



Watershed Management Plan 2020-2029





Watershed Management Plan 2020-2029



www.ricecreek.org

Rice Creek Watershed District
4325 Pheasant Ridge Drive, Suite 611
Blaine, Minnesota, 55449-4539
Phone: (763) 398-3070
Fax: (763)398-3088

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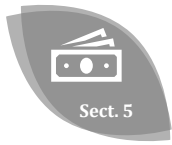
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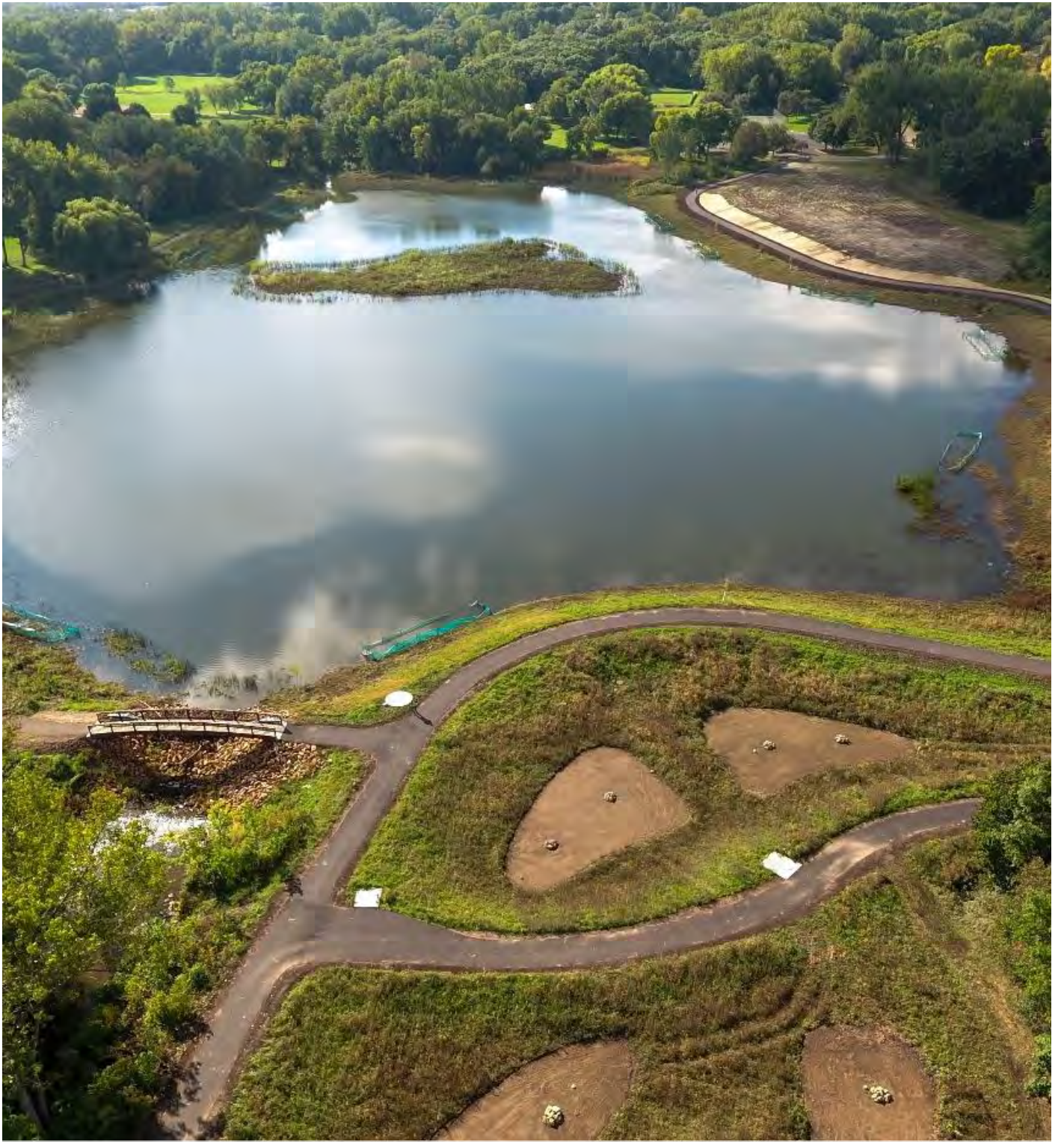
ACSIC	As-Constructed and Subsequently Improved Condition
AIS	Aquatic Invasive Species
AUID	Assessment Unit Identification Number
AWP	Annual Work Plan
BMP	Best Management Practice
BWSR	Board of Water and Soil Resources
CAC	Citizen Advisory Committee
CIP	Capital Improvement Project
CWPMP	Comprehensive Wetland Protection and Management Plan
DNR	Department of Natural Resources
DWSMA	Drinking Water Supply Management Area
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GIS	Geographic Information System
LGU	Local Government Unit
MDA	Minnesota Department of Agriculture
MDH	Minnesota Department of Health
MnDOT	Minnesota Department of Transportation
MOU	Memorandum of Understanding
MPCA	Minnesota Pollution Control Agency
MR	Minnesota Rule
MS	Minnesota Statute
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NWI	National Wetland Inventory
PFOS	Perfluorooctane Sulfate
PRAP	Performance Review and Assistance Program
PWI	Public Waters Inventory
RCWD	Rice Creek Watershed District
RMP	Resource Management Plan
SWPPP	Stormwater Pollution Prevention Plan
SPRWS	St. Paul Regional Water Services
SWCD	Soil and Water Conservation District
TAC	Technical Advisory Committee
TMDL	Total Maximum Daily Load
TSI	Trophic State Index
TCAAP	Twin Cities Army Ammunition Plant
WCA	Wetland Conservation Act
WMD	Water Management District
WMO	Water Management Organization
WMP	Watershed Management Plan
USFWS	United States Fish and Wildlife Service
USGS	U.S. Geological Survey

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Executive Summary

Executive Summary

The Rice Creek Watershed District (RCWD) is comprised of approximately 186 square miles of urban and rural lands in Anoka, Hennepin, Ramsey, and Washington counties. The District was established with the purpose of conserving and restoring water resources for the beneficial use of current and future generations. The District’s boundaries include all or portions of 28 cities and townships (Figure ES-1).

The RCWD is a special-purpose unit of government that was established by the Minnesota Board of Water and Soil Resources on January 18, 1972 upon petition by citizens, county boards, and cities. The RCWD mission is to manage, protect, and improve the water resources of the District through flood control and water quality projects and programs.

Development of this Watershed Management Plan (WMP) is required by law, but was guided cooperatively by constituents of the District, technical representatives from District communities and the State of Minnesota, and RCWD’s staff and Citizen Advisory Committee. The District Board, through its staff, has promoted and implemented projects and programs with an emphasis on partnership and collaboration with its member cities and counties. This philosophy of collaboration guided the development of the WMP and can be found throughout the plan.

The WMP provides resource management guidance to District staff, establishes funding goals and limits for projects and programs, and displays transparency to constituents of the District. The WMP incorporates and builds upon the successes of previous plans and leverages the work conducted by the RCWD to ensure proper guidance for future District activities. This WMP is focused on District resources and implementation efforts that aim to address priorities and improve water resources. A focus on implementation requires the RCWD to successfully balance water management law, address funding issues, and effectively coordinate with constituents to fulfill its mission.



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Section One: Introduction



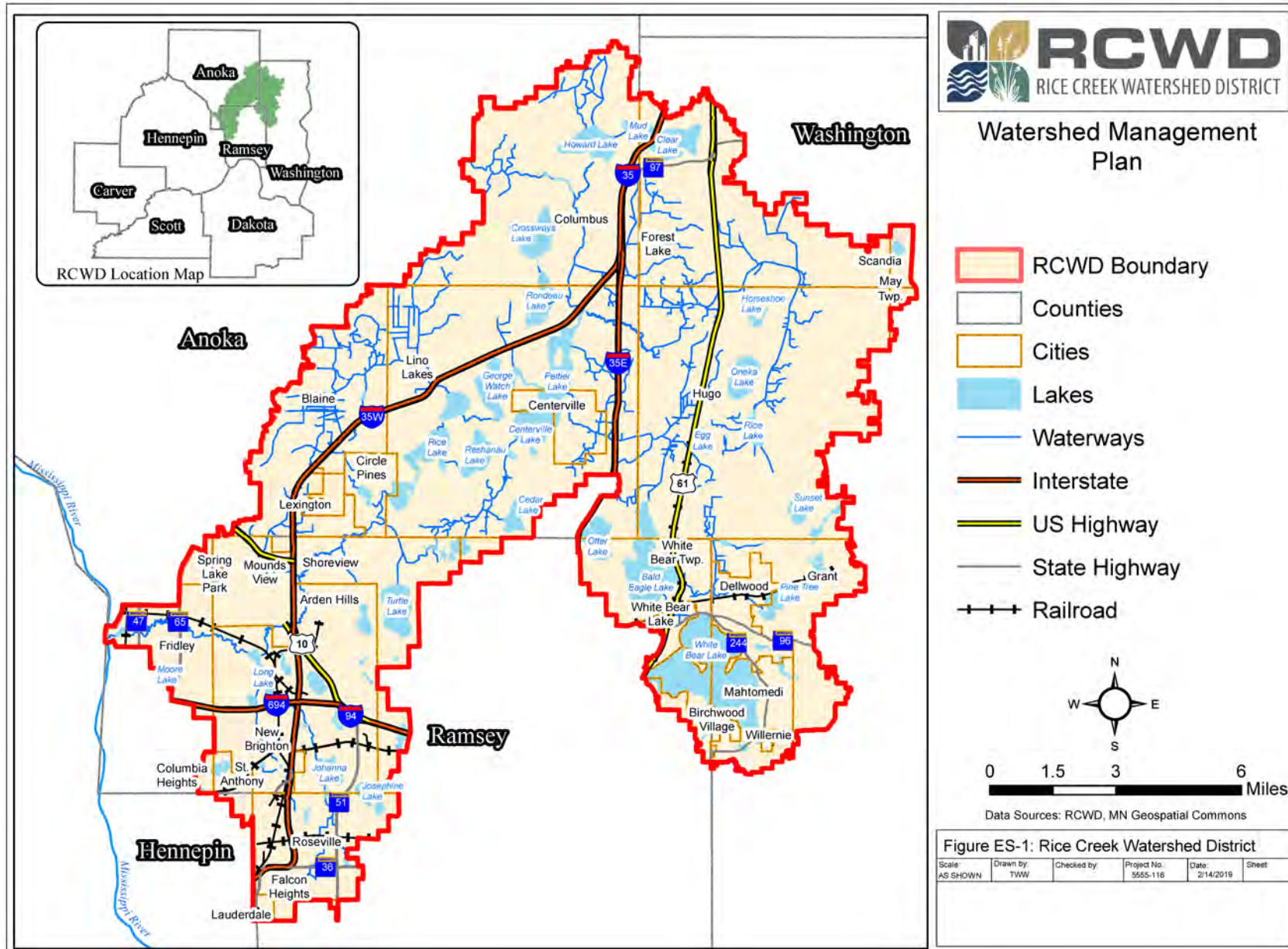
Nine management categories are introduced in **Section 1** of the WMP. The management categories are used to describe the diversity of resources and issues across the District. These categories encompass specific resource concerns and associated issues. The management categories are the foundation by which the RCWD will organize its actions and efforts to meet measurable goals and address priority issues of the District (**Section 3**).

The categories include:

- MS 103E Public Drainage Systems
- Non-103E Drainage Systems
- District Facilities
- Flooding
- Water Quality Management
- Funding
- Collaborations
- Regulatory; and
- Communication, Outreach, and Education



Figure ES-1: Rice Creek Watershed District



Section Two: District Land and Water Resources



Section 2 of this WMP describes the physical and cultural features that characterize the District. Maps and tables that describe the unique climate, geography, topography, geology, geomorphology, and soils of the RCWD are included in this section. Hydrologic features described include drainage systems, streams, lakes, wetlands and groundwater resources. Natural and cultural aspects contained in this section include wildlife and recreation areas, land use and land cover, and other features such as the St. Paul Water Utility and known potential hazards.

Section Three: District Priority Issues, Goals, and Policies



Section 3 discusses issues, goals and policies that are important to the RCWD. The District Board of Managers completed a Strategic Direction process to identify and prioritize issues to guide implementation efforts and funding for the 10-year lifespan of this plan. The Strategic Direction process included input from District constituents, technical advisors, and the RCWD Board of Managers. **Table ES-1** outlines each identified issue by management category, and shows the priority level assigned during the Strategic Direction process.

Table ES-1: District Issues Table for the RCWD Plan Update

Management Category	Management Category Definition	Issue	Priority Level
MS 103E Public Drainage Systems	Management and maintenance of public drainage systems in its role as Drainage Authority (County and Judicial Ditches established under MS 103E)	Public Drainage System Maintenance, Repair, and Management Approach	A
		Repair Project Financing	B
		Stakeholder Outreach on Drainage System Roles and Expectations	B
Non-103E Drainage Systems	Management of drainage systems not established under MS 103E and stormwater conveyance systems within the District boundary	Management of Non-103E Systems	C
District Facilities	Operation and maintenance of water management structures and property constructed and/or owned by the District	Management of District Facilities	A
Flooding	Managing the peak rate and volume of runoff from the landscape in an attempt to reduce potential flood damages in receiving surface waters	Addressing Existing Flooding Issues	A
		Impacts of Future Development on Downstream Rate and Volume	B
		Modeling and Mapping	A
Water Quality Management	Protecting and/or improving the water quality of District streams, rivers, lakes, and other watercourses	Accelerated Sedimentation	B
		Aquatic Invasive Species	C
		Wetlands	B
		Nutrient Enrichment, Algae, and Cultural Eutrophication	B



Management Category	Management Category Definition	Issue	Priority Level
		Surface Water Monitoring	C
		Surface Water/ Groundwater Interactions	C
Funding	Prioritized budgeting of costs for District programs and projects and identification of revenue sources	Financing and Funding Sources	B
		Funding Distribution	A
Collaborations	Developing and maintaining positive collaborative relationships and agreements with other agencies and partners to better carry out District's mission	Collaborations with Local, State, and Federal Partners	A
		Collaborations with Private Partners	B
Regulatory	Administration of District rules to manage District water resources	District Rules	C
		District's Role as WCA Authority	C
		Permitting and Enforcement	A
Communication, Outreach, and Education	Implementation of effective outreach efforts related to District priorities, policies, activities, and projects. Outreach efforts tailored to four main audiences: General Public; Counties; Cities; and State Agencies.	Communication Opportunities and Strategies	C
		Resources for Adequate Outreach, Communication, and Education	C

Measurable goals are established to address each watershed issue. Measures accompany each goal to evaluate the District's success in achieving goals during the 10-year lifespan of the plan. Policies are established by the RCWD to guide efforts toward accomplishing stated goals. This establishes direction for the RCWD and provides an indication of how projects, problems, and issues will be approached and resolved.

This plan outlines and describes measurable goals for the 23 identified District issues in a series of easy-to-understand fact sheets. Within each fact sheet, each issue is discussed individually and goals, measures, and policies are defined to describe how the RCWD will strategically address watershed priorities. **Figure ES-2** provides an example of how three priority issues are addressed. For a full list of plan goals, see **Section 3**.



Figure ES-2. Issue/Goal Fact Sheet Examples from Section 3



Section Four: Implementation Plan



The RCWD's implementation plan is presented in **Section 4**. The implementation plan is composed of three main elements: 1) administration, 2) implementation programs, and 3) capital improvement projects.

Implementation programs are designed to carry out the District's mission and make progress towards established measurable goals. **Table ES-2** highlights the implementation programs the District will administer to address plan issues and make progress towards goals. An example implementation program summary is shown below in **Figure ES-3**.



Figure ES-3: Example Implementation Program Summary (Section 4)



Example Activities

- Maintain an inventory of District facilities and documentation that can be shared with partners
- Develop an inspection, operation and maintenance plan/protocol

Primary Issues Addressed

- District Facilities: Management of District Facilities

Table ES-2. Approximate Annual Budget by Implementation Program

Plan Section	Implementation Program	Estimated Annual Budget Range: Low	Estimated Annual Budget Range: High	Planned No. of Years for Expenditure
4.2.1	Public Drainage System Inspection, Maintenance and Repair	\$450,000	\$600,000	Annual
4.2.2	Natural Waterway Management	\$0	\$20,000	Annual
4.2.3	District Facilities Inspection, Operations and Maintenance	\$25,000	\$100,000	Annual
4.2.4	Modeling and Planning Program	\$150,000	\$250,000	Annual
4.2.5	Water Quality Grant Program	\$200,000	\$250,000	Annual
4.2.6	Carp and Curly Leaf Pondweed Management Program	\$200,000	\$300,000	Annual
4.2.7	Mini-Grants Program	\$0	\$10,000	Annual
4.2.8	Surface Water Monitoring and Management Program	\$200,000	\$400,000	Annual
4.2.9	Groundwater Management and Stormwater Reuse Assessment Program	\$15,000	\$40,000	Annual
4.2.10	Municipal Capital Improvements – Early Coordination Program	\$10,000	\$20,000	Annual
4.2.11	Boundary Management Program	\$0	\$50,000	Annual
4.2.12	Rule Revision/Permit Guidance	\$30,000	\$60,000	Annual
4.2.13	Permit Review, Inspection, and Coordination Program	\$900,000	\$1,250,000	Annual
4.2.14	Watershed Communication and Outreach	\$30,000	\$75,000	Annual
4.2.15	Minnesota Water Steward Program	\$15,000	\$30,000	Annual
4.2.16	Watershed Plan Maintenance	\$0	\$200,000	Three years (2027-2029)
	Total	\$2,225,000	\$3,655,000	

In addition to implementation programs, **Table ES-3** highlights the Capital Improvement Projects (CIPs) the District will administer to address plan issues and make progress towards goals. Estimated cost for projects identified varies in quality and should be considered suitable for planning purposes only. To fund its capital improvement projects, the District will seek out grants and other external sources of funding when possible, and otherwise will use District sources of funds as described in Section 5 as well as contributions of project partners. Budget amounts in **Table ES-3** anticipate use of these funding sources collectively.

The District has been identified as a project funding partner in many of its member communities' approved local water management plans. Projects may be considered for implementation by the RCWD Board through this WMP, where they fit within the District's CIP list below. The community projects are summarized within **Appendix G**.

Table ES-3. Proposed Capital Improvement Projects for the Rice Creek Watershed District 2020-2029

Plan Section	Capital Improvement	Location	Proposed Implementation Year Begin	Proposed Implementation Year End	Estimated Average Annual Budget*	Total Estimated Budget*
4.3.1	Anoka County Ditch 53-62 Repair	Blaine, Circle Pines	2020	2024	\$300,000	\$1,500,000
4.3.2	Anoka Ramsey Judicial Ditch 1 Repair	Blaine, Mounds View, Circle Pines	2028	2029	\$250,000	\$500,000
4.3.3	Anoka Washington Judicial Ditch 3 Repair	Hugo, Lino Lakes	2020	2027	\$375,000	\$3,000,000
4.3.4	Ramsey County Ditch 4 Repair	Roseville, Arden Hills	2025	2027	\$400,000	\$1,200,000
4.3.5	Anoka County Ditch 15/Judicial Ditch 4 Stormwater Master Planning and Implementation	Columbus, Forest Lake	2020	2029	\$300,000	\$3,000,000
4.3.6	Stormwater Management Grant Program	District-Wide	2020	2029	\$300,000	\$3,000,000
4.3.7	Ramsey County Ditches 2,3, and 5 Basic Water Management Project	New Brighton, St. Anthony Village, Roseville	2020	2029	\$2,200,000	\$22,000,000**
4.3.8	Bald Eagle Lake Water Management Project	Hugo, Lino Lakes, White Bear Twp.	2020	2029	\$150,000	\$1,500,000
4.3.9	Clear Lake Water Management Project	Forest Lake	2020	2029	\$25,000	\$250,000
4.3.10	Anoka Chain of Lakes Water Management Project	Multiple Cities	2020	2029	\$250,000	\$2,500,000
4.3.11	Silver Lake Water Management Project	New Brighton, St. Anthony Village, Columbia Heights	2020	2029	\$25,000	\$250,000



Plan Section	Capital Improvement	Location	Proposed Implementation Year Begin	Proposed Implementation Year End	Estimated Average Annual Budget*	Total Estimated Budget*
		Columbia Heights				
4.3.12	Golden Lake Water Management Project	Circle Pines, Lexington, Blaine	2020	2029	\$50,000	\$500,000
4.3.13	Southwest Urban Lakes Implementation	Multiple Cities	2020	2029	\$200,000	\$2,000,000
4.3.14	Regional Water Management Partnership Projects	District Wide	2020	2029	\$150,000	\$1,500,000
4.3.15	Maintenance of District Facilities	District-Wide	2020	2029	\$300,000	\$3,000,000
4.3.16	Middle Rice Creek Water Management Project	Arden Hills, Shoreview, Blaine, Circle Pines, Lino Lakes	2020	2029	\$50,000	\$500,000
4.3.17	Lower Rice Creek Water Management Project	Fridley, New Brighton, Mounds View, Spring Lake Park	2020	2029	\$200,000	\$2,000,000
Total					\$5,525,000	\$48,200,000
* Funding of budgeted items anticipated from all potential sources, including, but not limited to, ad valorem, Watershed Management Districts, and grants. The District will evaluate the need and availability for state and federal grant funding prior to project implementation						
** Due to the scale of the flooding and water quality issues and associated projects to address this issue, it is imperative to the success of the project that the State has a significant role in funding the project.						

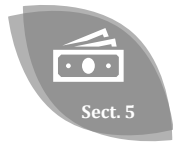
Actions related to administration, implementation programs, and capital improvement projects are housed within the Implementation Table at the end of this section. The Implementation Table contains:

- A brief description of each action;
- The goal (s) addressed by implementation;
- District priority for implementation;
- Anticipated partnering entities for implementation;
- When implementation will occur within the 10-year timeframe of the plan;
- Estimated annual and total cost of action implementation; and
- The funding source(s) for each action.

The Implementation Table will be used to identify, plan, and implement specific actions and capital improvement projects to address District issues and make progress towards stated goals.



Section Five: Watershed Financing



The RCWD intends to distribute costs for administration, programs, and projects as equitably as possible while maintaining an efficient implementation process without disproportionately high administrative costs. **Section 5** provides an explanation of the financing and funding mechanisms available to the District that ensure an effective operational process. These funding mechanisms are described in terms of their relation to Minnesota Statutes.

The District plans to use ad valorem levies (or its District-wide taxes) to cover the costs of administration, District-wide implementation programs, projects of common benefit, and operation and maintenance of District facilities. Fees are utilized to mitigate the cost to the District for reviewing permit applications. Water management district charges fund projects that have defined local benefits.

The District will also seek state grants to fund water quality and flood damage reduction projects.

Section Six: Watershed Plan Administration



Section 6 provides direction for the District's administration of WMP components. It includes amendment procedures, the criteria for amendments, and summarizes how amendments will be formatted. It also describes general and minor plan amendments and outlines the differences between the two. Additional concerns including the administration of the legal boundary of the RCWD are explained. Interaction with local government units (LGUs) are described in terms of local

water management plans, regulatory controls and enforcement, and the financial relations between the LGUs and the RCWD.



The RCWD Watershed Management Plan meets the District's statutory obligations and is the guide for the District's activities for the calendar years 2020-2029. Equally important is the collaborative process that was used to gain input from the District's partners on priorities, activities, and funding issues. The District endeavored to ensure that this plan is equitable, manages flood control and water quality concerns, and is a valuable tool for the District and its partners. A copy of the complete plan and comprehensive information on District efforts is maintained on the RCWD website (<http://www.ricereek.org>).





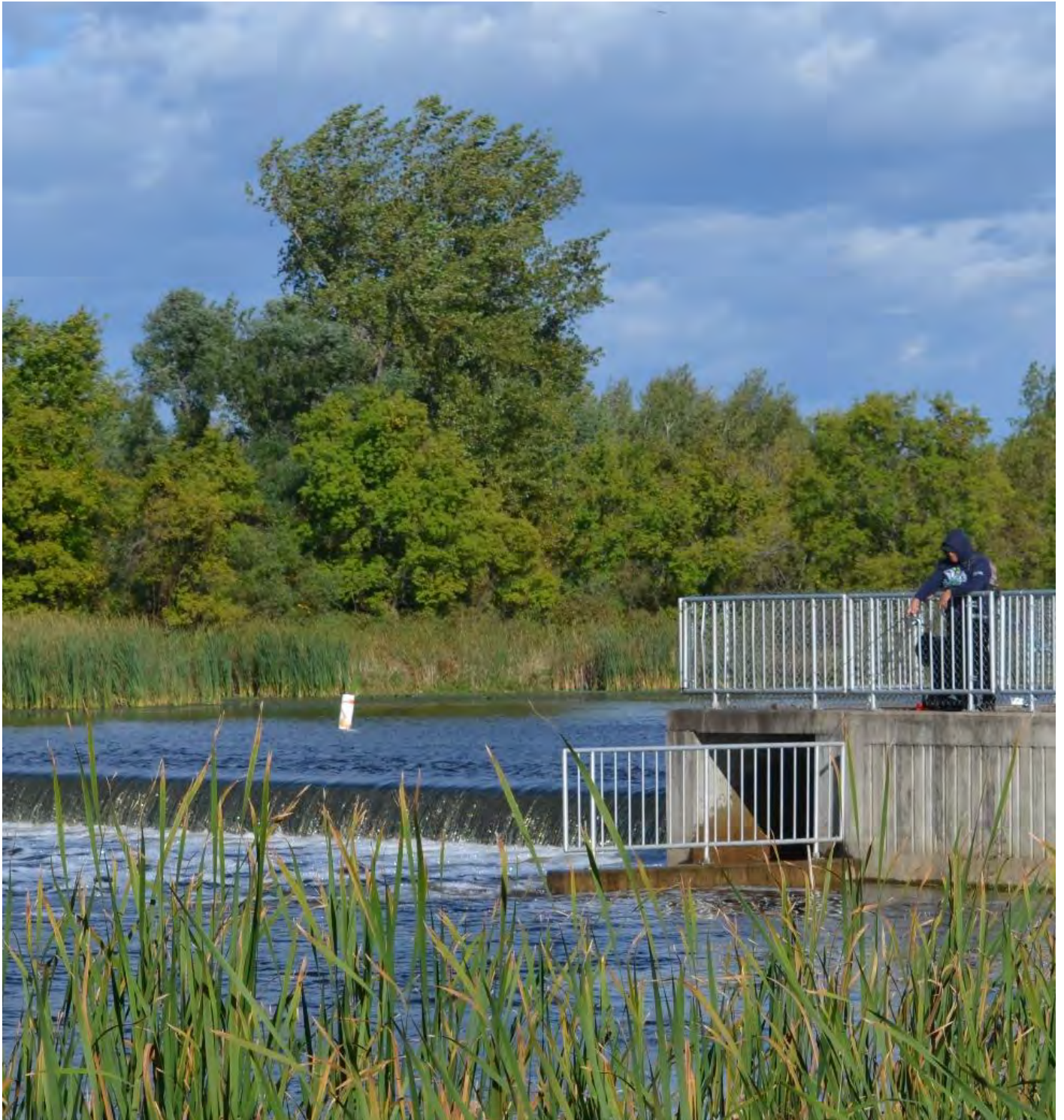
The watershed management plan will provide a collective vision for the next ten years



Want to Get Involved?

Look throughout the plan for the collaboration icon. We'll share tips and ideas for how you can become more involved with watershed management within your local watershed!





Sect. 1

1. Introduction

1.1 District Overview

The Rice Creek Watershed District (RCWD) was established on January 18th, 1972 at the request of citizens, county boards and cities. Since its formation, the RCWD has led the way for water resource protection and management in the Twin Cities area and has successfully adapted to the changing landscape and the needs, rights, and interests of a wide range of constituents.

The RCWD’s mission is to manage, protect, and improve the water resources of the District through flood control and water quality projects and programs.

The RCWD accomplishes its mission through many activities, including but not limited to the following, in no particular order:

- Managing public drainage systems within the boundary of the RCWD through its role as Drainage Authority;
- Administering a permit program that enforces RCWD rules;
- Collaboration with local partners to construct projects that address runoff rate, volume, and water quality issues;
- Administering the Wetland Conservation Act (WCA);
- Monitoring, maintaining, and improving water quality;
- Promoting best management practices; and
- Educating public partners and residents about water resources and what they can do to help.

1.1.1 Boundaries and Communities

The RCWD is located in Anoka, Ramsey, and Washington Counties, with a small portion in Hennepin County. The current (as of 2019) legal boundary of the RCWD encompasses approximately 186 square miles of urban and rural land with portions in 28 cities and townships: Arden Hills, Birchwood Village, Blaine, Centerville, Circle Pines, Columbia Heights, Columbus, Dellwood, Falcon Heights, Forest Lake, Fridley, Grant, Hugo, Lauderdale, Lexington, Lino Lakes, Mahtomedi, May Township, Mounds View, New Brighton, Scandia, Roseville, Saint Anthony, Shoreview, Spring Lake Park, White Bear Lake, White Bear Township, and Willernie (**Table 1-1**). The current legal boundary of the RCWD and member cities, townships, and counties are shown in **Figure 1-1**.



Table 1-1: Cities and Townships of the Rice Creek Watershed District

City	County	Acres	Square Miles	Percent of District
Arden Hills	Ramsey	6,154	9.6	5.2
Birchwood Village	Washington	214	0.3	0.2
Blaine	Anoka & Ramsey	7,859	12.3	6.6
Centerville	Anoka	1,560	2.4	1.3
Circle Pines	Anoka	1,243	1.9	1.0
Columbia Heights	Anoka	224	0.3	0.2
Columbus	Anoka	13,296	20.8	11.1
Dellwood	Washington	1,799	2.8	1.5
Falcon Heights	Ramsey	192	0.3	0.2
Forest Lake	Washington	10,199	15.9	8.5
Fridley	Anoka	2,916	4.6	2.4
Grant	Washington	4,641	7.3	3.9
Hugo	Washington	20,409	31.9	17.1
Lauderdale	Ramsey	190	0.3	0.2
Lexington	Anoka	441	0.7	0.4
Lino Lakes	Anoka	20,236	31.6	17.0
Mahtomedi	Washington	3,033	4.7	2.5
May Twp.	Washington	177	0.3	0.1
Mounds View	Ramsey	2,631	4.1	2.2
New Brighton	Ramsey	4,525	7.1	3.8
Roseville	Ramsey	4,588	7.2	3.8
Scandia	Washington	494	0.8	0.4
St. Anthony	Hennepin & Ramsey	669	1.0	0.6
Shoreview	Ramsey	4,827	7.5	4.0
Spring Lake Park	Anoka & Ramsey	449	0.7	0.4
White Bear Twp.	Ramsey	5,088	7.9	4.3
White Bear Lake	Ramsey & Washington	1,134	1.8	1.0
Willernie	Washington	82	0.1	0.1
Totals:		119,270	186.2	100%

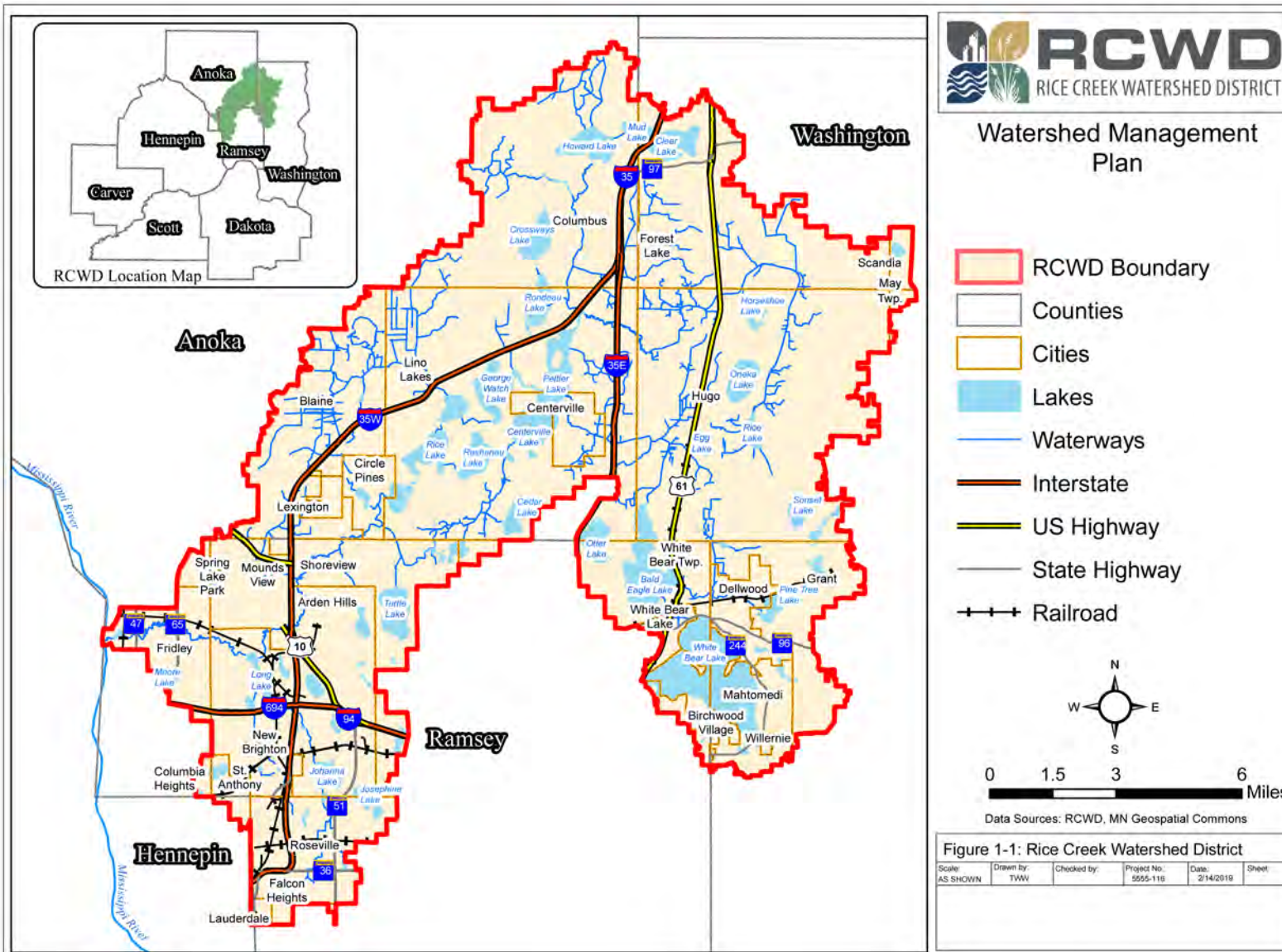
Three watershed management organizations and seven watershed districts surround the borders of the RCWD. The Sunrise River Watershed Management Organization and the Comfort Lake-Forest Lake Watershed District are directly north of the RCWD, both of which ultimately drain to the Saint Croix River. The Carnelian-Marine-St. Croix Watershed District, Browns Creek Watershed District, and Valley Branch Watershed District comprise the eastern boundary and drain to the Saint Croix River. The Vadnais Lake Area Water Management Organization (VLAWMO) comprises the largest portion of RCWD's southern boundary. VLAWMO extends north into Lino Lakes and divides the two southern lobes of the District. The Ramsey- Washington-Metro Watershed District and the Capitol Region Watershed District comprise the remaining southern boundary, both of which ultimately drain to the Mississippi River. The western side of the RCWD is bounded by the Mississippi Watershed Management Organization and the Coon Creek Watershed District, which drain to the Mississippi River.

From 2013-2019, there have been five changes to the legal RCWD boundary:

- **2013-2014:** Partial eastern boundary correction with Browns Creek Watershed District;
- **2015-2016:** Partial northern boundary correction with Sunrise River Watershed Management Organization;
- **2014-2017:** Comprehensive northeastern boundary correction with Comfort Lake-Forest Lake Watershed District;
- **2015-2018:** Comprehensive southeastern boundary correction with Valley Branch Watershed District; and
- **2018-2019:** Comprehensive eastern boundary correction with Browns Creek Watershed District.

To date, boundary changes and corrections have been completed to address discrepancies between hydrologic boundaries and political boundaries. All boundary changes have been subject to the boundary adjustment process set forth in Minnesota Statutes 103B and 103D.

Figure 1-1: Rice Creek Watershed District Legal Boundary



1.1.2. Planning History and Success Since Previous Plan

The RCWD was formed by petition in 1972 as a means of conserving and managing the waters and natural resources of the area. An overall plan for water management was prepared in 1974 as required under Minnesota Statute (MS) 103D. The 1974 plan focused on flood control, drainage, water quality, erosion and sedimentation, land development, and the preservation of open spaces for recreation and wildlife. The District completed a second management plan, which was adopted in 1990, to satisfy the Metropolitan Surface Water Management Act, MS 103B. The plan was updated in 1994, 1997, and 2010 to comply with the more specific directions of Minnesota Administrative Rule (MR) 8410. These plan updates concentrated on many of the same issues as the original management plan but provided for additional planning efforts at the municipal level. Throughout the updates, the original plan has served as the foundation for the past 45 years of District activities. This document serves as the Watershed Management Plan (WMP) update required under MS 103B and 103D and MR 8410. Specifically, this plan replaces the adopted 2010 WMP as amended in 2016.

The RCWD has had significant implementation success since the most recent 2010 WMP. The District has administered local water management and conducted water monitoring programs and capital projects for the purposes of flood damage reduction, drainage maintenance, and water quality protection, maintenance, and improvement. In August 2018, the Board of Water and Soil Resources (BWSR) Performance Review and Assistance Program (PRAP) completed a Level II performance review of the RCWD to evaluate the District’s WMP implementation and overall organizational effectiveness in the delivery of land and water conservation projects and programs. The District demonstrated excellent compliance with the BWSR’s basic and high-performance standards. The full performance review has been provided as an attachment in **Appendix A**.

1.1.3. Board of Managers

Governing the RCWD is a five-member Board of Managers, two of which are appointed from Ramsey County, two from Anoka County, and one from Washington County. The RCWD does not have an appointed manager from Hennepin County because it only consists of a small portion of land in the RCWD. Appointments are made by the respective counties’ Board of Commissioners as three-year terms. A manager can serve multiple terms. The RCWD Board of Managers history is presented in **Table 1-2**.

Table 1-2: Rice Creek Watershed District Board of Managers

Anoka County	Start Date	End Date
Andrew J. Cardinal, Sr.	January 1972	January 2007
Ernest A. Petrangelo	January 1972	January 1987
C. Wade Savage	January 1987	January 1993
Eugene L. Peterson	January 1993	April 2001
Robin C. Doege	June 2001	November 2003
Harvey F. Karth	January 2004	January 2005
Donald J. Steinke	February 2005	January 2008

(cont.) Table 1-2: Rice Creek Watershed District Board of Managers

Rick A. Mastell	January 2007	December 2012
Patricia L. Preiner	January 2008	January 2023
Steven P. Wagamon	January 2013	Current
Jess Robertson	January 2023	Current
Ramsey County	Start Date	End Date
George V. Dimke	January 1972	April 1980
Robert R. Hamilton	January 1972	April 1981
Diane N. Harstad	January 1981	January 1985
Lloyd H. Scott, Sr.	April 1981	October 1988
Gerald A. Sande	January 1985	January 1994
Arndt J. Duvall	February 1989	September 1990
Herbert G. Lancaster	February 1991	January 1994
Carole V. Ryden	January 1994	January 1997
Barbara A. Haake	February 1994	December 1998
David T. Cooper	January 1997	December 1998
W. Tom Waddell	January 1999	March 2002
Ordeen J. Braathen	January 1999	January 2002
Barbara A. Haake	January 2002	January 2020
Roger K. Aiken	June 2002	February 2006
Susan R. Oven	February 2006	January 2009
Harley M. Ogata	January 2009	January 2015
Michael J. Bradley	January 2015	Current
Marcia A. Weinandt	January 2020	Current
Washington County	Start Date	End Date
Wilbur L. Goyer	January 1972	January 1980
Charles T. King	January 1980	January 1986
Donald E. Willcoxon	January 1986	January 1989
Arthur J. Potts	January 1989	May 1990
Charles T. King	May 1990	January 1992
Roger L. Oberg	January 1992	January 1995
Robert M. Hult	January 1995	January 2001
James A. Leroux	January 2001	January 2007
John J. Waller	January 2007	Current



1.2 Plan Overview



This WMP provides the vision and guidance for the RCWD to implement and manage the water and natural resources of the District into the foreseeable future extending through 2029. As such, the WMP incorporates and builds on the previous plans as well as the numerous studies, inventories and assessments that have been completed in recent history. Focusing on implementation also requires the RCWD to successfully balance conflicting water management laws, address funding issues, and effectively coordinate with constituents.

This WMP is organized around nine management categories, listed below in no order of importance.

- MS 103E Public Drainage Systems
- Non-103E Drainage Systems
- District Facilities
- Flooding
- Water Quality Management
- Funding
- Collaborations
- Regulatory
- Communication, Outreach, and Education

These management categories serve to address the diversity of resources and issues across the District. Management categories are broad, encompassing resources, actions and efforts within the District. The use of management categories is important for identifying which issues are priorities within the District, thereby guiding planning and budgeting efforts.

This WMP is organized into six sections:

- **Section 1: Introduction** contains background information about the RCWD, its planning history, and how the plan is organized.
- **Section 2: Land and Water Resources** provides an inventory of natural resources located within the District.
- **Section 3: District Priority Issues, Goals, and Policies** identifies RCWD priority issues and establishes watershed measurable goals organized by management category, with policies in place to support the goals.
- **Section 4: Implementation Plan** presents capital projects and District implementation programs to achieve progress toward the measurable goals established in the WMP.
- **Section 5: Watershed Financing** summarizes funding needs and opportunities within the District.
- **Section 6: Watershed Plan Administration** establishes the steps for amending plan content, and watershed boundaries and contains important information for local government units within the District.

Want to Get Involved?

Learn more about the District

Get better acquainted with the District at <https://www.ricecreek.org/>

Attend regular meetings

Board meetings are open to the public. Find a schedule of meetings and agenda topics online.

Watch recorded meetings

Can't make it to a Board meeting? Recordings of completed meetings are available on the Rice Creek Watershed District's YouTube channel. <https://www.youtube.com/RiceCreekMtg>

Consider participating in local events and activities

Get involved with the District by joining in educational events and activities. Keep an eye on the District's event calendar online for dates and details.

Volunteer!

The District often needs volunteers to help record scientific data and assist with cleanups. Subscribe to the Rice Creek Watershed District newsletter to learn more about upcoming opportunities.





2. **Land & Water Resources**

2.1 Topography

Rice Creek is the defining surface water feature in the RCWD. The creek begins at Clear Lake, just south of Forest Lake, and meanders southwestward through the Lino Lakes Chain of Lakes (i.e., Peltier, George Watch, Marshan, Rice, Reshanau, Centerville, and Baldwin, herein referred to as “Chain of Lakes”). From here, Rice Creek continues to Long Lake in New Brighton where it then flows west through Fridley and joins the Mississippi River. Rice Creek has two major tributaries, Hardwood Creek and Clearwater Creek, which drain the eastern part of the watershed into Peltier Lake within the Chain of Lakes. The southwestern lobe of the watershed drains to Long Lake via two urban open channel drainage systems, Ramsey County Ditch 2 and the Lake Johanna Outlet Channel.

The elevation of Rice Creek drops 84 feet during its 28-mile course from Clear Lake, which has an ordinary high-water elevation of 890 feet above mean sea level, to its confluence with the Mississippi River. Most of that decline in elevation occurs in the last 8 miles before the junction with the Mississippi River. The upper 20 miles of Rice Creek has a fall of less than 1 foot per mile, resulting in relatively poor drainage while providing abundant lakes and wetlands. The very flat topography in the northern part of the watershed makes subwatershed drainage divides difficult to distinguish. The highest point in the District is more than 1,100 feet above mean sea level in Arden Hills. The lowest point is in Fridley, where Rice Creek flows into the Mississippi River.

2.2 Geology

Figure 2-1 shows the bedrock surfaces beneath the RCWD. The only surface exposure of the bedrock is near the Mississippi River. Most of the bedrocks are sandstones and limestones that date to the Cambrian and Ordovician ages about 400 to 500 million years ago.

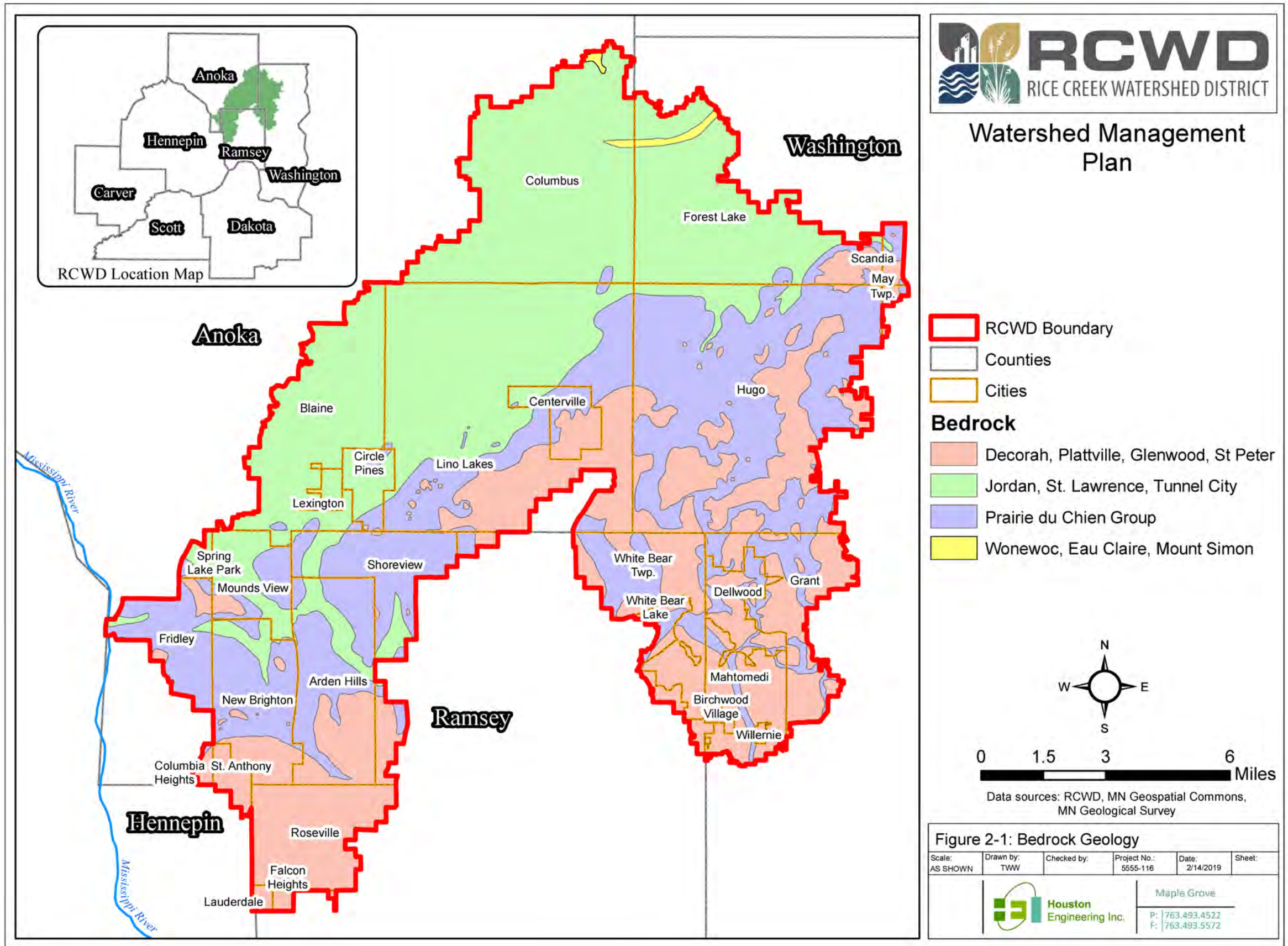
The general chronology of the bedrock deposits show that the most recent deposits of Decorah Shale are barely present overlying the Platteville and Glenwood formations in the southwest and southeast. Progressing to the north, and particularly evident in the east and southeast, the older St. Peter Sandstone comprises the bedrock surface. The Prairie du Chien dolomite shows irregular exposures in the southeast, but forms a band running from southwest to northeast through the middle of the bedrock surface. Along the north and northwest, exposures of the older and complex St. Lawrence and Franconia formations dominate but are interspersed with the younger Jordan sandstone which also forms a band adjacent to the Prairie du Chien exposure band. The oldest evident bedrock is a small sliver of the Ironton-Galesville Sandstones at the north end of the RCWD beneath Howard and Clear Lakes.

Above the bedrock, the RCWD is covered by glacial and post glacial deposits to depths of up to 400 feet, except near the Mississippi River where bedrock is exposed. **Figure 2-2** shows the surface expression of the materials that cover the bedrock. Most of the materials are of glacial origin being deposited as glaciers retreated from advances across the North American continent. The southeastern portion of the District is underlain by glacial deposits of the Superior Lobe, which had flowed into the area from the north and northeast bringing a reddish-brown drift, and then retreated about 14,000 years ago. Most of the District is underlain by deposits of the Grantsburg Sublobe, which flowed into the area from the southwest as an offshoot of the Des Moines Lobe and then retreated approximately 12,500 years ago. The Grantsburg Sublobe brought gray drift from Manitoba and the Red River Valley.

The edge of the Anoka Sandplain is evident on **Figure 2-2** as outwash with an eastern boundary that expresses itself in a series of lakes with till and organic deposits. To the east of the Anoka Sandplain the surficial deposits are predominantly till with outwash and organic materials interspersed. Surficial deposits are more complex at the eastern parts of the District.



Figure 2-1: Bedrock Geology



Watershed Management Plan

- RCWD Boundary
- Counties
- Cities
- Bedrock**
- Decorah, Plattville, Glenwood, St Peter
- Jordan, St. Lawrence, Tunnel City
- Prairie du Chien Group
- Wonewoc, Eau Claire, Mount Simon

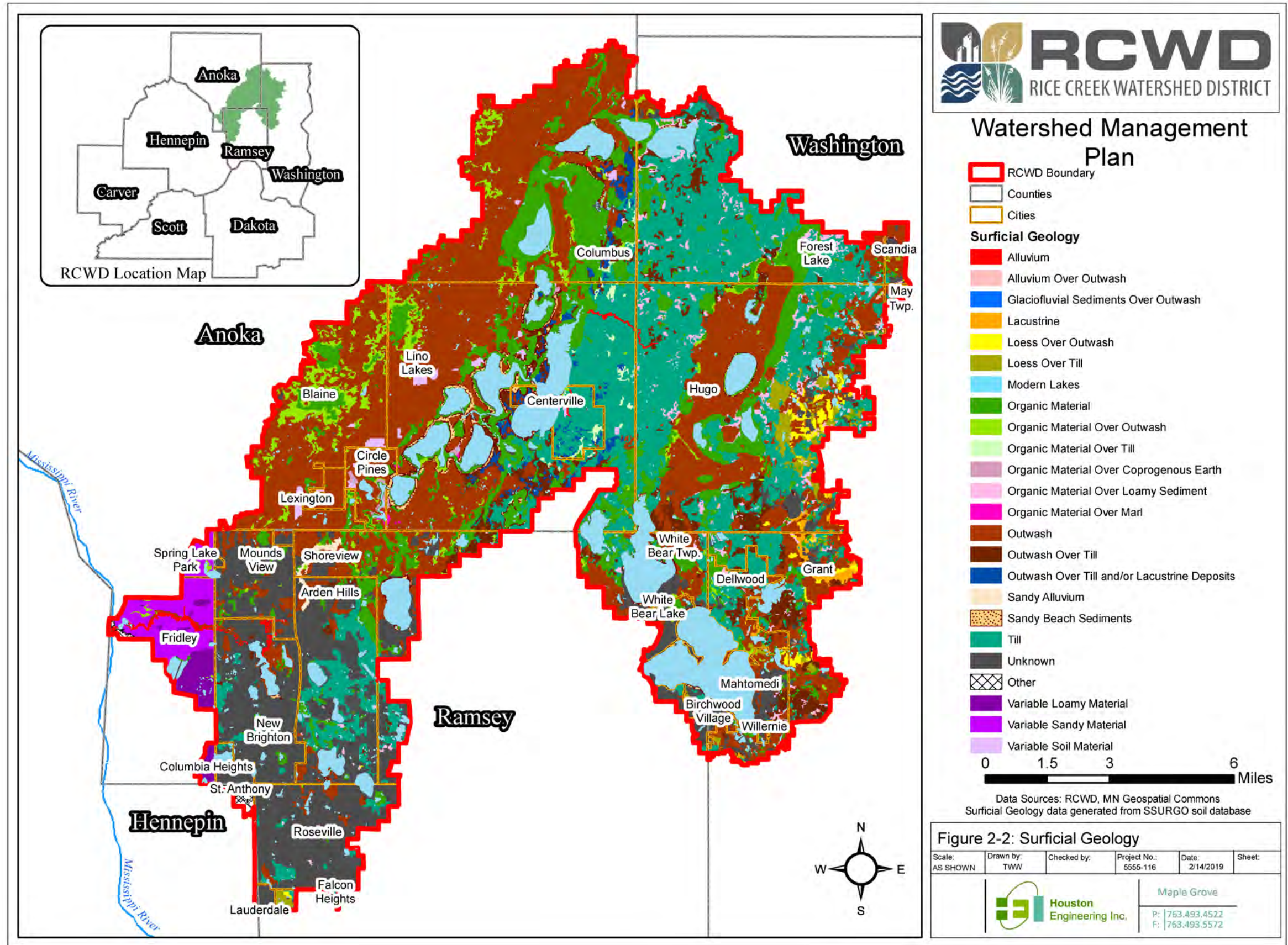


0 1.5 3 6 Miles

Data sources: RCWD, MN Geospatial Commons, MN Geological Survey

Figure 2-1: Bedrock Geology					
Scale: AS SHOWN	Drawn by: TWW	Checked by:	Project No.: 5555-116	Date: 2/14/2019	Sheet:
			Maple Grove		
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Figure 2-2: Surficial Geology



2.1.1 Geomorphology

Surficial geology directly affects the geomorphology of the RCWD. The District is divided into two geomorphic areas: the Anoka Sandplain and the Eastern St. Croix Moraine. The northwestern portion of the District is part of the Anoka Sandplain geomorphic area. The Anoka Sandplain is an outwash plain formed during the retreat of the Grantsburg Lobe. The material comprising the Plain is principally fine sand. Depressions are common in the Plain and were formed when isolated blocks of ice later melted. They are now filled with peat deposits or are lakes and wetlands. The landscape within the Anoka Sandplain is generally considered to be a gently undulating plain. The water table is near the surface in depressions and from 2 to 10 or more feet deep in the upland areas.

The remainder of the District is in the Eastern St. Croix Moraine geomorphic area. This area was formed at the southern limit of the Superior and Rainy Lobes, which brought red drift into the area. The drift of the St. Croix Moraine is often mixed with high-lime gray moraine associated with the Owatonna Moraines and Grantsburg Lobe. The morainic lobe consists of regular and terminal moraines, and ice disintegration features of sandy and loamy textures.

There are three primary surficial geologic formations within the District: glacial outwash, glacial till, and glacial lacustrine deposits. Glacial outwash in the District area is generally well-drained, except for pockets of organic soils which are not as well drained. The glacial tills are in the eastern portion of the District and, as previously described, are more heterogeneous than the outwash areas. There are also small areas of glacial lake deposits. In the glacial lake deposits, soils tend to be very well-sorted with nearly level topography.

2.1.2 Soil

Soils are classified by the Natural Resource Conservation Service (NRCS) into four hydrologic soil groups (HSGs) based on the soil's runoff potential: The four are A, B, C and D; where A's generally have the smallest runoff potential and D's the greatest. The soil groups for the RCWD are shown in **Figure 2-3** and described below:

- **HSG A** is sand, loamy sand, or sandy loam types of soils. They have low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sands or gravels and have a high rate of water transmission.
- **HSG B** soils are generally silt loam or loam. They have a moderate infiltration rate when thoroughly wetted and consists chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures.
- **HSG C** soils are generally sandy clay loam. They have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine to fine structure.
- **HSG D** soils are clay loam, silty clay loam, sandy clay, silty clay, or clay. This soil group has the highest runoff potential. The soils have very low infiltration rates when thoroughly wetted and consist mainly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material.

Parts of Ramsey County shown in **Figure 2-3** are labeled as N/A for 'not available' or 'not applicable' and are likely locations of pavement or other impervious surfaces that prevent access to identify the soil group.

Some small patches of soil that rated as HSG C, C/D, or D, are difficult to discern at this scale. Most soils are rated HSG A or B suggesting a relatively high rate of infiltration under most conditions. However, those HSG A or



B ratings often are combined with a qualifier of “D” suggesting a high water table, resulting in the soils performing similar to HSG D soils unless drainage infrastructure is present.

The predominant soils types in the RCWD are shown in **Figure 2-4**. All these data were compiled and are maintained as part of the STATSGO2 (State Soil Geographic) database under the direction of the NRCS. Soils are generally reflective of the parent material that is evident in **Figure 2-2**, which shows the surficial geology of the RCWD. It also relates strongly to the hydrologic soil groupings shown in **Figure 2-3**. However, differences between the maps are evident because different criteria are used in collecting and processing the data, and the level of detail conveyed in the maps leads to generalization. Furthermore, variations exist between soil types indicated on maps and observed soil types in some locations, which may also be due to the generalizations associated with the soil mapping process.

Figure 2-3: Hydrologic Soils

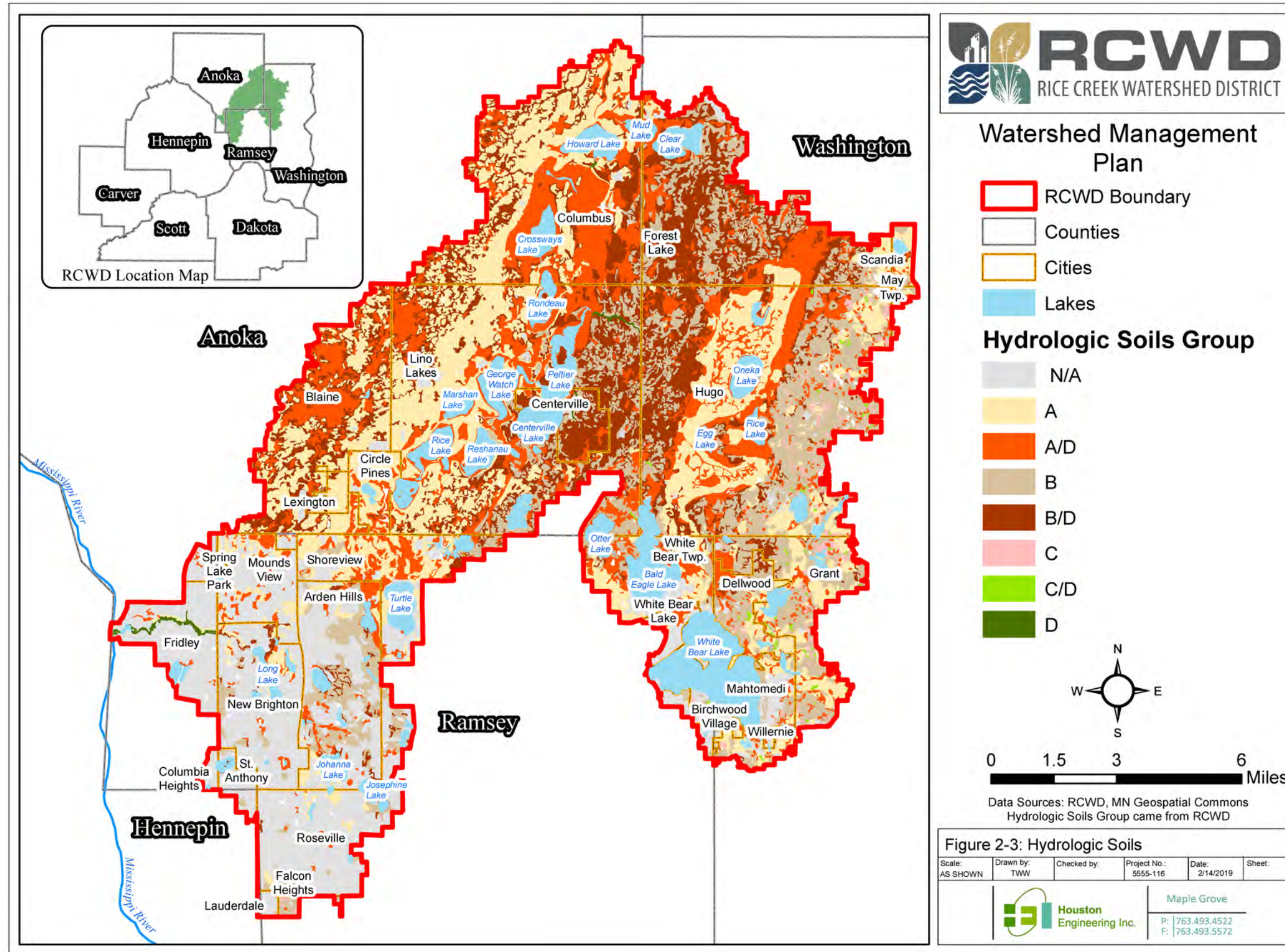
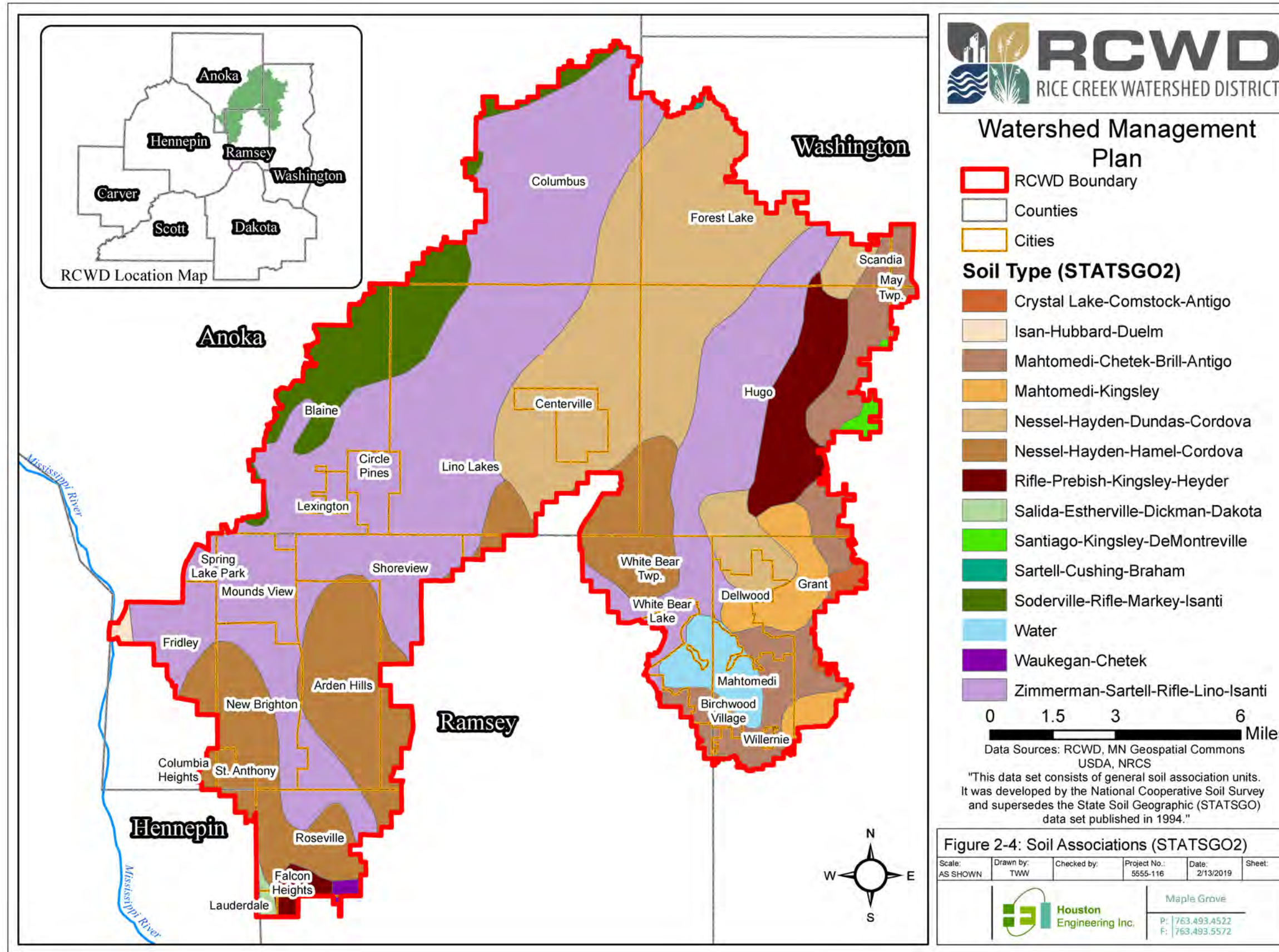


Figure 2-4: Soil Associations



2.3 Groundwater

Groundwater within the District is supplied by a series of bedrock and quaternary aquifers. Bedrock aquifers are geologic bedrock units that are able to release water in quantities sufficient to supply reasonable amounts to wells (DNR, 2016). The St. Peter Sandstone Aquifer, Prairie Du Chien-Jordan Aquifer, and the Franconia-Ironton-Galesville Aquifer are the three primary bedrock aquifers impacted by groundwater pumping in the District. The deeper Franconia-Ironton-Galesville Aquifer exists primarily in the northern area of the District. The Prairie Du Chien-Jordan Aquifer is extensive in the central and southern part of the District, and the southern-most areas of the District overlay the St. Peter Aquifer (Metropolitan Council, 2014). Although contaminants have been detected and are a problem in some communities, these aquifers generally are well protected from widespread contamination. Where contaminants have been detected in water supplies, treatment technologies have been employed to make the water safe for public consumption.

Quaternary (or surficial, unconsolidated) aquifers are layered above bedrock. Many of the shallow, quaternary deposits overlying the bedrock contain aquifers that form an important source of water for private individuals and smaller communities. These aquifers can be a plentiful source of water, particularly in the northwest of the District where the extensive Anoka Sandplain is present. Where surficial deposits are more complex at the eastern parts of the District, the quantity of water supplied likely is irregular. All surficial aquifers may be susceptible to contamination because the water is very near the land surface, often expressing itself in lakes, streams, and wetlands.

Most of the municipalities within the District rely on groundwater for their primary source of supply. While southern cities near St. Paul including Arden Hills and Roseville are supplied by the Saint Paul Regional Water Services, most of the remaining communities including the cities of New Brighton, Lino Lakes, Centerville, and all the cities in Washington County rely on groundwater. Most of this is drawn from the Prairie Du Chien-Jordan bedrock aquifer. More northern communities draw some of their water from deeper wells, including the Franconia-Ironton-Galesville aquifer (Metropolitan Council, 2014). The St. Peter Aquifer is only utilized to a minor degree for domestic well supply (Metropolitan Council, 2014).

Significant lake level fluctuations in several northeast metro lakes—in particular, White Bear, Spring, and Turtle have spurred new studies by the U.S. Geological Survey (USGS, 2016), and DNR (DNR, 2018) (**Appendix C**). These studies have suggested a link between some lake water levels, aquifer levels, and aquifer use. The Metropolitan Council developed the *Feasibility Assessment of Approaches to Water Sustainability in the Northeast Metro* to evaluate the sustainability of the area’s groundwater supplies. As part of the larger Feasibility Assessment, the Metropolitan Council investigated the water demands for Centerville, Circle Pines, Columbus, Forest Lake, Hugo, Lexington, Lino Lakes, Mahtomedi, North St. Paul, Shoreview, Vadnais Heights, White Bear Lake, and White Bear Township, of which all but North St. Paul and Vadnais Heights are located within the District. Of the studied communities, municipal well permit appropriations for individual cities in the year 2010 ranged from 20 million gallons per year (MGY) to 1.4 billion gallons per year (BGY). For the study area, demand is anticipated to grow by approximately 56% from 2010 to 2040, due to increases in population and use. The projected municipal water demands in the year 2040 range from 110 MGY to 1.2 BGY. This increased demand exceeds 2010 permit appropriations for a majority of the studied communities, including those within the District, indicating that future increased demands for water may not be met through current groundwater appropriations (Metropolitan Council, 2014).



Groundwater recharge is important to refresh the aquifers that supply baseflow to streams, maintain the water level in lakes and wetlands, and maintain the supply of groundwater. **Figure 2-5** shows areas in the District where rainfall and other precipitation is most likely to infiltrate into the soil and recharge groundwater supplies rather than running off into ditches and streams. Drinking Water Supply Management Areas (DWSMAs) are areas surrounding public water supply wells that may be prone to impact from land and water use. Vulnerable DWSMAs have a higher likelihood for a potential contaminant to impact a public water supply well. Therefore, vulnerable DWSMAs must be considered when managing storm water runoff using infiltration (**Figure 2-6**).

Figure 2-5: Groundwater Infiltration Potential

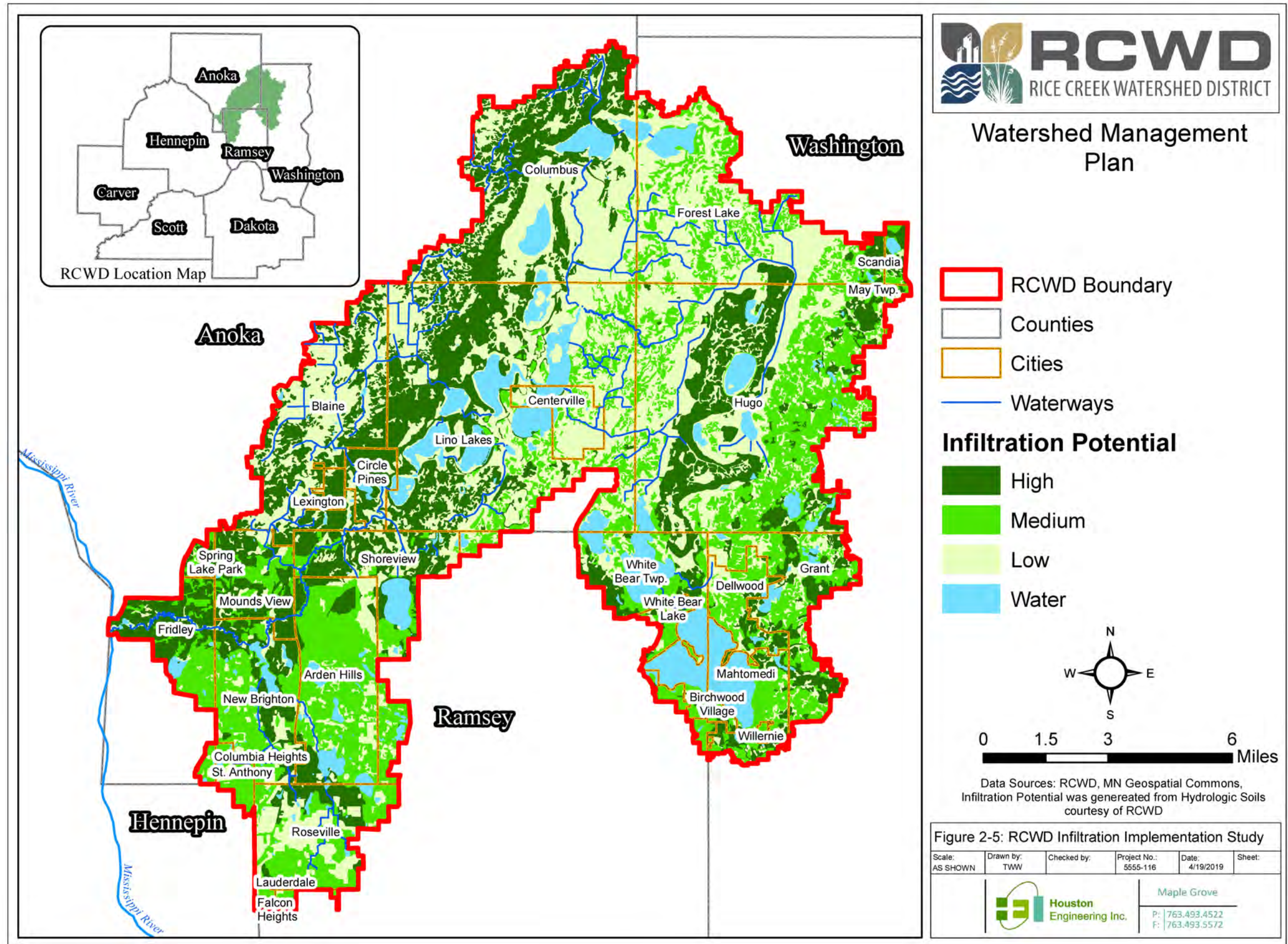
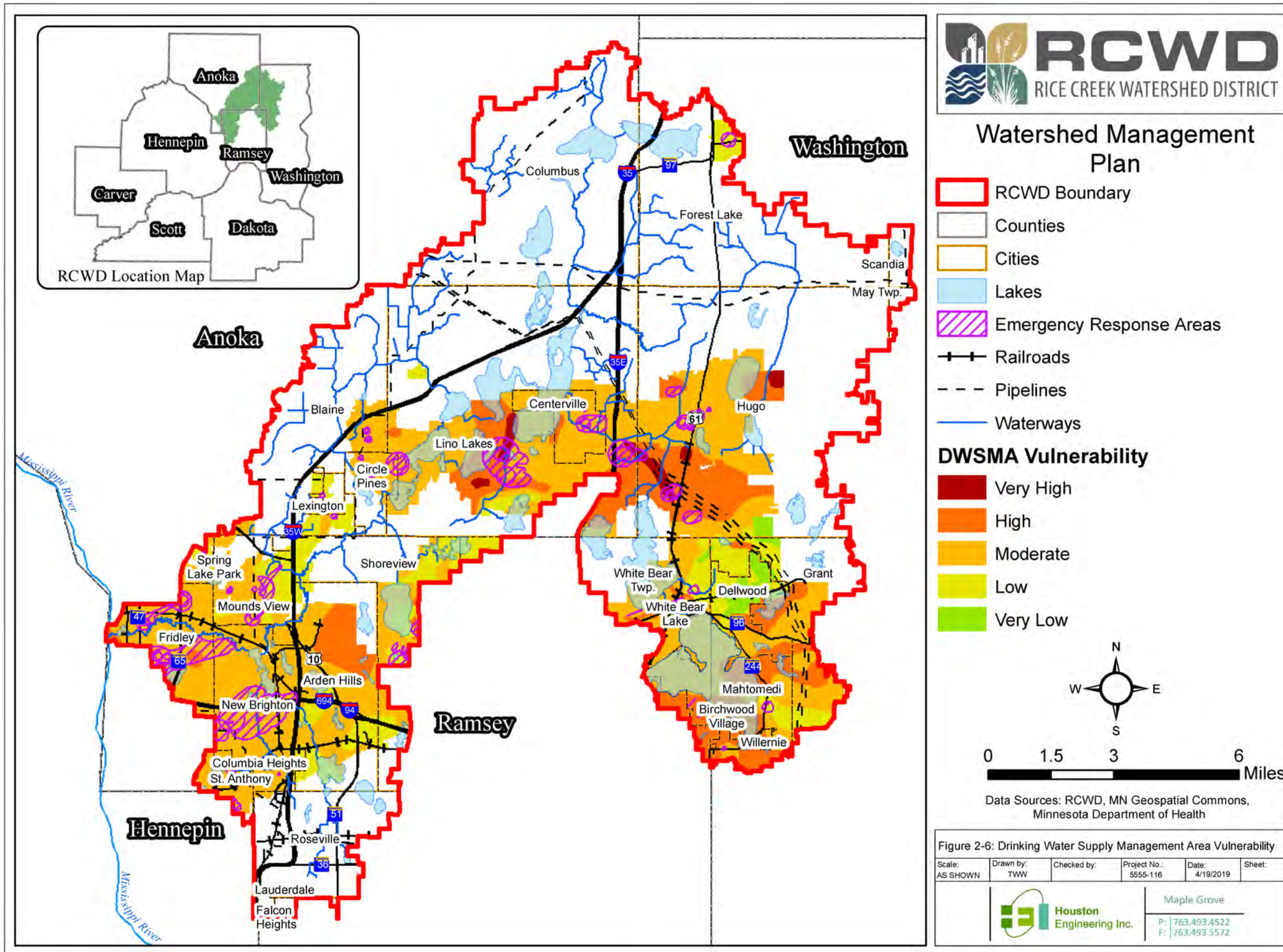


Figure 2-6: DWSMA Vulnerability

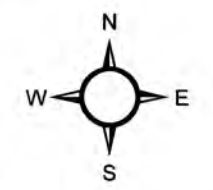


Watershed Management Plan

- RCWD Boundary
- Counties
- Cities
- Lakes
- Emergency Response Areas
- Railroads
- Pipelines
- Waterways

DWSMA Vulnerability

- Very High
- High
- Moderate
- Low
- Very Low



0 1.5 3 6 Miles

Data Sources: RCWD, MN Geospatial Commons, Minnesota Department of Health

Figure 2-6: Drinking Water Supply Management Area Vulnerability

Scale: AS SHOWN	Drawn by: TWW	Checked by:	Project No.: 5555-116	Date: 4/19/2019	Sheet:
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Maple Grove
P: 763.493.4522
F: 763.493.5572

2.4 Climate and Precipitation

The RCWD has a continental climate, with warm summers and cold winters. Climatological summaries presented here are based on records collected during 1981-2010 at weather stations north of the RCWD (Forest Lake, Network:ID, GHCND:USC00212881) and south of the RCWD (St. Paul Airport, Network:ID, GHCND:USW00014927) and are provided by the National Climatic Data Center (www.ncdc.noaa.gov). The average monthly temperature during the period ranged from 13.2°F in January to 73.9°F in July. The mean annual precipitation ranges from 28.51 inches in the south part of the District to 32.05 inches in the north. Most of the precipitation occurs in the summer months of June, July and August with the greatest amount, 4.86 inches occurring in June over that time. February averages the least amount of precipitation with 0.67 inches (liquid-equivalent). The highest daily precipitation recorded at Forest Lake was 6.50 inches on June 1, 1965. The highest daily precipitation recorded at the St. Paul Airport was 5.57 inches on May 29th, 1942. NOAA Atlas 14 indicates precipitation events are occurring with higher degrees of intensity in the District, necessitating adaptation in how surface water is managed.

2.5 Surface Waters

The RCWD is rich with surface water features, primarily due to its flat topography and shallow water table, especially in the northern portions of the District. Extensive wetlands drain into small streams which drain into shallow lakes and larger streams. While streams and lakes generally feed into progressively larger surface water features, many of the lakes are isolated from each other or have stream channels that transition into wetlands or other flat areas. Lakes which have no outlets and intermittent streams suggest a subsurface connection through the ground water system. Therefore, their water levels are affected primarily through climactic fluctuations and an interaction with groundwater levels. The dependency of these resources on groundwater is not well understood.

During seasonal dry conditions or droughts, many streams will slow to a trickle or cease to flow. Land-locked lakes may drop several feet in elevation which may inconvenience shoreline landowners who find that their shoreline is several feet beyond where it used to be. The converse also may occur during wetter than normal conditions causing flooding of shorelines and nearby dwellings, erosion, and connection of water bodies that otherwise were isolated. This results in a complex hydrology that is challenging to characterize. Drainage divides are not definitive in this flat topography, subsurface flow through the local surficial groundwater is difficult to determine, and wetland areas have a storage capacity that is difficult to quantify. In an effort to improve the usability of land in the District, public and private drainage systems were constructed to drain water from wet areas allowing access for farming and other development. This increased the complexity of the drainage patterns. Public drainage system maintenance is an important part of the RCWD activities, but the needs of drainage are complicated by regulations. However, the public drainage systems must be maintained to prevent flooding as these are typically the only available outlets for runoff.

The change in elevation of Rice Creek near the headwaters is very gradual (less than 0.5 feet per mile). This results in slow movement of water through the system, shown by the slow velocities characteristic of most of the rivers when runoff is minimal. There is a greater gradient between Long Lake and Locke Lake (over 5 feet per mile), resulting in higher velocities and a more energetic system.

Annual precipitation averages about 30 inches per year across the District. The RCWD District Wide Model estimates that runoff (defined as the amount of water that leaves a watershed after evaporation, transpiration, and infiltration are subtracted from precipitation) ranges from 2 inches to over 10 inches over the course of a



normal growing season (RCWD, 2012). This equates to a volume of 20,000 to 100,000 acre feet of runoff from the District. .

2.5.1 Lakes and Streams

Rice Creek is the major surface water feature in the RCWD, spanning much of the north and west of the watershed. It begins at Clear Lake in the City of Forest Lake and drains into the Mississippi River in Fridley. The upper two-thirds of Rice Creek is a slow-moving, relatively deep stream passing through numerous lakes, including the Chain of Lakes and wetlands. Further south and west, it encounters more vertical relief and becomes shallower with faster velocities. The greater vertical relief helps aerate the stream, but it also increases transport of particulate matter including suspended sediment. The lakes that are in line with Rice Creek receive sediment that is transported by the Creek. A more thorough discussion of this issue is presented in **Section 3**.

Rice Creek has two major tributaries that drain nearly 60 square miles of the eastern part of the watershed: Clearwater Creek and Hardwood Creek. Both tributaries join Rice Creek at Peltier Lake, and have generally flat topography and slow velocities. Clearwater Creek drains the southeast part of the District including White Bear and Bald Eagle Lakes, and includes the cities of White Bear Lake, Hugo, and Centerville. Hardwood Creek drains the northeast part of the District, including the cities of Hugo and Forest Lake, and is mostly agricultural with other undeveloped land. The relatively rural watershed of Hardwood Creek tends to have poorly-drained soils.

The Minnesota Department of Natural Resources (DNR) Public Waters Inventory (PWI) is a valuable resource for identifying public water basins and watercourses throughout the District. “Public waters” are defined in MN Rules Chapter 6115 and are protected by specific permitting requirements. **Figure 2-7** shows the public water basins and watercourses as identified by the DNR. This geospatial information was updated in 2017, therefore practitioners should consult the most recent public waters inventory before making regulatory decisions.

The DNR PWI identifies approximately 66 public water lakes within the District, ranging from about 8 acres to 2,400 acres in size, and 1 foot to 83 feet in depth. In the following section, **Table 2-3** shows some of the physical and water quality characteristics of District lakes. There are various reasons that lakes are present or missing from **Table 2-3**. Entities may classify certain lakes as wetlands and vice versa, which leads to inconsistent lists. Generally, the most authoritative list is the PWI maintained by the DNR, but that list is also subject to interpretation. While the DNR PWI is a valuable resource for identifying regulatory jurisdiction, the RCWD has invested in geospatially inventorying surface water resources within the District, to ensure local accuracy for resource management purposes. These surface water features and their impairment status (discussed in the next section) are shown in **Figure 2-8**.



Figure 2-7: Minnesota Department of Natural Resources Public Waters

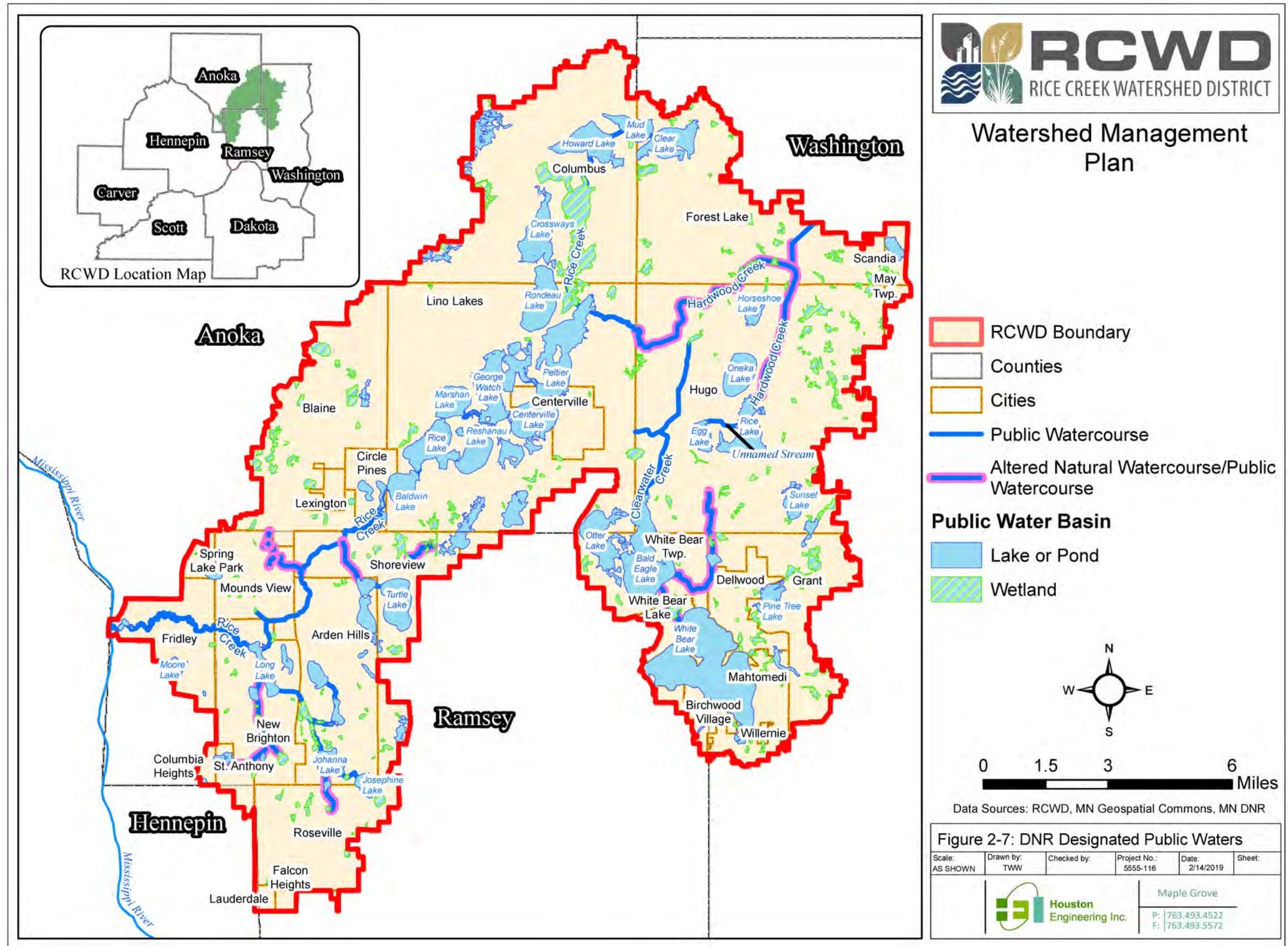
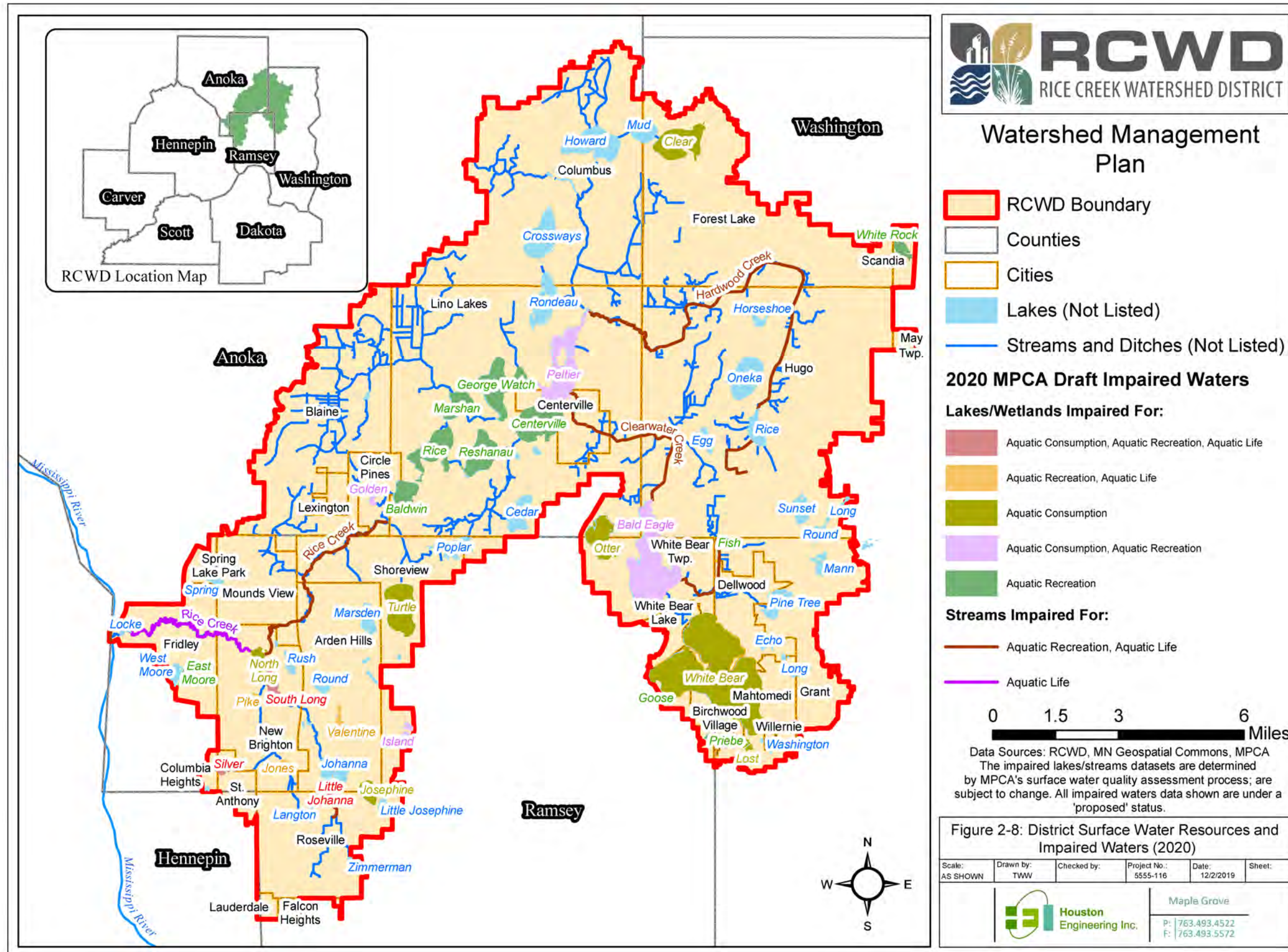


Figure 2-8: Minnesota Pollution Control Agency Proposed Impaired Waters (2020)



2.5.1.1 RCWD Lakes Classification System

Lakes in the RCWD range from deep to shallow, riverine to land-locked, productive to pristine, with many other characteristics. Many of the lakes are associated with extensive wetland areas or are shallow enough to be considered wetlands. Although each of the RCWD lake systems are unique, they also have much in common since they are part of the same hydrologic system.

A RCWD lakes classification system has been developed to reduce complexity and better address management issues. All 67 lakes within **Table 2-3** have been initially classified into one of five District lake types, reflecting their physical nature and accessibility:

1. Shallow – No Access;
2. Shallow – Public Access;
3. Deep – Public Access;
4. Deep – No Access; and
5. Non-classified (Lack of Data or Special Circumstance).

Each lake type is intended to guide how actively and to what degree the RCWD will manage lakes, the purpose of the management, and the goals for lake quality. Factors assessed for classifying a lake into a lake type include the lake’s depth and presence of public access. Water quality thresholds for defining lake management efforts (protection vs. restoration) are assigned using Carlson’s Trophic State Index (TSI).

Lake Depth

The depth of a lake is an important factor in determining its need for protection versus restoration and proximity to a defined water quality threshold. Greater depth imparts greater vertical stability into a lake which has major implications for the lake quality and other characteristics. Alternatively, depth can be incorporated as a term that describes whether the lake stratifies. In the RCWD lake classification system, depth is used as a factor for identifying District lake types as either “shallow” or “deep.”

Using the MPCA criteria of maximum depth greater than 15 feet, 22 RCWD lakes are considered “deep” and 23 that are considered “shallow,” ranging from less than 7 to 15 feet deep. The remaining 22 lakes do not have a clearly described depth, therefore receiving a “non-classified” lake type. Should additional data become available, these lakes would be placed into appropriate lake types based on depth.

Public Access

A primary consideration for RCWD lake management activity is the presence of public access. A public boat launch indicates the nearby residents’ desire for boat access. Protection and restoration of lakes with public access is a critical strategy of the RCWD.

Of the 67 lakes characterized in **Table 2-3**, 31 have public access. Types of access are indicated below.

- Concrete access: 14 Lakes
- Carry-in/Pier access: 9 Lakes
- Dirt/Earthen access: 5 Lakes
- Shore access: 3 Lakes.

The remaining 36 District lakes are presumed to not have public access.



Trophic State Index

Carlson’s Trophic State Index (TSI) is a lake classification system that assigns a trophic class to a body of water based on a combination of three factors: concentration of total phosphorus, concentration of Chlorophyll a (Chl-a), and secchi depth (Carlson, 1977). Trophic classes include oligotrophic (excellent water quality), mesotrophic (fair water quality), and eutrophic/hypereutrophic (poor water quality) based on TSI values shown in the table below.

Table 2-1. Carlson’s Trophic Classification by Trophic State Index Value (Carlson and Simpson, 1996)

TSI	Chlorophyll a (ug/L)	Total Phosphorus (ug/L)	Secchi Depth(m)	Trophic Class
< 30 - 40	0 - 2.6	0 - 12	> 8 - 4	Oligotrophic
40 - 50	2.6 - 20	12 - 24	4 - 2	Mesotrophic
50 - 70	20 - 56	24 - 96	2 - 0.5	Eutrophic
70 - 100+	56 - 155+	96 - 384+	0.5 - < 0.25	Hypereutrophic

In the North Central Hardwood Forest eco-region (Heiskary, 1987), the state total phosphorus water quality standard threshold is 40 ug/L in deep lakes, and 60ug/L in shallow lakes. If a lake exceeds the phosphorus threshold, it must also exceed the secondary Chlorophyll a or secchi depth standard to be listed as “impaired.” For deep lakes in the North Central Hardwood Forest eco-region, the water quality standard is 14 ug/L for Chlorophyll a, and not less than 1.4 meters of secchi depth. For shallow lakes in the same region, the water quality standard is 20 ug/L for Chlorophyll a, and not less than 0.9 meters of secchi depth.

The TSI is a useful way to classify a lake’s water quality and potential management activity, as it considers all three parameters used by the MPCA to determine nutrient impairment status, though it does not rely on impairment thresholds alone. Trophic State Index is used to identify District lakes that fall into either protection or restoration management types, as described below.

Protection and Restoration

Lake management activities in the RCWD include protection, restoration, or minimal management activities (Table 2-2). Protection activities aim to maintain lakes with good water quality (≤ 55 TSI for deep lakes, and ≤ 60 TSI for shallow lakes), with efforts preferentially focused on ensuring lakes nearing a water quality threshold do not exceed it. Restoration activities aim to restore lakes to good water quality, with efforts preferentially focused on lakes at or near a water quality threshold. Preferential focus of protection and restoration activities near this water quality threshold ensures that District resources and efforts are going to the lakes that need it the most and have the highest chance of protection or restoration success. Minimal management activities may be pursued by the District but are a lower priority than protection and restoration activities near the water quality threshold. District lake classification is shown in greater detail in Table 2-3.



Table 2-2. District Lake Classification Thresholds









Shallow- No Access	Protection 							Restoration 					Minimal		
Shallow- Public Access	Protection 							Restoration 							
TSI Score	<30-54	55	56	57	58	59	60	61	62	63	64	65	66	67+	
Deep- Public Access	Protection 	Restoration 													
Deep- No Access	Protection 	Restoration 									Minimal				



Table 2-3. Lake Statistics – Physical Characteristics and Management Classification of Public Lakes in the RCWD

Lake Name*	Municipality	County	Lake Identifier	Recreation Access	Lake Area (Acres)	Watershed Area (Acres)	Mean Depth (Feet)	Max Depth (Feet)	10-Year TP Average (Parts per Billion) (2008-2017)	10 Year Chl-A Average (Parts per Billion) (2008-2017)	10-Year Secchi Depth Average (Meters) (2008-2017)	TP Lake Trend**	Chl-A Lake Trend**	MPCA DNR TSI	TP Reduction Goal (lbs/year)	Depth Classification	RCWD Management Classification***
Bald Eagle	White Bear Lake	Anoka, Ramsey, Washington	62-0002-00	Concrete	1,046	19,688	12	39	49	22	1.8	+	+	58	75	Deep	Restoration
Baldwin	Circle Pines	Anoka	02-0013-00	Dirt	220	81,485	4	4.5	91	ID****	ID	N/A	N/A	69	(See Peltier)	Shallow	Minimal
Cedar	Lino Lakes	Anoka	02-0012-00	N/A	N/A*****	N/A	N/A	N/A	ID	ID	ID	N/A	N/A	ID	N/A	ID	Not Classified
Centerville	Centerville	Anoka	02-0006-00	Concrete	495	799	12	19	51	30	1.5	-	-	60	40	Deep	Restoration
Clear	Forest Lake	Washington	82-0163-00	Concrete	400	3,220	12	28	27	7	1.9	=	=	51	25	Deep	Protection
Columbus	Columbus	Anoka	02-0018-00	N/A	N/A	N/A	N/A	N/A	ID	ID	ID	N/A	N/A	ID	N/A	ID	Not Classified
Crossways (Tamarack)	Columbus	Anoka	02-0019-00	N/A	355	2,035	4	9	ID	ID	ID	N/A	N/A	ID	N/A	Shallow	Not Classified
Echo	Dellwood	Washington	82-0129-00	N/A	N/A	N/A	N/A	N/A	ID	ID	ID	N/A	N/A	ID	N/A	ID	Not Classified
Egg	Hugo	Washington	82-0147-00	N/A	106	532	3.5	4.5	ID	ID	ID	N/A	N/A	ID	N/A	Shallow	Not Classified
Fish	Grant	Washington	82-0137-00	N/A	21	N/A	N/A	34	62	ID	2.4	N/A	N/A	56	N/A	Deep	Restoration
George Watch	Lino Lakes	Anoka	02-0005-00	Carry-in	528	69,639	4	5	188	48	0.6	=	=	74	(See Peltier)	Shallow	Minimal
Golden	Circle Pines	Anoka	02-0045-00	Concrete	57	6,624	8	24	69	33	1.3	+	+	63	40	Deep	Restoration
Hart	Columbia Heights	Anoka	02-0081-00	N/A	8	N/A	N/A	N/A	ID	ID	ID	N/A	N/A	ID	N/A	ID	Not Classified
Horseshoe	Hugo	Washington	82-0138-00	N/A	N/A	N/A	4.5	9	ID	ID	ID			ID	N/A	Shallow	Not Classified
Howard	Columbus	Anoka	02-0016-00	Earthen	541	7,616	2	5.5	39	9	1.3	=	=		N/A	Shallow	Protection
Island (North)	Shoreview	Ramsey	62-0075-02	Concrete (South)	18	279 (Both Basins)	N/A	11	52	16	1.7	+	+	57	10 (Both Basins)	Shallow	Protection
Island (South)	Shoreview	Ramsey	62-0075-01	Concrete (South)	40	279 (Both Basins)	N/A	11	48	15	1.9	+	+	56	10 (Both Basins)	Shallow	Protection

(cont.) Table 2-3. Lake Statistics – Physical Characteristics and Management Classification of Public Lakes in the RCWD

Lake Name*	Municipality	County	Lake Identifier	Recreation Access	Lake Area (Acres)	Watershed Area (Acres)	Mean Depth (Feet)	Max Depth (Feet)	10-Year TP Average (Parts per Billion) (2008-2017)	10 Year Chl-A Average (Parts per Billion) (2008-2017)	10-Year Secchi Depth Average (Meters) (2008-2017)	TP Lake Trend**	Chl-A Lake Trend**	MPCA DNR TSI	TP Reduction Goal (lbs/year)	Depth Classification	RCWD Management Classification***
Johanna	Arden Hills	Ramsey	62-0078-00	Concrete	200	3,893	17	41	27	11	2.3	=	=	52	10	Deep	Protection
Jones	New Brighton	Ramsey	62-0076-00	N/A	13	3,074	0.8	1.1	ID	ID	ID	N/A	N/A	ID	N/A	Shallow	Not Classified
Josephine	Roseville	Ramsey	62-0057-00	Concrete	116	839	20	44	29	11	2.2	=	=	52	10	Deep	Protection
Karth	Arden Hills	Ramsey	62-0072-00	Shore	16	N/A	N/A	14	40	21	1.8	+	=	55	5	Shallow	Protection
Langton (North)	Roseville	Ramsey	62-0049-01	Pier (South)	9	257 (Both Basins)	4	5	55	14	1.1	+	=	61	N/A	Shallow	Restoration
Langton (South)	Roseville	Ramsey	62-0049-02	Pier	8	257 (Both Basins)	4	5	72	ID	1.1	+	=	63	N/A	Shallow	Restoration
Little Johanna	Roseville	Ramsey	62-0058-00	N/A	18	N/A	N/A	38	57	18	1.4	=	=	59	40	Deep	Restoration
Little Josephine	Roseville	Ramsey	62-0201-00	N/A	N/A	N/A	N/A	N/A	ID	ID	ID	N/A	N/A	ID	N/A	ID	Not Classified
Loch Ness	Blaine	Anoka	02-0585-00	N/A	N/A	N/A	N/A	N/A	43	16	1.9	N/A	N/A	55	N/A	ID	Not Classified
Locke	Fridley	Anoka	02-0077-00	Shore	22	N/A	N/A	N/A	120	41	1	=	=	69	N/A	ID	Not Classified
Long (North)	New Brighton	Ramsey	62-0067-01	Concrete	69	112,560 (Both Basins)	N/A	26	114	42	1	=	+	68	N/A	Deep	Restoration
Long (South)	New Brighton	Ramsey	62-0067-02	Concrete	118	112,560 (Both Basins)	N/A	26	43	22	2	+	+	57	80	Deep	Restoration
Long	Mahtomedi	Washington	82-0130-00	N/A	50	1,366	N/A	25	25	10	2.5	=	=	49	N/A	Deep	Protection
Long	Hugo	Washington	82-0155-00	N/A	48	614	N/A	N/A	ID	ID	ID	N/A	N/A	ID	N/A	ID	Not Classified
Lost	Mahtomedi	Washington	82-0134-00	Pier	22	N/A	8.5	26	42	ID	2	N/A	N/A	ID	N/A	Deep	Not Classified
Mann	Grant	Washington	82-0121-00	N/A	74	2,515	N/A	N/A	ID	ID	ID	N/A	N/A	ID	N/A	ID	Not Classified

(cont.) Table 2-3. Lake Statistics – Physical Characteristics and Management Classification of Public Lakes in the RCWD

Lake Name*	Municipality	County	Lake Identifier	Recreation Access	Lake Area (Acres)	Watershed Area (Acres)	Mean Depth (Feet)	Max Depth (Feet)	10-Year TP Average (Parts per Billion) (2008-2017)	10 Year Chl-A Average (Parts per Billion) (2008-2017)	10-Year Secchi Depth Average (Meters) (2008-2017)	TP Lake Trend**	Chl-A Lake Trend**	MPCA DNR TSI	TP Reduction Goal (lbs/year)	Depth Classification	RCWD Management Classification***
Marsden	Arden Hills	Ramsey	62-0059-00	N/A	121	N/A	0.5	1.7	ID	ID	ID	N/A	N/A	ID	N/A	Shallow	Not Classified
Marshan	Lino Lakes	Anoka	02-0007-00	Carry-in	312	N/A	3.5	5	160	23	1	N/A	N/A	66	(See Peltier)	Shallow	Restoration
Moore (East)	Fridley	Anoka	02-0075-01	Carry-in, Pier	26	N/A	N/A	22	ID	ID	1.9	N/A	N/A	52	15 (Both Basins)	Deep	Protection
Moore (West)	Fridley	Anoka	02-0075-02	Carry-in, Pier	65	N/A	N/A	5	41	7	1.4	N/A	N/A	54	15 (Both Basins)	Shallow	Protection
Mud	Forest Lake, Columbus	Anoka, Washington	82-0168-00	N/A	37	3,721	3.4	4	24	3	ID	N/A	N/A	ID	N/A	Shallow	Not Classified
Oneka	Hugo	Washington	82-0140-00	Earthen	381	810	4	7	27	3	ID	+	+	52	N/A	Shallow	Protection
Otter	Lino Lakes, White Bear TWP	Anoka, Ramsey	02-0003-00	Concrete	332	1,179	6	21	18	3	3.4	N/A	N/A	43	N/A	Deep	Protection
Peltier	Centerville	Anoka	02-0004-00	Concrete	483	65,989	7	16	182	56	1.4	+	=	69	100	Deep	Minimal
Pike	New Brighton	Ramsey	62-0069-00	N/A	35	5,949	N/A	16	139	20	1.2	N/A	N/A	65	(See Long Lake (South Basin))	Deep	Minimal
Pine Tree	Dellwood, Grant	Washington	82-0122-00	N/A	174	4,128	5	31	23	5	2.9	+	+	48	N/A	Deep	Protection
Poplar	Shoreview	Ramsey	62-0077-00	N/A	N/A	N/A	N/A	N/A	ID	ID	ID	N/A	N/A	ID	N/A	ID	Not Classified
Poplar	New Brighton	Ramsey	62-0044-00	N/A	N/A	N/A	N/A	N/A	ID	ID	ID	N/A	N/A	ID	N/A	ID	Not Classified
Priebe	White Bear Lake	Ramsey	62-0036-00	N/A	N/A	N/A	N/A	N/A	174	90	0.4	N/A	N/A	78	N/A	ID	Minimal
Reshanau	Lino Lakes	Anoka	02-0009-00	Pier	342	4,264	7	10	112	46	0.7	N/A	N/A	68	10	Shallow	Restoration
Rice	Lino Lakes	Anoka	02-0008-00	Carry-in	358	79,673	4	4.8	138	44	0.8	=	=	69	(See Peltier)	Shallow	Restoration
Rice	Hugo	Washington	82-0146-00	N/A	126	3,469	2	2.5	122	36	1	N/A	N/A	69	N/A	Shallow	Minimal
Rondeau	Lino Lakes	Anoka	02-0015-00	N/A	275	3,448	3	12	57	21	1	N/A	N/A	63	N/A	Shallow	Restoration
Round	Arden Hills	Ramsey	62-0070-00	N/A	122	848	2.6	7	ID	ID	ID	N/A	N/A	ID	N/A	Shallow	Not Classified
Round	Hugo	Washington	82-0136-00	N/A	N/A	N/A	N/A	N/A	ID	ID	ID	N/A	N/A	ID	N/A	ID	Not Classified
Rush	New Brighton	Ramsey	62-0068-00	N/A	N/A	N/A	N/A	N/A	ID	ID	ID	N/A	N/A	ID	N/A	ID	Not Classified

(cont.) Table 2-3. Lake Statistics – Physical Characteristics and Management Classification of Public Lakes in the RCWD

Lake Name*	Municipality	County	Lake Identifier	Recreation Access	Lake Area (Acres)	Watershed Area (Acres)	Mean Depth (Feet)	Max Depth (Feet)	10-Year TP Average (Parts per Billion) (2008-2017)	10 Year Chl-A Average (Parts per Billion) (2008-2017)	10-Year Secchi Depth Average (Meters) (2008-2017)	TP Lake Trend**	Chl-A Lake Trend**	MPCA DNR TSI	TP Reduction Goal (lbs/year)	Depth Classification	RCWD Management Classification***
Sherman	Lino Lakes	Anoka	02-0011-00	N/A	N/A	N/A	N/A	N/A	ID	ID	ID	N/A	N/A	ID	N/A	ID	Not Classified
Silver	Saint Anthony	Anoka, Ramsey	62-0083-00	Earthen	75	659	7.5	47	50	28	1.5	=	=	60	10	Deep	Restoration
Spring	Mounds View, Spring Lake Park	Anoka, Ramsey	02-0071-00	Shore	44	386	N/A	18	31	6	3	+	=	49	N/A	Deep	Protection
Stony	New Brighton	Ramsey	62-0182-00	N/A	N/A	N/A	N/A	N/A	ID	ID	ID	N/A	N/A	ID	N/A	ID	Not Classified
Sunfish	Arden Hills	Ramsey	62-0065-00	N/A	N/A	N/A	N/A	N/A	37	8	ID	N/A	N/A	ID	N/A	ID	Not Classified
Sunset	Hugo	Washington	82-0153-00	Earthen	124	666	N/A	17	19	4	3.1	=	=	45	N/A	Deep	Protection
Turtle	Shoreview	Ramsey	62-0061-00	Concrete	444	884	10	29	19	5	2.7	=	=	46	N/A	Deep	Protection
Valentine	Arden Hills	Ramsey	62-0071-00	N/A	56	2,237	4.5	13.6	72	32	1.6	N/A	N/A	61	25	Shallow	Restoration
Walsh	Roseville	Ramsey	62-0214-00	N/A	N/A	N/A	N/A	N/A	ID	ID	ID	N/A	N/A	ID	N/A	ID	Not Classified
Wards	Lino Lakes	Anoka	02-0010-00	N/A	211	3,722	N/A	N/A	ID	ID	ID	N/A	N/A	ID	N/A	ID	Not Classified
Washington	Willernie	Washington	82-0352-00	N/A	N/A	N/A	N/A	N/A	ID	ID	ID	N/A	N/A	ID	N/A	ID	Not Classified
White Bear	White Bear Lake	Ramsey, Washington	82-0167-00	Concrete	2,410	7,744	22.6	83	18	5	3.5	+	=	45	30	Deep	Protection
White Rock	Scandia	Washington	82-0072-00	N/A	75	N/A	N/A	N/A	69	28	1.5	N/A	N/A	65	N/A	ID	Restoration
Zimmerman	Roseville	Ramsey	62-0053-00	N/A	N/A	N/A	N/A	N/A	ID	ID	ID	N/A	N/A	ID	N/A	ID	Not Classified

Data were retrieved from MPCA Environmental Quality Information System (EQIIS) and the Rice Creek Watershed District. 10-Year Summer Averages span 2008-2017. "ID" denotes insufficient data for this time period. "N/A" denotes No Data Available. The station with the longest record of scale was used when there were multiple stations.

* Lakes in table extracted from DNR 2018 PWI, with several additions per local knowledge

**Lake trend data procured by the RCWD. "+" indicates improving trend (decrease in concentration); "-" indicates worsening trend (increase in concentration); "=" indicates no trend observed; "+*" indicates trend observed due to large scale project. Trend analysis was conducted with RCWD data through 2018.

***There are multiple lakes within Table 2-3 that are designated as "Not Classified" due to incomplete information on lake depth or TSI value. During plan implementation, the District will use new data released annually as outcomes of the Monitoring Program to update the District Management Classifications of its lakes.

****Insufficient Data

*****Not Available

2.5.1.2 Impaired Waters

Section 303(d) of the federal Clean Water Act requires states to identify waters that do not meet applicable water quality standards or do not fully support their designated uses. Waters failing to attain their designated use are defined as impaired. Each state determines the cause, or the pollutant or stressor for impairment. Impaired waters are placed on a list and subject to completion of a Total Maximum Daily Load (TMDL) analysis. A TMDL analysis consists of many steps, but the process is intended to identify ways to restore impaired waters to their full beneficial uses. The implementation of load reduction efforts identified in a TMDL analysis may have future bearing on other activities of the RCWD.

There are multiple stream/river systems and lakes within the boundaries of the RCWD which are on the 2020 303(d) impaired waters list. These water resources are listed in **Table 2-4** and displayed in **Figure 2-8**. For impaired waters within the RCWD boundary, the District may elect to lead a TMDL analysis. For waters with an approved TMDL plan within the RCWD, the District will frequently have a role in the implementation of projects that reduce pollutant loads.

Table 2-4. Rice Creek Watershed District 2020 303(d) Impairments

Impaired Water	Lake or Stream Identifier	Affected Use	Year* Listed	Pollutant or stressor	TMDL Approval
Baldwin Lake	02-0013-00	Aquatic Recreation	2010	Excess Nutrients	2013
Bald Eagle Lake	62-0002-00	Aquatic Consumption	1998	Hg in Fish Tissue	2008
		Aquatic Recreation	2002	Excess Nutrients	2012
Centerville Lake	02-0006-00	Aquatic Recreation	2002	Excess Nutrients	2013
Clear Lake	82-0163-00	Aquatic Consumption	2002	Hg in Fish Tissue	2008
Clearwater Creek	07010206-519	Aquatic Life	2002	Fish Bioassessments	None
		Aquatic Life	2006	Macroinvertebrate Bioassessments	None
		Aquatic Life	2020	Dissolved Oxygen	None
East Moore Lake	02-0075-01	Aquatic Recreation	2002	Excess Nutrients	2015
Fish Lake	82-0137-00	Aquatic Recreation	2006	Excess Nutrients	None
George Watch Lake	02-0005-00	Aquatic Recreation	2002	Excess Nutrients	2013
Golden Lake	02-0045-00	Aquatic Recreation	2002	Excess Nutrients	2009
		Aquatic Consumption	2010	Hg in Fish Tissue	2010
Hardwood Creek	07010206-595	Aquatic Life	2004	Dissolved Oxygen	None
Hardwood Creek	07010206-596	Aquatic Life	2002	Fish Bioassessments	2009
			2004	Dissolved Oxygen	2009
Island (Basin S. of I-694)	62-0075-01	Aquatic Recreation	2002	Excess Nutrients	2015
		Aquatic Consumption	2012	Hg in Fish Tissue	None
Island (Basin N. of I-694)	62-0075-02	Aquatic Recreation	2002	Excess Nutrients	2015
		Aquatic Consumption	2012	Hg in Fish Tissue	None
Johanna Lake	62-0078-00	Aquatic Consumption	2010	PFOs in Fish Tissue	None

(cont.) Table 2-4. Rice Creek Watershed District 2020 303(d) Impairments

Impaired Water	Lake or Stream Identifier	Affected Use	Year* Listed	Pollutant or stressor	TMDL Approval
Josephine Lake	62-0057-00	Aquatic Consumption	1998	Hg in Fish Tissue	2008
Little Johanna Lake	62-0058-00	Aquatic Recreation	2004	Excess Nutrients	2015
		Aquatic Consumption	2012	PFOs in Fish Tissue	None
		Aquatic Life	2014	Chloride	2016
Lost (North West Bay)	82-0134-01	Aquatic Consumption	2014	Hg in Fish Tissue	2014
Lost (South East Bay)	82-0134-02	Aquatic Consumption	2014	Hg in Fish Tissue	2014
Marshan Lake	02-0007-00	Aquatic Recreation	2002	Excess Nutrients	2013
Mississippi River – Crow River to Upper St. Anthony Falls	07010206-805	Aquatic Consumption	1998	Hg in Fish Tissue	2007
		Aquatic Consumption	2002	PCB in Fish Tissue	None
		Aquatic Recreation	2006	Fecal Coliform	None
		Aquatic Life	2016	Excess Nutrients	None
North Long Lake	62-0067-01	Aquatic Consumption	1998	Hg in Fish Tissue	2008
Otter Lake	02-003-00	Aquatic Consumption	2010	Hg in Fish Tissue	2010
Peltier Lake	02-0004-00	Aquatic Recreation	2002	Excess Nutrients	2013
		Aquatic Consumption	2002	Hg in Fish Tissue	2008
Pike Lake	62-0069-00	Aquatic Recreation	2002	Excess Nutrients	2015
		Aquatic Life	2014	Chloride	2016
Priebe Lake	62-0036-00	Aquatic Recreation	2014	Excess Nutrients	None
Ramsey/Washington Judicial Ditch 1	07010206-565	Aquatic Life	2004	Dissolved Oxygen	None
Reshanau Lake	02-0009-00	Aquatic Recreation	2006	Excess Nutrients	2013
Rice Creek	07010206-583	Aquatic Life	2004	Fish Bioassessments	None
			2006	Macroinvertebrate Bioassessments	None
Rice Creek	07010206-584	Aquatic Life	2006	Macroinvertebrate Bioassessments	None
		Aquatic Life	2014	Fish Bioassessments	None
		Aquatic Recreation	2014	<i>E. coli</i>	2014
Rice Lake	02-0008-00	Aquatic Recreation	2010	Excess Nutrients	2013
Silver (West) Lake	62-0083-00	Aquatic Recreation	2002	Excess Nutrients	2010
		Aquatic Consumption	2012	Hg in Fish Tissue	2013
		Aquatic Life	2014	Chloride	2016
South Long Lake	62-0067-02	Aquatic Consumption	1998	Hg in Fish Tissue	2008
		Aquatic Recreation	2002	Excess Nutrients	2015
		Aquatic Life	2014	Chloride	2016
Turtle Lake	62-0061-00	Aquatic Consumption	2002	Hg in Fish Tissue	None
Unnamed Creek	0701206-909	Aquatic Life	2014	Chloride	2016
Valentine Lake	62-0071-00	Aquatic Recreation	2002	Excess Nutrients	2015
		Aquatic Life	2014	Chloride	2016



Impaired Water	Lake or Stream Identifier	Affected Use	Year* Listed	Pollutant or stressor	TMDL Approval
White Bear Lake	82-0167-00	Aquatic Consumption	1998	Hg in Fish Tissue	2007
White Rock	82-0072-00	Aquatic Recreation	2010	Excess Nutrients	None

* 2020 Draft MPCA 303(d) list

2.5.1.3 Water Based Recreation

There are numerous aquatic recreational opportunities within the District. The Rice Creek Water Trail is a major recreational canoe route spanning a reach of Rice Creek from the outlet of Peltier Lake to the outlet of Long Lake. The DNR hosts several Aquatic Management Areas (AMAs) within the District. These areas provide angler and management access, protect critical shoreland habitat and provide areas for education and research. AMAs within the District include Rice Creek AMA in Fridley, Johanna Lake AMA in Arden Hills, and the Marshan Lake AMA in Lino Lakes. There are 25 public water access locations throughout the District that provide recreational opportunities on area lakes and streams.

2.5.2 Drainage Systems

There are numerous public drainage systems within the RCWD (Figure 2-9). Within the remainder of this plan, “public drainage systems” refers to those systems subject to MS 103E that are managed by the Rice Creek Watershed District. These judicial and county ditches were constructed primarily to drain land for agricultural purposes. An analysis of data comprising Figure 2-9 shows there are 22 public systems under the purview of the RCWD, totaling approximately 116 miles of drainage system. There are also many other drainage systems (not established under MS 103E) and stormwater conveyance systems within the District boundary. Management of these other drainage systems is important as an outlet of local surface water to the public drainage systems and trunk conveyance systems.

The concept of a trunk conveyance system was first identified by the RCWD through the development of the 1997 Watershed Management Plan, for identifying conveyance systems of regional significance. As described in the 1997 and 2010 plan, the trunk conveyance system was defined as Rice Creek, Hardwood Creek (Anoka-Washington Judicial Ditch 2, or JD2), Clearwater Creek (Anoka-Washington Judicial Ditch 3, or JD 3), and Ramsey County Ditch 2 (RCD 2). Characteristics that describe or define trunk conveyance systems include:

- The system serves multiple communities;
- The system has a 100-year peak flow of greater than 350 cubic feet per second;
- The system conveys flows for areas of at least 5,000 acres; and
- The system serves as an outlet for at least one public drainage system.

Based on these characteristics, this Plan defines the trunk conveyance system as Rice Creek, Hardwood Creek (AWJD 2), Clearwater Creek (AWJD3), RCD 2, and the Lake Johanna outlet channel (Figure 2-9).

2.5.3 Wetlands

Figure 2-10 shows wetlands in the District identified by the DNR’s Public Waters Inventory (PWI) and the National Wetland Inventory (NWI). The NWI is the most comprehensive wetlands map available and indicates the probable location of wetlands throughout the United States. It should be noted the NWI is not based on field-acquired data and therefore should be limited to use as an initial screening tool.



Wetland vegetation types range from aquatic plants to trees that emerge along wetland boundaries. Wetlands are interspersed throughout the RCWD but are most predominantly found in the northern portion of the District. The RCWD has developed five comprehensive wetland protection and management plans for this northern area. The nature and value of these documents is discussed in further detail in **Section 3**.

Public drainage systems were constructed in the late 19th century and early 20th century to attempt to convert predominantly wet areas into land with a greater agricultural value. Due to the flat topography and shallow water table, the construction of these systems rarely fully drained the land adjacent to it, but instead decreased the frequency and depth of inundation (which enabled less intensive agriculture uses such as haying and pasture) and facilitated an outlet for privately constructed drainage systems.

Land development, and particularly that which occurred prior to the passage of the Wetland Conservation Act (WCA), has had a more drastic effect on the presence and condition of wetlands within the RCWD, as evidenced by much lighter density of wetlands in the southern part of the RCWD. Prior to state and federal wetland laws, wetlands in urbanizing areas were frequently filled in and paved over, leaving few locations for stormwater to attenuate on the landscape and sediment and nutrients to be filtered out. As a result, the early development areas of the RCWD are much more prone to flash flooding and generally exhibit poorer water quality.

As laws have changed to reflect changing attitudes in the function and value of wetlands, the RCWD's roles in managing drainage systems and preserving water resources has likewise evolved. The District serves as the Local Government Unit (LGU) responsible for the administration of the Wetland Conservation Act (WCA) within the watershed, except for the cities of Hugo and Circle Pines and state lands as defined by Rule 8420.0200 Subpart C. As LGU, the District administers state and District rules that discourage encroachment upon existing wetlands, and mitigates loss of area, function, and value of these wetlands. Mitigation through the creation of new wetlands or restoration of previously drained wetlands can be challenging, particularly at smaller scales. Current wetland rules and policies encourage the purchase of banked wetland credits (created most frequently through the restoration of larger wetland complexes) to mitigate wetland losses.

2.5.4 Local Water Resources Requiring Riparian Protection

Minnesota Statute §103F.48, Subd. 4 requires that each Soil and Water Conservation District develop, adopt, and submit to each local water management authority within its boundary a summary of watercourses for inclusion in the local water management authority's plan. In 2017, the Ramsey County Soil and Water Conservation Division and the Washington Conservation District, by resolution, determined that the MnDNR buffer protection map identified all of the significant water bodies within their respective Counties, and that no other watercourses need to be identified within local water management authority plans for riparian protection. The Anoka Conservation District did not identify specific watercourses for inclusion in the plan, but passed a 2017 resolution identifying waters matching the following criteria as potentially benefitting from perennially vegetated riparian buffers or other best management practices:

1. Hydrologically connected, open waterways and wetlands as part of a flowing drainage network, and
2. Wetlands of high or outstanding ecological value and/or supporting rare species.

The RCWD addresses riparian protection along waterways and wetlands throughout the RCWD by many different programs, including but not limited to its administration of the WCA; administration of District rules; water quality cost share programs; public drainage system maintenance; and public engagement efforts. These programs are described in greater detail in **Section 4**.



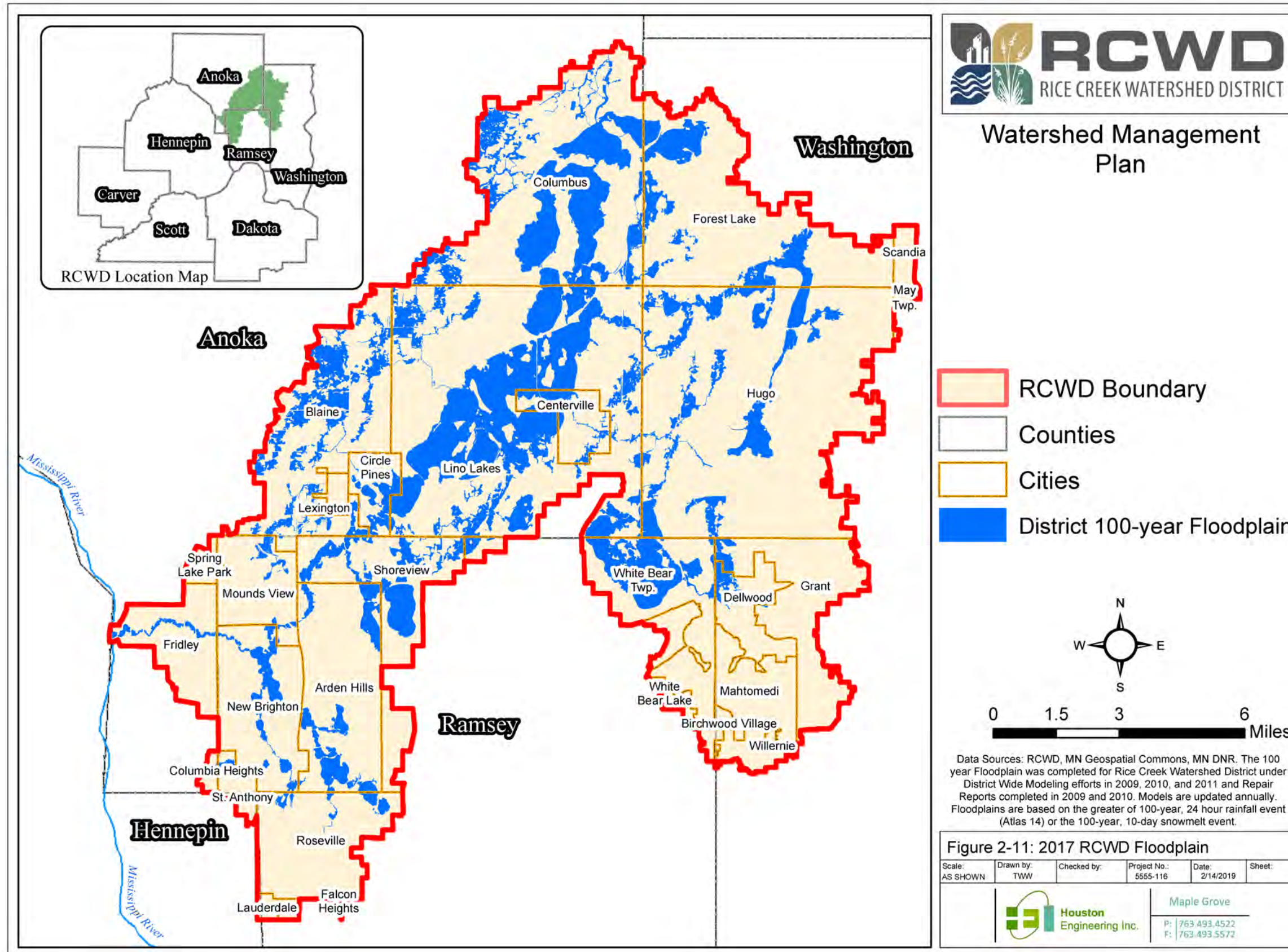
2.5.5 Surface Water Quantity

The RCWD actively manages the peak rate and volume of runoff from the landscape because of the influence on floodplains, the need to reduce potential flood damages and to improve the water quality of lakes. The Chain of Lakes located within the central portion of the District provide considerable storage, minimizing the impact of some of the peak flood events. However, some homes along many portions of Rice Creek, Long Lake, and the Chain of Lakes are subject to flooding and flood damages. In 2011, the District Wide Model was created, and has been annually updated since then with new survey and hydrologic data as it is collected. **Figure 2-11** illustrates areas within the RCWD that are within the 100-year floodplain.

Additional runoff caused by urbanization has the potential to cause adverse downstream consequences along a floodplain within a natural waterway, and within a lake receiving the additional runoff volume if left unmitigated. Floodplain boundaries change as the volume of water increases, increasing the risk of flood damages. Natural waterways more frequently experience small base flows with greater peak runoff rates during storm events, leading to channel instability and erosion. Lakes experience an increase in the load of nutrients because of the additional runoff volume, which leads to cultural eutrophication. Addressing issues related to the rate and volume of runoff are at the center of recent District activities.



Figure 2-11: 2017 RCWD Floodplain



2.6 Fish and Wildlife

Table 2-5 below lists Endangered, Threatened, Special Concern, and Watchlist plants and animals (defined by Minnesota Rule 6134) that have been reported within the RCWD boundary (per DNR National Heritage Information Systems [NHIS]). The DNR tracks occurrences of state-listed rare species through the NHIS. Plant and animal species designated as Endangered or Threatened at the state level or designated as a species of Special Concern are defined as:

- **“Endangered”** plants and animals are threatened with extinction throughout all or a significant portion of their ranges in Minnesota.
- **“Threatened”** plants and animals are likely to become endangered within the foreseeable future throughout all or a significant portion of their ranges in Minnesota.
- **“Special Concern”** plants and animals are extremely uncommon in Minnesota, or have unique or highly specific habitat requirements, and deserve careful monitoring. Species on the periphery of their ranges that are not listed as threatened may be included in this category along with those species that were once threatened or endangered but now have increasing or protected, stable populations.

The MS 84.0895 (Protection of Threatened and Endangered Species) and associated MN Rule 6134 impose a variety of restrictions, a permit program, and several exemptions pertaining to species designated as Endangered or Threatened. There are no restrictions to species listed as Special Concern or Watchlist, however these populations are closely monitored, and their status may be upgraded to Endangered or Threatened by the DNR.

Table 2-5. Minnesota Rule 6134 and 2018 NHIS Endangered, Threatened, Special Concern, and Watchlist species within the RCWD

Scientific Name	Common Name	Category	Status
<i>Aristida longespica</i> var. <i>geniculata</i>	Slimspike Three-awn	Vascular Plant	Endangered
<i>Juncus articulatus</i>	Jointed Rush	Vascular Plant	Endangered
<i>Juncus marginatus</i>	Marginated Rush	Vascular Plant	Endangered
<i>Limnephilus secludens</i>	A Caddisfly	Invertebrate Animal	Endangered
<i>Polygala cruciata</i>	Cross-leaved Milkwort	Vascular Plant	Endangered
<i>Potamogeton bicupulatus</i>	Snailseed Pondweed	Vascular Plant	Endangered
<i>Potamogeton diversifolius</i>	Diverse-leaved Pondweed	Vascular Plant	Endangered
<i>Rubus missouricus</i>	Missouri Bristle-berry	Vascular Plant	Endangered
<i>Rubus stipulatus</i>	A Bristle-berry	Vascular Plant	Endangered
<i>Scleria triglomerata</i>	Tall Nutrush	Vascular Plant	Endangered
<i>Xyris torta</i>	Twisted Yellow-eyed Grass	Vascular Plant	Endangered
<i>Aristida tuberculosa</i>	Seaside Three-awn	Vascular Plant	Threatened
<i>Aureolaria pedicularia</i>	Fernleaf False Foxglove	Vascular Plant	Threatened
<i>Cicindela lepida</i>	Ghost Tiger Beetle	Invertebrate Animal	Threatened
<i>Emydoidea blandingii</i>	Blanding’s Turtle	Vertebrate Animal	Threatened
<i>Gaylussacia baccata</i>	Black Huckleberry	Vascular Plant	Threatened
<i>Hudsonia tomentosa</i>	Beach Heather	Vascular Plant	Threatened
<i>Ironoquia punctatissima</i>	A Caddisfly	Invertebrate Animal	Threatened
<i>Oecetis ditissa</i>	A Caddisfly	Invertebrate Animal	Threatened



(cont.) Table 2-5. Minnesota Rule 6134 and 2018 NHIS Endangered, Threatened, Special Concern, and Watchlist species within the RCWD

Scientific Name	Common Name	Category	Status
<i>Orobanche uniflora</i>	One-flowered Broomrape	Vascular Plant	Threatened
<i>Phalaropus tricolor</i>	Wilson's Phalarope	Vertebrate Animal	Threatened
<i>Platanthera flava</i> var. <i>herbiola</i>	Tuberclad Rein Orchid	Vascular Plant	Threatened
<i>Rotala ramosior</i>	Toothcup	Vascular Plant	Threatened
<i>Rubus fulleri</i>	a bristle-berry	Vascular Plant	Threatened
<i>Rubus semisetosus</i>	Swamp Blackberry	Vascular Plant	Threatened
<i>Trichophorum clintonii</i>	Clinton's Bulrush	Vascular Plant	Threatened
<i>Viola lanceolata</i> var. <i>lanceolata</i>	Lance-leaf Violet	Vascular Plant	Threatened
<i>Acipenser fulvescens</i>	Lake Sturgeon	Vertebrate Animal	Special Concern
<i>Baptisia lactea</i> var. <i>lactea</i>	White Wild Indigo	Vascular Plant	Special Concern
<i>Botrychium rugulosum</i>	St. Lawrence Grapefern	Vascular Plant	Special Concern
<i>Botrychium simplex</i>	Least Moonwort	Vascular Plant	Special Concern
<i>Buteo lineatus</i>	Red-shouldered Hawk	Vertebrate Animal	Special Concern
<i>Chondestes grammacus</i>	Lark Sparrow	Vertebrate Animal	Special Concern
<i>Crotalaria sagittalis</i>	Rattlebox	Vascular Plant	Special Concern
<i>Cygnus buccinator</i>	Trumpeter Swan	Vertebrate Animal	Special Concern
<i>Decodon verticillatus</i> var. <i>laevigatus</i>	Water-willow	Vascular Plant	Special Concern
<i>Eleocharis quinqueflora</i>	Few-flowered Spikerush	Vascular Plant	Special Concern
<i>Eptesicus fuscus</i>	Big Brown Bat	Vertebrate Animal	Special Concern
<i>Etheostoma microperca</i>	Least Darter	Vertebrate Animal	Special Concern
<i>Fimbristylis autumnalis</i>	Autumn Fimbry	Vascular Plant	Special Concern
<i>Heterodon nasicus</i>	Plains Hog-nosed Snake	Vertebrate Animal	Special Concern
<i>Ligumia recta</i>	Black Sandshell	Invertebrate Animal	Special Concern
<i>Myotis lucifugus</i>	Little Brown Myotis	Vertebrate Animal	Special Concern
<i>Najas gracillima</i>	Slender Naiad	Vascular Plant	Special Concern
<i>Panax quinquefolius</i>	American Ginseng	Vascular Plant	Special Concern
<i>Paradamoetas fontana</i>	A Jumping Spider	Invertebrate Animal	Special Concern
<i>Perognathus flavescens</i>	Plains Pocket Mouse	Vertebrate Animal	Special Concern
<i>Pituophis catenifer</i>	Gophersnake	Vertebrate Animal	Special Concern
<i>Platanthera clavellata</i>	Small Green Wood Orchid	Vascular Plant	Special Concern
<i>Protophila erotica</i>	A Caddisfly	Invertebrate Animal	Special Concern
<i>Rubus multiflorus</i>	Kinnickinnick Dewberry	Vascular Plant	Special Concern
<i>Sterna forsteri</i>	Forster's Tern	Vertebrate Animal	Special Concern
<i>Vireo bellii</i>	Bell's Vireo	Vertebrate Animal	Special Concern
<i>Bartramia longicauda</i>	Upland Sandpiper	Vertebrate Animal	Watchlist
<i>Botaurus lentiginosus</i>	American Bittern	Vertebrate Animal	Watchlist
<i>Grus canadensis</i>	Sandhill Crane	Vertebrate Animal	Watchlist
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Vertebrate Animal	Watchlist
<i>Heterodon platirhinos</i>	Eastern Hognose Snake	Vertebrate Animal	Watchlist
<i>Lycaena epixanthe michiganensis</i>	Bog Copper	Invertebrate Animal	Watchlist



(cont.) Table 2-5. Minnesota Rule 6134 and 2018 NHIS Endangered, Threatened, Special Concern, and Watchlist species within the RCWD

Scientific Name	Common Name	Category	Status
<i>Oenothera laciniata</i>	Slashed Evening Primrose	Vascular Plant	Watchlist
<i>Pantherophis ramspotti</i>	Western Foxsnake	Vertebrate Animal	Watchlist

The Blanding’s Turtle is a species of concern for the DNR. Portions of the RCWD are within the DNR designated Blanding’s Turtle priority areas. These areas contain primary habitat for the turtle and DNR considers them the highest priority for Blanding’s Turtle research and management.

2.7 Land Uses

Land cover classification is a characterization of the features covering the ground surface. These features can be both natural communities as well as constructed by human activity. In contrast, land use describes the activities that occur on a piece of land and the function that the land serves. These are important distinctions in understanding which tool to use for management and planning purposes.

Identification and interpretation of land cover is standardized under the Minnesota Land Cover Classification System (MLCCS). The MLCCS “was developed as a result of unanswered questions regarding natural resource identification, protection and restoration efforts in the seven-county Metropolitan area” (MLCCS User Manual, version 5.4, 2004).

Land cover in the RCWD historically consisted of wet prairie, oak opening and barrens, aspen-oak lands, and big wood-hardwoods (**Figure 2-12**). Conversion to agricultural production began during the 1890s and early 1900s. Agricultural drainage systems, both private and public or legal drainage systems, became prominent landscape features as land was converted into agricultural production. The current land cover trend is toward urbanization; this trend is expected into the future.

Classification of land use is performed at the local level. Municipal and County planning and zoning activities define the allowed land use activities within designated areas of cities and townships, respectively. Different types of land use can have distinct impacts upon surface water and groundwater quality, due primarily to the amount of impervious cover (e.g., rooftop, parking lot) associated with a type of land use. It is also a function of the land use (e.g., industrial, commercial) and the quality of runoff historically observed with the land use.

Figure 2-13 shows the land use in the RCWD as of 2016. Generally, the land use ranges from heavily developed with a mix of industrial, commercial, retail, and multi-family and single-family residential land uses in the southwest part of the RCWD to more rural, with agricultural and undeveloped land use in the north and east. The more urbanized southwest part of the RCWD reflects its proximity to Minneapolis and St. Paul. Retail and industrial complexes are evident along the I-35W corridor to the north.

Individual community comprehensive plans project future land use within the District. A summary of community comprehensive plans that include projected future land use for member cities and townships is provided as reference in **Section 6**.



Figure 2-12: Pre-Settlement Vegetation

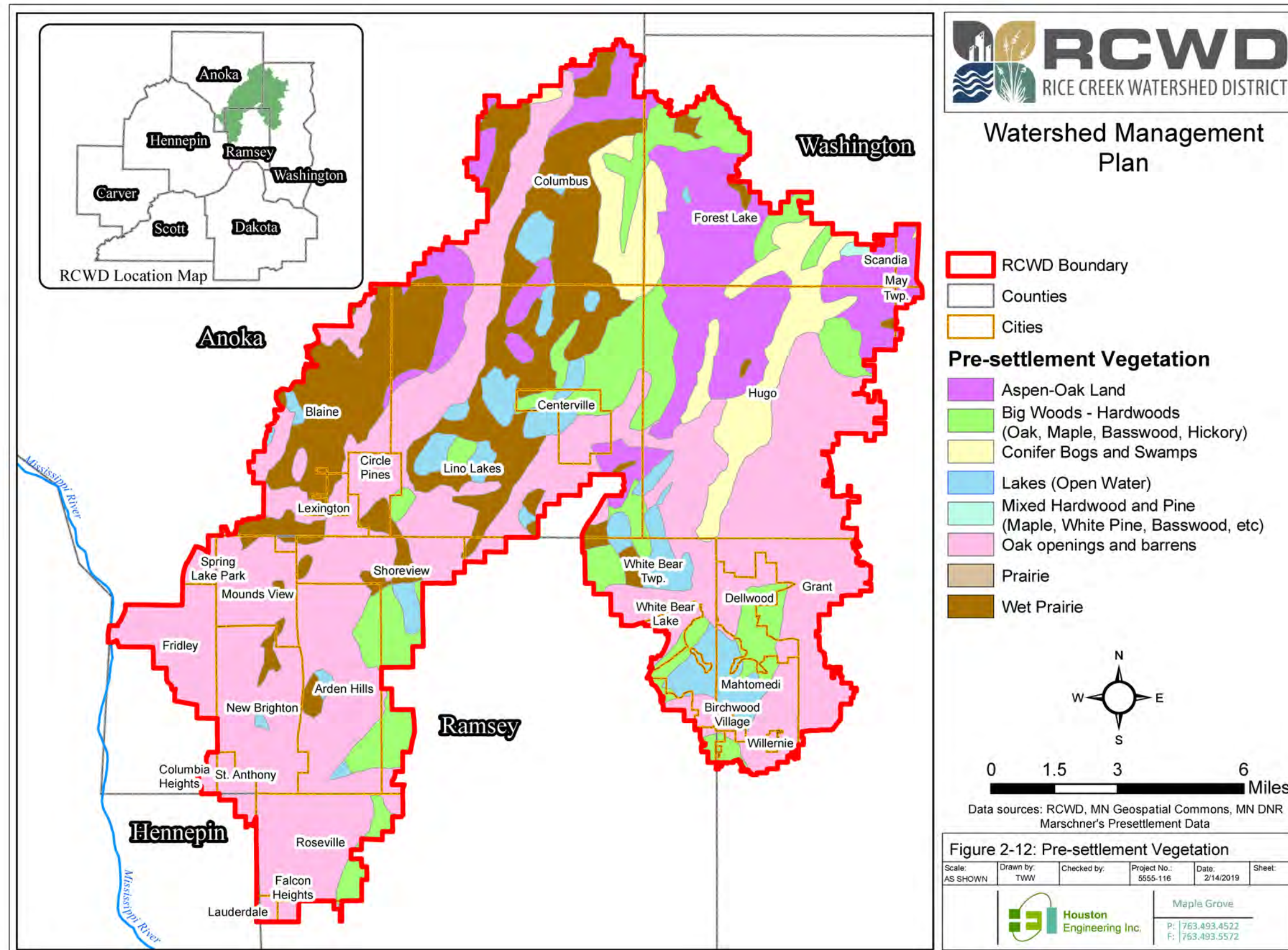
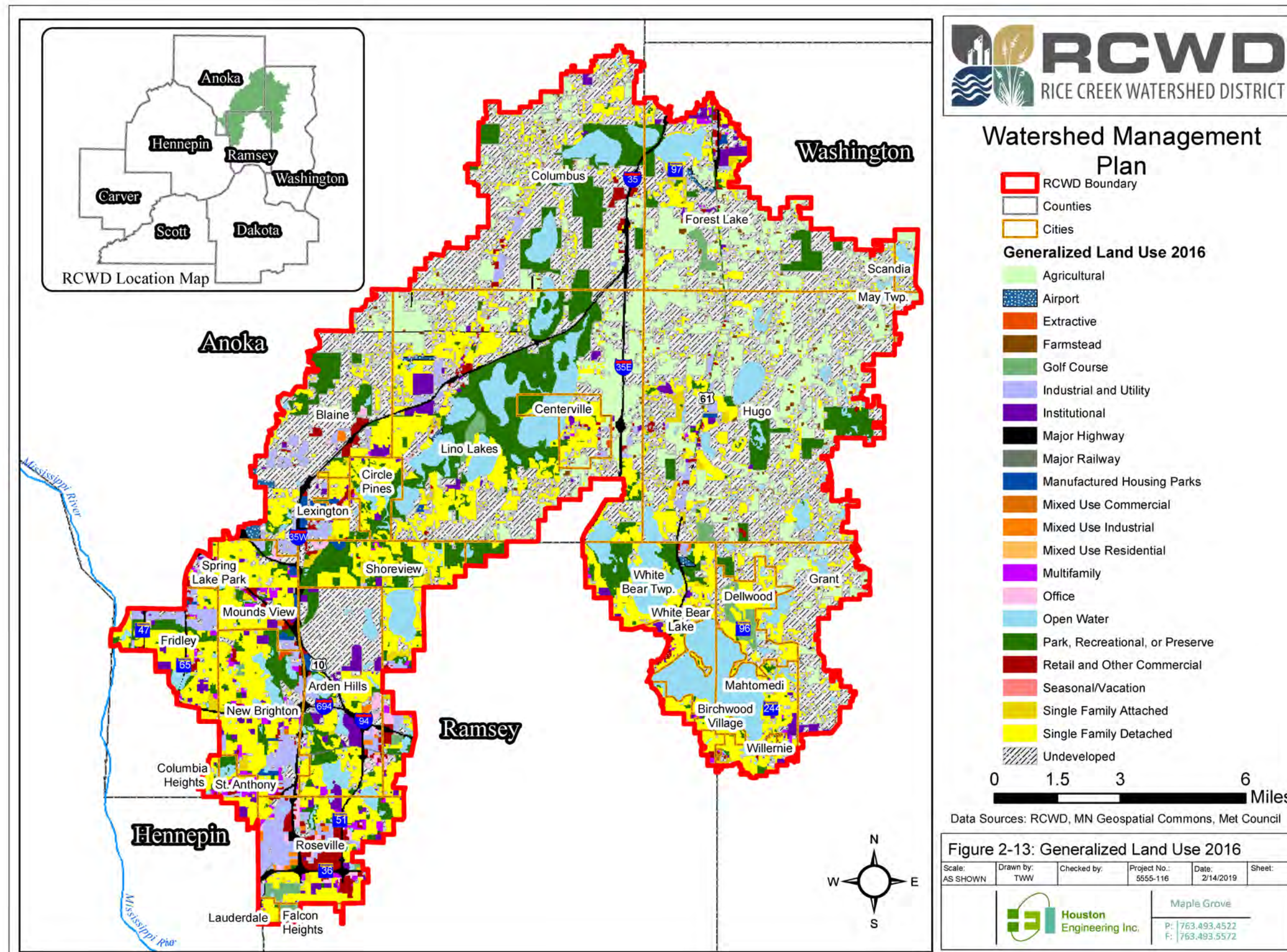


Figure 2-13: Generalized Land Use 2016



2.8 Other Features

2.8.1 St. Paul Water Utility

Water stored in Centerville and Otter Lakes has historically been a source of supply to the City of St. Paul and suburban communities serviced by the St. Paul Regional Water Services (SPRWS). The Board of Water Commissioners of the City of St. Paul, a governmental unit created under Special Laws of Minnesota for 1885, owns fee title to and has obtained easements for a considerable amount of property in the Rice Creek watershed.

SPRWS has the potential to play a significant role in the management of the water resources of the RCWD. Although SPRWS has not operated their Centerville or Otter Lake pumping systems since 1992, Peltier, Centerville, Bald Eagle, and Otter Lakes are all capable of being directly affected by withdrawals for the purpose of supplying water to SPRWS. Water taken from the Otter or Centerville Lake pumping stations is essentially a diversion of water from the District, although not all of the surface system is within the natural hydrologic boundary of the District.

In 2018, SPRWS completed a system assessment of the Centerville/Otter Lake water supply system to assist SPRWS staff and its board in determining the future of this water supply resource. This assessment includes both an extensive history of the operations of the system and a feasibility assessment of various alternatives to either resume pumping operations or abandon the system. This report is attached for reference in **Appendix B**.

2.8.2 Twin Cities Army Ammunition Plant (TCAAP)

The Twin Cities Army Ammunition Plant (TCAAP), located along Rice Creek in the City of Arden Hills, was used for the production and storage of small arms ammunition from the 1940s to the mid-1990s. As one of the largest contamination sites in the State of Minnesota, many investigation and cleanup activities have been focused on the former TCAAP site. Ramsey County has now completed cleanup of the surface of the site to residential soil reference value (SRV) standards. The Minnesota Pollution Control Agency issued a Certificate of Completion for the soil remediation efforts. The county has requested the Environmental Protection Agency to officially delist soil at the site from its Superfund list.

Ramsey County is now leading redevelopment of the site into the Rice Creek Commons. Future property use is anticipated to be mixed residential, retail, non-retail commercial and park. Within the redevelopment site, the Army will continue to own, operate and monitor groundwater remediation systems in the surficial groundwater and in the deep groundwater. Ramsey County maintains a website with background and additional information on Rice Creek Commons (<http://ricecreekcommons.com/>).

2.8.3 Pollutant Sources

The Minnesota Pollution Control Agency's (MPCA) "What's in my Neighborhood" website shows some known and potential pollutant sources within the state. Identified potential sources are scattered throughout the RCWD with a few sites to the east and more sites to the west and south as the level of development and urbanization increases. According to the MPCA, there is one permitted public household hazardous waste site in Blaine and one used oil and filter collection site in Arden Hills.

Most sites within the RCWD are classified as Voluntary Investigation and Cleanup (VIC) sites. VIC sites are part of a program that allows buyers, sellers, developers or local governments to voluntarily investigate and, if necessary, clean up contaminated land to facilitate its sale, financing or redevelopment. Voluntary parties that



complete investigation and/or cleanup activities under MPCA oversight can receive liability assurances that protect them from future Superfund liability.

Other hazards that exist within the RCWD are transient in nature and are largely related to the transportation network within the watershed. Major highways and rail lines convey considerable quantities of hazardous materials that have the potential to harm the environment. Well-trained quick response teams historically have been able to contain hazardous materials spills before they cause significant environmental damage.

Fueling stations and similar facilities are also prone to leaks that may contaminate local soil and ground-water resources. In recent years these have been heavily regulated to prevent or control releases into the environment. Substandard facilities have been closed and cleaned up, while others have been upgraded to comply with standards to prevent or contain unintended releases.

Want to Get Involved?

Find waterbodies in your area

Familiarizing yourself with local lakes and streams will help with protection efforts. Learn more about impairments and protection opportunities to see how you can help improve water quality within Rice Creek Watershed.

Find out more about “What’s in my Neighborhood” on the Minnesota Pollution Control Agency’s website.

Volunteer for citizen science programs

The District needs volunteers for water quality monitoring and other research duties. Become aware of your waterbodies and then get involved to monitor their current health. Two specific monitoring programs are:

- Citizen Assisted Monitoring Program (CAMP)
- Stream Health Evaluation Project (SHEP)

Learn more about these programs on the District website.





Sect. 3

3. District Priority Issues, Goals, and Policies

The purpose of this plan section is to provide an in-depth overview of the District’s priority issues, goals, and policies. RCWD priority issues will be the focus of the District’s efforts during the 10-year lifespan of this plan. Measurable goals are established to address watershed issues. Policies are established by the RCWD to guide efforts toward accomplishing stated goals.

This plan section begins by identifying the steps used to identify District issues, organized by “management categories” and “issues.” **Management categories** are broad descriptors of challenges facing the District when addressing and managing a specific resource. An example of a management category is “water quality management.” **Issues** are smaller subcomponents of the larger management categories. For example, “accelerated sedimentation” and “aquatic invasive species” are issues within the management category “water quality management.” This section then identifies the full list of management categories and issues considered for prioritization, a list of the agreed upon priority issues, and a descriptor of their measurable goals and related RCWD policies.

Section 3 forms the foundation for the remaining portions of the WMP. The outcome of these efforts is a District implementation plan, found in **Section 4**, focused on achieving goals associated with the prioritized issues.

3.1 Identification and Prioritization of District Issues

The process for identifying District issues for consideration in this WMP included the following:

1. A review of previous studies, reports, and project related information prepared by the RCWD as well as other local, state and federal agencies (see **Appendix C**);
2. The collective experience of District staff, Managers, and the District Engineer;
3. Specific requests from members of the Citizen Advisory Committee (CAC) and the Technical Advisory Committee (TAC) during meetings and workshops;
4. Comment letters received from local and state entities in response to the 60-day plan initiation notification required by MN Rules 8410.0045 (see **Appendix D**);
5. Input received from the general public and other stakeholders of the District, and
6. A general understanding of resource management trends.

Issues were identified and inventoried in no particular order within the “District Issues Table” prior to prioritization. The District Issues Table (**Table 3-1**) illustrates how issues are refinements of a management category. The District Issues Table was used to confirm with the TAC, CAC, and public that all issues within the District were identified prior to issue prioritization. **Table 3-1** shows the complete list of all management categories and issues that were inventoried and considered for plan development.

To be consistent with MR 8410.0045 Subpart 7, this plan must identify priority issues to focus implementation efforts. Priority is assigned in recognition that the District lacks the time and resources to adequately address all issues identified in the District Issues Table. The District Board of Managers pursued and completed a “Strategic Direction” process to identify priority issues and guide implementation efforts and funding for the 10-year lifespan of this plan.



There were many participants in the Strategic Direction process including the Board of Managers, CAC, TAC, City/County Partners and members of the public. Participants followed a thorough and rigorous process to prioritize the issues within the District Issues Table. Issues were introduced during an educational presentation, and then prioritized using an interactive, in-person voting process with each participant group. The interactive voting process was used to inform the Board of Managers about the participants' priority issues and guide their overall prioritization of issues.

The Board of Managers ultimately assigned priority to issues for this plan. Issues were categorized into one of three priority levels (A, B, and C) as outlined in **Table 3-1**. These priority levels are not intended to reject issues for consideration in the plan, but rather are used to guide the timeline and aggressiveness of implementation efforts and funding. Issues that are a higher priority level (e.g. A or B) will receive a greater focus of resources during initial implementation efforts, however, each issue will be described with a measurable goal regardless of priority.



Table 3-1: District Issues Table for the RCWD Plan Update

Management Category	Management Category Definition	Issue	Issue Definition	Priority Level
MS 103E Public Drainage Systems	Management and maintenance of public drainage systems in its role as Drainage Authority (County and Judicial Ditches established under MS 103E)	Public Drainage System Maintenance, Repair, and Management Approach	Establishing a defined process and prioritized actions throughout the entire management life cycle, beginning with records establishing and continuing through project execution.	A
		Repair Project Financing	Apportioning cost of drainage system repairs in a reasonable manner.	B
		Stakeholder Outreach on Drainage System Roles and Expectations	Educating benefitting landowners, regulatory agencies, and municipal partners on the condition of the public drainage system, effect of proposed repairs and maintenance, and District roles and authorities.	B
Non-103E Drainage Systems	Management of drainage systems not established under MS 103E and stormwater conveyance systems within the District boundary	Management of Non-103E Systems	The District's roles and authorities for management of drainage systems not subject to MS 103E are inherently different than public drainage systems and need to be clearly defined.	C
District Facilities	Operation and maintenance of water management structures and property constructed and/or owned by the District	Management of District Facilities	To preserve the District's investment in projects, District facilities must be inventoried, inspected, and maintained in a systematic and scheduled program.	A
Flooding	Managing the peak rate and volume of runoff from the landscape in an attempt to reduce potential flood damages in receiving surface waters	Addressing Existing Flooding Issues	Opportunities exist to decrease the risk and impact of known flooding issues through collaboration with local partners.	A
		Impacts of Future Development on Downstream Rate and Volume	Projected future development will result in regional increases in runoff rate and volume, even with current District rules in place.	B
		Modeling and Mapping	Results from modeling efforts (e.g. District future conditions model) are necessary for	A

(cont.) Table 3-1: District Issues Table for the RCWD Plan Update

Management Category	Management Category Definition	Issue	Issue Definition	Priority Level
			identifying flood risks and evaluating alternatives.	
Water Quality Management	Protecting and/or improving the water quality of District streams, rivers, lakes, and other watercourses	Accelerated Sedimentation	Accelerated sedimentation creates downstream water quality problems and increased sedimentation in District facilities (e.g. Long and Locke Lake sediment basins), requiring maintenance dredging and drainage system repairs.	B
		Aquatic Invasive Species	Aquatic invasive species (AIS) may impact water quality in District resources. The District is involved in managing AIS for water quality purposes. AIS can also have deleterious effects on habitat and recreational lake use. The DNR is the primary State agency responsible for management and control of invasive species.	C
		Wetlands	Wetlands affect many District interests including water quality and flood control. The availability of banked wetland credits (public or private) is vital to District projects.	B
		Nutrient Enrichment, Algae, and Cultural Eutrophication	Several lakes and streams in the District are “impaired” due to issues related to nutrient enrichment and cultural eutrophication, and do not achieve their intended beneficial uses of aquatic life or recreation. State and federal laws specify District responsibilities related to addressing impairments.	B

(cont.) Table 3-1: District Issues Table for the RCWD Plan Update

Management Category	Management Category Definition	Issue	Issue Definition	Priority Level
Water Quality Management	Protecting and/or improving the water quality of District streams, rivers, lakes, and other watercourses	Surface Water Monitoring	Surface water monitoring closes data gaps related to surface water quality and documents the impact management activities have on improving District resources.	C
		Surface Water/ Groundwater Interactions	Surface water can infiltrate into the soil and recharge groundwater, creating implications for managing runoff, groundwater dependent natural resources, and groundwater supplies. Many agencies and organizations are responsible for managing various aspects of groundwater within the District.	C
Funding	Prioritized budgeting of costs for District programs and projects and identification of revenue sources	Financing and Funding Sources	When are various funding sources important? (i.e. ad valorem; special tax; WMD; bonds; grants).	B
		Funding Distribution	Prioritizing funding and implementation of projects and programs to achieve interests of the District's stakeholders.	A
Collaborations	Developing and maintaining positive collaborative relationships and agreements with other agencies and partners to better carry out District's mission	Collaborations with Local, State, and Federal Partners	The District partners with many (public) local, state, and federal partners to better carry out the District's mission.	A
		Collaborations with Private Partners	The District partners with private partners (e.g. landowners) to better carry out the District's mission.	B
Regulatory	Administration of District rules to manage District water resources	District Rules	The District has adopted a set of rules to guide decision-making with regard to stormwater management, soil erosion and sediment control, floodplain alterations, wetland alterations and other activities within the boundaries of the District.	C

(cont.) Table 3-1: District Issues Table for the RCWD Plan Update

Management Category	Management Category Definition	Issue	Issue Definition	Priority Level
Regulatory	Administration of District rules to manage District water resources	District's Role as WCA Authority	The District (or other municipalities) is responsible for implementation of WCA to achieve no net wetland loss while recognizing the desire to develop land and manage the maintenance/repair of public drainage systems.	C
		Permitting and Enforcement	Permits are issued in accordance to District rules to protect the District's natural resources. Issues include how to create efficiency and flexibility in the permitting process, while maintaining its intent.	A
Communication, Outreach, and Education	Implementation of effective outreach efforts related to District priorities, policies, activities, and projects. Outreach efforts tailored to four main audiences: General Public; Counties; Cities; and State Agencies.	Communication Opportunities and Strategies	Identifying and implementing education opportunities for stakeholders to facilitate informed decision-making related to District resources.	C
		Resources for Adequate Outreach, Communication, and Education	Ensuring sufficient resources for effective outreach materials, such as branded material and websites.	C



3.2 District Priority Issues, Goals, and Policies

The purpose of this section is to provide an overview of District issues and measurable goals. Policies are also summarized to accomplish stated goals or guide District management activities regardless of issue priority level. To orient the reader, definitions for these terms are provided below:

- **Goal:** Statement of intended accomplishment within an issue. A goal is strategic because it describes a District-wide initiative. Goals are meant to be simply stated and measurable.
- **Measure:** A feature, attribute, characteristic, amount, or quantity which forms the unit by which progress is evaluated toward attaining a goal at a minimum of every two years. The measure is provided to meet the requirement of a goal established in MR 8410.0080 Subpart 1.
- **Policy:** A narrative description of the anticipated approach used to achieve the goal. Policies set focused objectives and form the basis for specific actions to be implemented by the District. Several policies are often related to a single goal.



3.2.1 Minnesota Statute 103E Public Drainage Systems

3.2.1.1 Public Drainage System Maintenance, Repair, and Management Approach



Public Drainage System Maintenance, Repair, and Management Approach

Issue PDS-1: The need to comprehensively manage public drainage systems to provide the necessary level of service to both current and future development. The complexity of managing public drainage systems has led to several challenging issues faced by the District, including reestablishing the as-constructed and subsequently improved condition (ACSIC); prioritization and scheduling of drainage system inspection and maintenance; maintaining drainage records in centralized locations and providing for public access to these records; and managing the public drainage systems to serve multiple land uses as well as current and future development without exceeding the geometry and conveyance of the ACSIC.

Goals and Measurements:

- **Goal PDS-1:** Schedule, prioritize, and execute inspection and maintenance of the District's public drainage systems to preserve and/or restore drainage function for multiple uses.
- **Measure PDS-1:** Inspect each of the District's public drainage systems over each 5-year period of the Plan.



Why These Issues Are Important

Following the establishment of the RCWD in 1972, Anoka, Ramsey, and Washington counties transferred jurisdiction for all public drainage systems within the RCWD boundary that were subject to Minnesota Statute 103E (i.e. County and Judicial Ditches) to the RCWD upon petition from the District. The public drainage systems within the District are extensive, consisting of 22 systems with a total length of approximately 119 miles.

Issues associated with the public drainage systems historically and currently require a considerable portion of the energy and resources of the District. Some of the public drainage systems, such as Ramsey County Ditch (RCD) 4, are located within completely urbanized areas, have been totally or partially replaced by storm sewer pipe, and no longer serve agricultural land or provide agricultural benefits. These systems function as the outlet for storm water runoff. Other public drainage systems, such as Anoka County Ditch (ACD) 46, are comprised nearly entirely of open channel originally constructed in the late 1800s and early 1900s, still serve lands currently in agricultural production, and have limited urbanized land use within the benefited area. Several of the systems such as Judicial Ditch (JD) 4 are challenging to manage because they are comprised of both open channel and tile, serve lands currently in agricultural production, but are also urbanizing. **Continued** >>



➤➤ These systems need to serve those lands currently in agricultural production but also convey stormwater from the developing areas. In addition, Clearwater Creek (JD 3) and Hardwood Creek (AJD 2) are examples of public drainage systems that are modified natural waterways, which in some cases can associate an expected degree of ecological integrity.

All public drainage systems eventually deteriorate and require maintenance. A primary need associated with the management of public drainage systems is to establish a defined process and prioritized actions throughout the entire management life cycle, beginning with records establishment and continuing through inspection and maintenance project execution. Each public drainage system is scheduled for inspection by District staff a minimum of once every five years. Inspection results are annually summarized and presented to the Board of Managers.

Inspections are also completed based upon specific maintenance requests made by landowners, District partners, or others relying on the public drainage system for stormwater conveyance. To guide the process in responding to these requests, the RCWD has developed a maintenance/repair flowchart (see **Figure 3-1**). This flowchart identifies multiple steps to confirm the context of the issue regarding the public drainage system, the context of a proposed action regarding regulatory engagement and project budgeting, and actions required prior to completing the maintenance activity.

Please note that the flowchart distinctly identifies the actions “minor maintenance” and “major repair.” Within state drainage law (MS 103E), “maintenance” and “repair” are synonymous. However, in the flowchart and in its management practice the RCWD has utilized the term “minor maintenance” to refer to management activities that require little or no regulatory engagement, do not exceed the annual maintenance budget, and are confined to only a portion of the overall system. Conversely, the term “major repair” has been used to describe management activities that require extensive regulatory engagement, have a cost relative to that of a capital improvement project, or are system-wide in nature. For consistency, the terms “minor maintenance” and “major repair” will be utilized within this context for the remainder of the Plan.

The strategy used to manage public drainage systems continues to evolve and adapt to meet emerging and evolving resource and water management issues. Public drainage system repairs recognize the existing need to serve lands currently in agricultural production, but also must plan for the current and future need of municipalities to use the public drainage system while considering and weighing other resource issues and needs. This means that a repair depth, in some cases, may be less than the ACSIC; or that the public drainage system may coexist within or adjacent to municipal stormwater management features. This approach strives for “predictability” of the function of the drainage system with respect to agricultural drainage, stormwater management needs, and resource needs. To comply with Minnesota Statute and Rules, repairs to the public drainage system must not exceed the depth and capacity of the ACSIC.

Under some circumstances, the RCWD Board of Managers may determine that the RCWD’s management of a portion of the public drainage system is no longer of public benefit.

Continued ➤➤



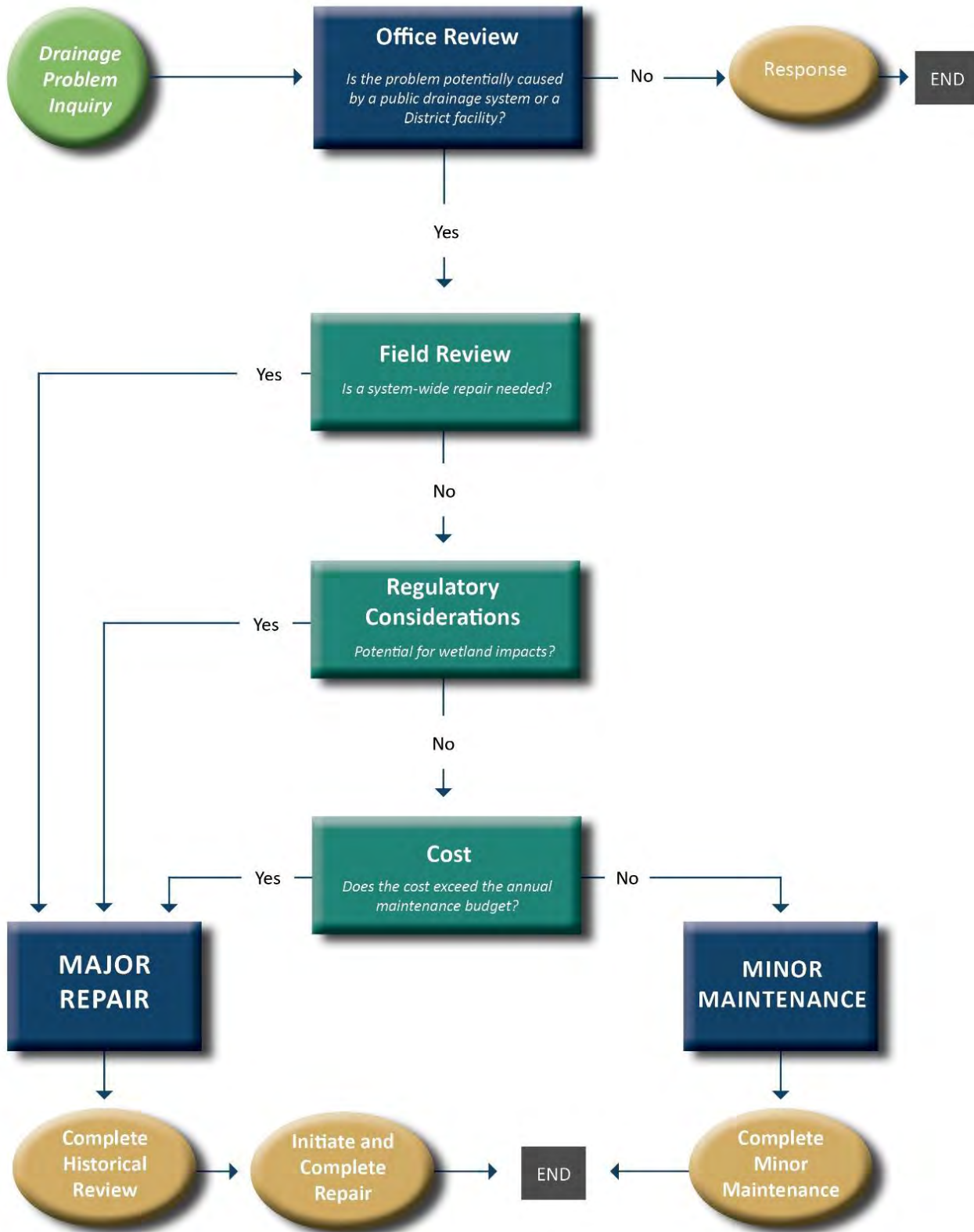
➤➤ All or a portion of a public drainage system may be transferred to a city per MS 103E.812 if the public drainage system continues to provide a public utility and the transfer of the system is necessary for the orderly management of storm, surface, or floodwaters. If a portion of the public drainage system no longer serves a public utility (for example, when a segment of the system is realigned), the RCWD may partially abandon the system per MS 103E.806.

District Policies

- **Policy:** Apply methods, procedures, standards and criteria for the maintenance and repair of public drainage systems. The District will identify the level of drainage system maintenance on which landowners can depend, which in some instances could be less than the ACSIC.
- **Policy:** Manage public drainage systems in a manner that recognizes the need to provide a functional level of service to benefitted lands, within the context of local, state and federal laws and programs.
- **Policy:** The management of drainage systems and conservation programs within the legal authority of the District may involve impacts to landowner’s rights. In such cases it may be appropriate to explore the conservation benefits of drainage related activities and consider a system of reasonable and fair compensation for the drainage rights and other voluntary or incentive-based approaches.
- **Policy:** Maintain legal right of entry and access along public drainage systems, formally document right of way along public drainage systems as part of drainage system legal proceedings, and require conveyance of easements from permittees as part of the permit review process.



Figure 3-1: RCWD Public Drainage System Maintenance and Repair Flowchart



3.2.1.2 Repair Project Financing



Repair Project Financing

Issue PDS-2: Establishing an equitable means of apportioning the cost of MS 103E public drainage system repair projects.

Goals and Measurements:

- **Goal PDS-2:** Equitably apportion costs of public drainage system repairs.
- **Measure PDS-2:** 100% utilization of the District's established cost allocation methodology.



Why These Issues Are Important

Under MS 103E, costs for repairs to the public drainage system are typically required to be prorated to each tract of property in direct proportion to the benefits received by the system. However, determining benefits is an overwhelming challenge in an urbanizing area because of the multiple types of services provided by the legal drainage system. In addition, some repair activities are ecological in nature (e.g. wetland avoidance) and provide benefits to landowners beyond the contributing drainage area of the system. Further, some public drainage systems (i.e. trunk conveyance systems) serve as a critical regional outlet within the District. Recognizing the challenges of assigning the cost of public drainage system repairs solely through MS 103E, the RCWD has developed a hybrid approach for financing major repairs, utilizing its authority under MS 103B, 103D, and 103E. The hybrid approach acknowledges the challenges associated with implementing and funding repairs by using multiple tools available to metropolitan watershed districts.

Continued >>



➤➤ The general rationale and process of this hybrid approach is as follows:

1. Allocation of project costs is considered on a public drainage system level; meaning, individual branches and laterals of the public drainage system are not evaluated apart from the entire system. Because the design and function of the main trunk, branches and laterals of these systems rely on the function of other branches and laterals, the allocation of costs cannot equitably be allocated by separate branches or laterals.
2. Costs for repairs to public drainage systems that are designated as trunk conveyance systems (see **Section 2.5.2** and **Figure 2-9**) are financed through ad valorem (District-wide) levies. These systems each serve as the outlet for multiple cities and multiple public drainage systems. The outlet that trunk conveyance systems provide is of a regional significance.
3. Costs of repair project components ordered for the purposes of ecological preservation or enhancement (e.g. wetland restoration, water quality improvement) are financed through ad valorem levies. These components are not required for the restoration or utility to the public drainage system and thus are not allocated directly to benefitting landowners.
4. Costs of major repairs to public drainage systems that are not trunk conveyance systems or for ecological preservation are allocated to land parcels within the contributing drainage area of the public drainage system, based on the runoff generated by that parcel. Because the need for maintenance is closely related to runoff and sediment delivery to the system, the allocation of charges by proportional runoff is an equitable means of distributing project cost. **Section 3.2.6** describes the process and methods used to allocate and collect these charges.
5. Costs for replacing and/or lowering culverts under publicly owned roadways and trails is allocated to the road authority or trail owner, unless the culvert was established as a component of the public drainage system.

The primary management responsibility of the District for the trunk conveyance system is to ensure as determined conveyance capacity. The maintenance and repair of the trunk conveyance system is accomplished using ad valorem funds. The rationale for using ad valorem funds is that benefits of maintenance and repair of the trunk conveyance system extend beyond the property owners directly drained by the trunk conveyance system, including the cities that use these waterways as an outlet for stormwater.

District Policies

- **Policy:** Allocate the costs of public drainage system repairs through implementation of the hybrid legal framework, which includes MS 103E, 103D, and 103B.



3.2.1.3 Stakeholder Outreach on Drainage System Roles and Expectations



Stakeholder Outreach on Drainage System Roles and Expectations

Issue PDS-3: The District needs to ensure communication to stakeholders is clear about the condition of the public drainage system, the effect of proposed repairs, and the District's roles and authorities.

Other issues include evolution of public drainage systems from agricultural drainage to urban drainage and the District's role in providing an outlet for future municipal stormwater conveyances; and public accessibility to drainage records and processes.

Goals and Measurements:

- **Goal PDS-3:** Use communication and outreach tools as an integral element in managing public drainage systems to credibly convey District roles and authorities and system data and information, thereby increasing knowledge, awareness, and capacity among stakeholders.
- **Measure PDS-3:** Send at least 1-2 project communications to affected landowners and stakeholders in addition to MS 103E legal requirements; Release one press statement for each major repair project; Update the RCWD website's drainage systems page quarterly with project updates.

Why These Issues Are Important

There are many stakeholders involved in public drainage system management, including benefitting landowners, regulatory agencies, and municipal partners. As Drainage Authority, the District has a role in educating these stakeholders on the condition of the public drainage system, the effect of proposed repairs, and the District's roles and authorities.

In 2009, the District received a grant from the Board of Soil and Water Resource to aid in the completion of a drainage records modernization project. The project involved three primary components: 1) to scan and inventory the available historic records for each drainage system; 2) to create GIS layers from the information; and 3) to make the information accessible through a website.



Continued >>



➤➤ The RCWD has completed records modernization for twenty-seven drainage systems and the results are accessible through the Public Drainage System Information Portal on the RCWD webpage.

- District Policies**
- **Policy:** Inventory, manage, and provide access to public drainage system records to improve operational efficiency, make common information accessible to constituents and improve the basic understanding of public drainage systems.
 - **Policy:** Hold public information meetings prior to records correction hearings and repair hearings.
 - **Policy:** Use consistent terms and definitions when describing the maintenance, repair, improvement and general management of public and private drainage systems.

3.2.2 Non-103E Drainage Systems

3.2.2.1 Management of Non-103E Systems



Management of Non-103E Systems

Issue NDS-1: Despite the limited role and authority of the District in managing non-103E systems, these systems can impact upstream and downstream water quantity conveyance and water quality and may serve a public benefit.

Goals and Measurements:

- **Goal NDS-1:** In consideration of the District's limited role, address conveyance concerns on non-103E systems within the framework of District policy.
- **Measure NDS-1:** 100% of all non-103E system concerns are addressed as determined by the District's Natural Channel Management Policy.



Why These Issues Are Important

There are many drainage systems within the District boundary that are not established under MS 103E.

These drainage systems include private drainage systems, natural channels, and stormwater conveyance systems. Portions of the trunk conveyance systems are also non-103E systems. Management of these non-103E systems is important, as they serve as an outlet of local surface water for the public drainage systems and trunk conveyance systems, and issues in these non-103E systems can negatively impact the conveyance of upstream and downstream systems, including Rice Creek itself.

The District's roles for management of drainage systems not subject to 103E are inherently different than for public drainage systems, as the District has no stated responsibility and limited statutory authority to manage these systems, including but not limited to the non-103E trunk conveyance systems. For this reason, the District's response to drainage concerns that are unrelated to 103E systems is very limited (**Figure 3-1**).

Continued >>



➤➤ For many of these systems, there is a different public entity responsible for managing these systems; for instance, road authorities who manage culverts and ditches within the road right-of-way, and municipalities who manage stormwater infrastructure. However, many drainage systems in the District that serve as outlets to individual landowners and even municipalities have no identified public entity charged with managing the system because they are private.

Because of their potential to affect stormwater management and flooding on a regional scale, the maintenance of non-103E trunk conveyance systems has been a long-term concern of the RCWD. To address this issue, the District has developed a RCWD Natural Channel Management Policy (**Appendix E**) that specifies triggers and actions related to maintaining the natural channel portions of these systems. Coordination and collaboration with adjacent landowners are critically important to facilitating access for this maintenance.

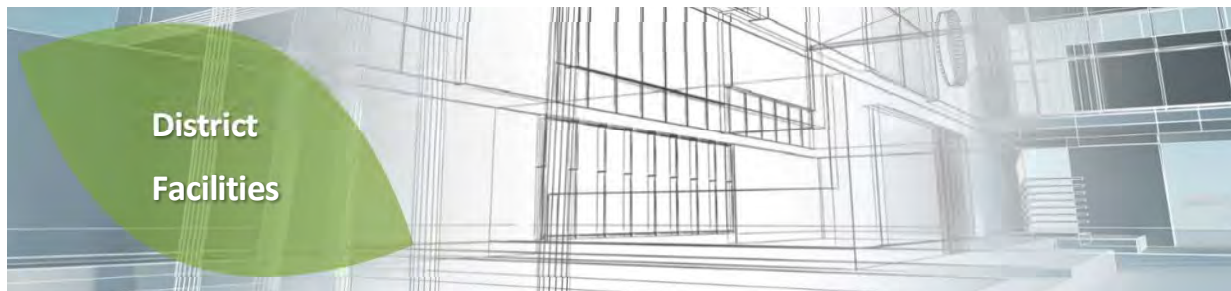
District Policies

- **Policy:** Use consistent messaging when describing the District’s role in management of non-103E drainage systems.
- **Policy:** Continue to implement the RCWD Natural Channel Management Policy in management of non-103E trunk conveyance systems.



3.2.3 District Facilities

3.2.3.1 Management of District Facilities



Management of District Facilities

Issue DF-1: Understanding what District facilities are, where they are located, their current condition, whether the facilities need repair, and whether the District should fund and complete maintenance / repair of District owned and operated facilities. Other issues include physical accessibility to existing District facilities.

Goals and Measurements:

- **Goal DF-1a:** Development of an updated District program that focuses on construction, inspection, maintenance, and/or operation of District facilities in accordance with their water management purposes and gages their effectiveness over time.
- **Measure DF-1a:** Inspect 100% of District facilities over the 10-year life cycle of the Plan.
- **Goal DF-1b:** Strive to obtain and maintain legal access for operation and maintenance of those District facilities that currently do not have legal access.
- **Measure DF-1b:** Obtain legal access to 75% of District facilities over the 10-year life cycle of the plan.

Why These Issues Are Important

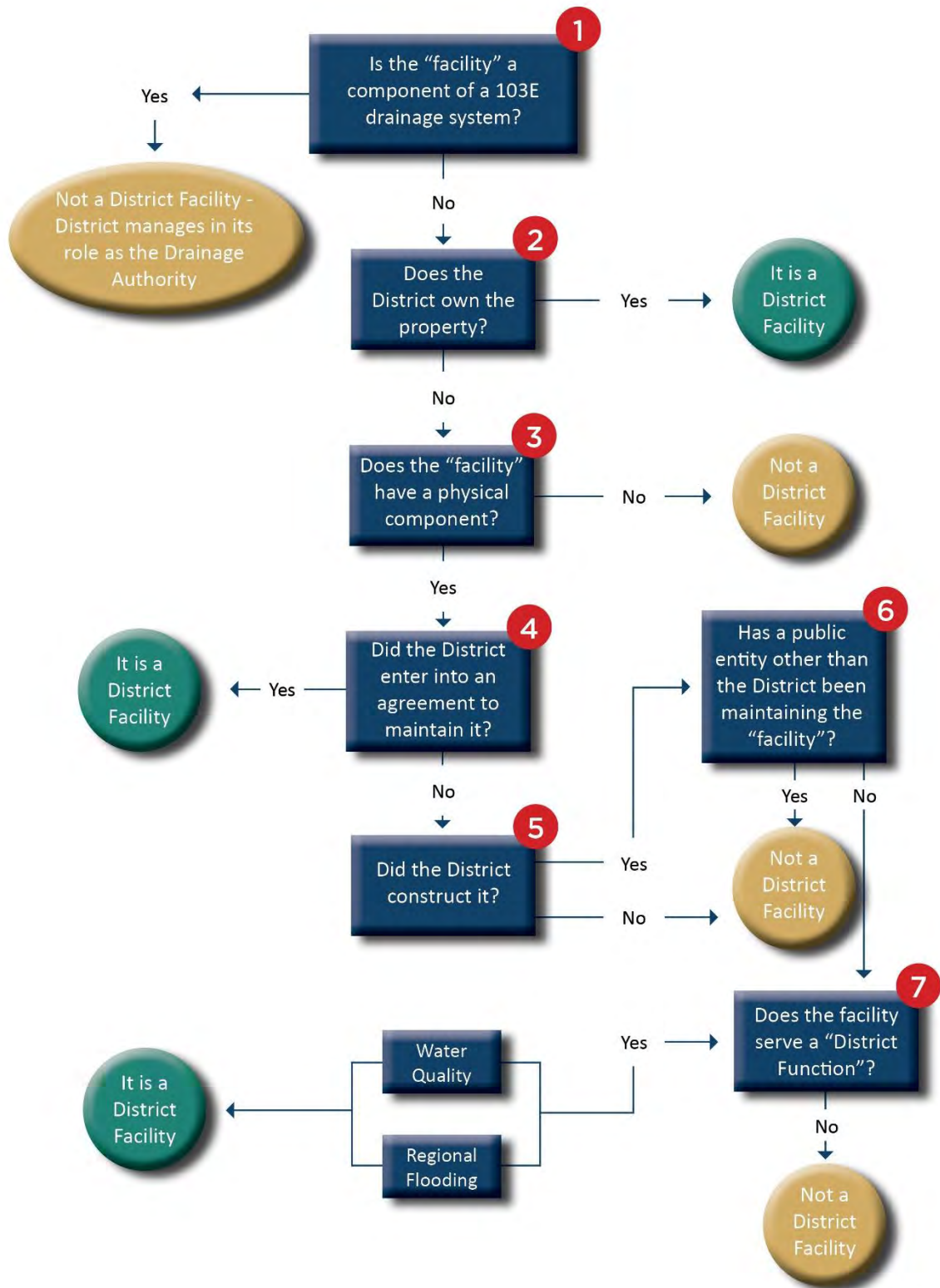
For purposes of this plan, a “District facility” is defined as a physical water management project constructed and/or owned and maintained by the District for purposes of addressing water quality, regional flooding, or wetland habitat. A flowchart for determining if a project is defined as a District facility is shown by **Figure 3-2**.

In 2018, the District completed an inventory of District facilities and identified existing accessibility of those facilities for operation and/or maintenance. This inventory was amended on April 26, 2021 to correct an omission and add some newly constructed projects (HEI, 2021). Known District facilities are listed in **Table 3-2** and shown in **Figures 3-3** and **3-4**. Examples of District facilities include, but are not limited to, sedimentation basins, water control structures, lake outlet structures, wetland banking sites, stream re-meander projects, storm sewer diversions, and iron-enhanced sand filters.

One challenge with maintaining District facilities is physical accessibility to the projects for inspection and maintenance through access agreements or easements. In addition to the facility identification number and project name, **Table 3-2** identifies whether the 2021 District facilities inventory identified a right of access to each facility.

Continued >>

Figure 3-2: Flowchart for Determining a District Facility



➤➤ Most facilities appear to have adequate right of access for inspection and basic maintenance, either through dedicated easement or public ownership of the access path. However, to complete substantial repairs there may be challenges in accessing some of the sites with heavy equipment and staging construction. The need for additional easements/agreements will need to be evaluated on an individual basis following annual inspections or as projects develop.

Table 3-2: Existing District Facilities and Described Access to Those Facilities

Project ID	City	Project Name	Described Access (Y/N)	Facility Purpose
CB-1	Columbus	Walls Bros. Wetland Restoration	Y	Water quality
LL-2	Lino Lakes	Rondeau Lake Outlet Channel	Y	Flood control
LL-3	Lino Lakes	Rondeau Lake Fish Barrier	Y	Water quality
FD-7	Fridley	Locke Lake Sedimentation Basin	Y	Water quality
NB-8	New Brighton	Long Lake Sedimentation Basin	Y	Water quality
NB-10	New Brighton	35 W Wetland Treatment Area (New Brighton FSC)	Y	Water quality
AH-11	Arden Hills	"E2" Wetland Weir	Y	Water quality, Flood control, Wetland habitat
AH-12	Arden Hills	Lake Johanna Outlet Structure	N	Flood control
WBT-15	White Bear Twp.	Hwy. 61/JD No.1 Treatment Basin	Y	Water quality, Wetland habitat
MM-17	Mahtomedi	Hall's Marsh Outlet Structure	Y	Water quality
RV-18	Roseville	Oasis Pond Weir	Y	Water quality
FL-20	Forest Lake	Lamprey Pass	Y	District-owned property
CB-22	Columbus	Browns Preserve	Y	Water quality, Wetland habitat
NB-23	New Brighton	Hansen Park Pond – South Basin	Y	Water quality, Flood control
NB-24	New Brighton	Hansen Park Iron-Enhanced Sand Filter	Y	Water quality, Flood control
LL-4	Lino Lakes	Hardwood Creek Restoration (Remeander 2012)	N	Water quality
SV-5	Shoreview	Middle Rice Creek Meander Restoration (2005)	N	Water quality
AH-6	Arden Hills	Middle Rice Creek Meander Restoration (2016)	N	Water quality
NB-9	New Brighton	Jones Lake Outlet Weir	N	Water quality, Flood control
AH-13	Arden Hills	Floral Park Berm and Outlet	N	Water quality
AH-14	Arden Hills	Hwy 10 & 694 Outlet Structure	N	Water quality
WBT-16	White Bear Twp.	RWJD1 Fish Barrier	N	Habitat management
AH-19	Arden Hills	Lake Josephine Outlet	N	Flood control



Project ID	City	Project Name	Described Access (Y/N)	Facility Purpose
RV-21	Roseville	Little Lake Josephine Fish Barrier and Outlet	Y	Habitat management; Flood control
AH-25	Arden Hills	Bethel North	N	Water quality
HG-26	Hugo	Oneka Ridge Golf Course*	Y	Water quality
FL-27	Forest Lake	Rehbein Farms*	Y	Water quality
RV-111	Roseville	Oasis Pond Iron Enhanced Sand Filter*	Y	Water quality
WBT-138	White Bear Twp.	Bald Eagle Lake Iron-Enhanced Sand Filter	Y	Water Quality
WB-134	White Bear Lake, Mahtomedi, Birchwood Village	Priebe Lake Outlet	N	Flood Control
FD-139	Fridley	Lower Rice Creek Stabilization	Y	Water Quality

*RCWD has limited responsibility. Ownership and primary operations/maintenance responsibility are by other parties.

➤➤ The issues associated with management of District facilities can be addressed by developing an inspection and maintenance plan to systematically manage facilities for their intended purpose, including use of existing RCWD database products. Perhaps most importantly, the District can address these issues by developing access agreements or acquiring easements for those facilities currently lacking a known access point in order to carry out an inspection and maintenance program.

District Policies

- **Policy:** Prioritize, schedule, and complete inspections of District facilities.
- **Policy:** Facilitate sharing of District facility data among public entities within the District.
- **Policy:** Manage District-owned facilities in accordance with the original design purposes and/or permit conditions, periodically review these purposes, and modify operation in consideration of current resource management objectives.
- **Policy:** Remove and/or replace District facility infrastructure that no longer serves its original function.
- **Policy:** Obtain easements/right of access to District facilities without an established legal right of access to ensure the District can maintain structures and their resource management objectives.

Figure 3-3: Existing District Facilities

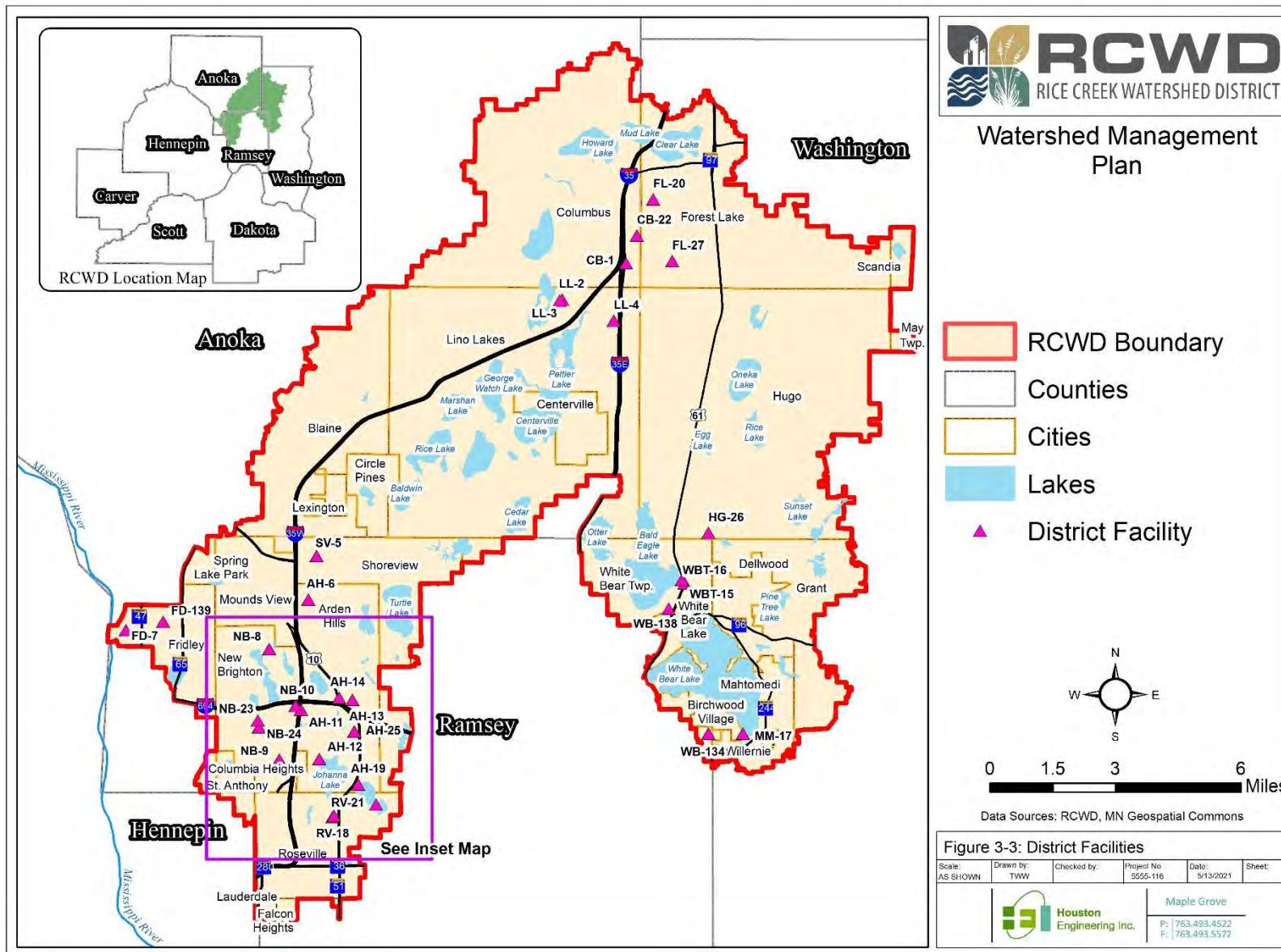
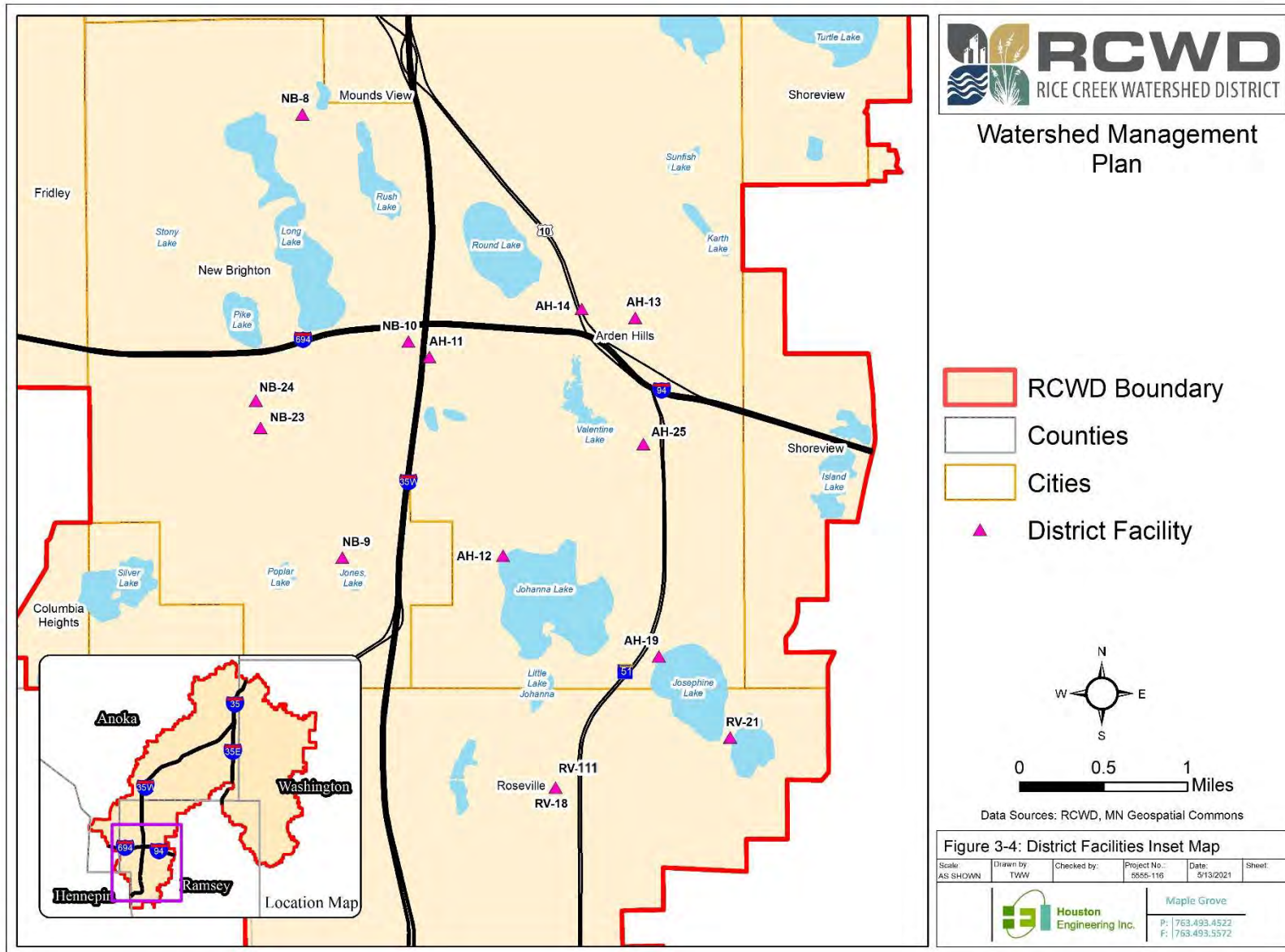


Figure 3-4: Existing District Facilities – Inset Map



3.2.4 Flooding

3.2.4.1 Addressing Existing Flooding Issues



Addressing Existing Flooding Issues

Issue F-1: The RCWD and its partners have identified numerous locations throughout the District that are at risk of damage due to flooding.

Goals and Measurements:

- **Goal F-1:** Decrease the risk and impact of known flooding issues through collaboration with local municipal partners.
- **Measure F-1:** Collaborate with partners to implement District-prioritized flood risk reduction projects to accrue 200 acre-feet of new live flood storage during the 10-year lifespan of the Plan, aimed at reducing the rate and volume of runoff.



Why These Issues Are Important

To prevent increases in the magnitude and duration of flooding, one of the District's primary functions is the maintenance of its public drainage system, which serves as the sole outlet for most of the District. The District also has an interest in managing the peak rate and volume of runoff from the landscape to reduce potential flood damages on properties adjacent to downstream receiving surface waters. Within the District, opportunities exist to decrease the risk and impact of known flooding issues through collaboration with local partners. The District has completed studies and analyses that demonstrate that District stormwater management rules (Rule C) alone cannot meet current and future flood management needs. Instead, the District utilizes a combination of regulation, projects, and programs to provide a multi-faceted approach for managing flooding.

The District and its partners rely on three primary methods to reduce flood frequency:

1. reducing runoff volume;
2. increasing stormwater conveyance; and
3. increasing stormwater detention volume.

Continued >>



➤➤ Preserving floodplain capacity and reducing runoff volume is a critical and preferred method for stormwater management as it addresses the issue at its source. Infiltration and water reuse practices have proven to be successful means of reducing runoff volume. Other alternative means of reducing runoff volume include targeted vegetation (trees and native plantings), soil decompaction, soil amendments, and impervious surface reduction. Unfortunately, not all lands are suitable for these practices. Infiltration practices are challenging if not infeasible in locations with heavy soils or shallow (high) water tables. For these reasons, the District must also utilize increased stormwater conveyance, preservation of existing floodplain capacity, and increased flood storage to accomplish flood reduction.

Increased stormwater conveyance capacity (e.g. bigger pipes) is often the most obvious and easiest solution to flooding issues, especially for those issues that are local in nature (street flooding, backyard flooding, etc.). However, increasing capacity can simply transfer the flooding issue to a location further downstream, most often to an area already prone to flooding.

Conversely, development of flood storage locations to increase stormwater detention volume can reduce downstream runoff rates and flood elevations but may cause inundation of upstream lands. Therefore, a balanced approach is required that identifies risks and opportunities both upstream and downstream of flooding locations and uses both storage and conveyance to achieve desired flood reductions. This approach recognizes that stormwater conveyance systems cross municipal boundaries in multiple locations across the District, and that maintaining these locations of intercommunity flows at or below current flow rates is critical to the success of District-wide flood management.

District Policies

- **Policy:** Minimize, avoid, and reduce flood damages through the use of a floodplain management program including analyses completed by the District, which is focused on identifying and assessing flood prone areas, characterizing flood damages, and regulating the placement of fill volume within the floodplain.
- **Policy:** Consider and evaluate the effects of increased conveyance capacity on downstream flood levels and collaborate with District partners to identify and develop storage practices to offset these effects.
- **Policy:** Foster, encourage, and fund where appropriate the implementation of regional Best Management Practices and Capital Improvement Projects to reduce the rate and volume of runoff.
- **Policy:** Identify opportunities to reduce flood damage risk through the adaptive management of existing District facilities.



3.2.4.2 Impacts of Future Development on Downstream Rate and Volume



Impacts of Future Development on Downstream Rate and Volume

Issue F-2: Projected future development will result in regional increases in runoff rate and volume that cannot be solely addressed through stormwater management rules.

Goals and Measurements:

- **Goal F-2:** Understand the effects of future development on runoff volume, flow rates, and flooding, and work to minimize those effects through regulation, projects, and programs.
- **Measure F-2:** Update the District's Future Conditions Model at least once during the 10-year lifespan of the Plan to account for realized and proposed land development and modeled changes in regional precipitation patterns.



Why These Issues Are Important

As the headwaters or upstream portions of the District and various drainage areas are developing, downstream flooding is an increased concern. To identify the location and scope of these flooding locations, the District developed hydrologic and hydraulic modeling of future developed conditions (based on current and future community land use maps and application of District rules).

This analysis shows that projected future development will result in regional increases in runoff rate and volume, even with current District rules in place. Additionally, the limited conveyance of several public drainage systems that serve as the primary outlet for stormwater in some communities has raised awareness of volume constrained areas. Within these areas the runoff volume increases from future development will exacerbate existing and/or create new flood issues.

Continued >>



➤➤ If a proposed development is found to cause adverse impacts to upstream and/or downstream properties, the District will work with associated parties to identify solutions to attempt to mitigate these effects. If the adverse impact cannot be avoided or mitigated, the District may deny a permit application that is inconsistent with its rules.

Addressing these issues requires a partnership between the District and the land use authority in each potential problem location. The first step of this partnership is reaching a common understanding regarding future development plans in the area. Given that the RCWD is not a land use authority, it is vital for each involved community to consider their options related to the feasibility of proposed future development and to understand the repercussions of regional flooding. The capacity of existing conveyance systems and the potential issues that may result should then be determined. The next steps are the development of a regional stormwater management plan to summarize these future development conditions and issues, summarizing controls and/or infrastructure to mitigate flooding effects, and identifying responsible parties and timelines. Common tenets of these regional stormwater management plans should include maximization of volume reduction practices, balancing conveyance with storage, and consideration of interim conditions between the completion of developments and associated flood mitigation projects. While the District will look to the land use authority to lead development of these plans, it stands ready to assist as an active partner to its member communities.

District Policies

- **Policy:** Use the District rules and the Permit Review, Inspection, and Coordination Program to minimize the increase in the rate and volume of runoff resulting from land disturbance, land development, increases in the amount of impervious surface, and other changes to the landscape.
- **Policy:** Pursue collaborations with District partners to implement alternative measures and programs, such as the ACD 55 capacity allocation, the NE Lino Lakes Drainage Area Comprehensive Stormwater Management Program, and JD 4 stormwater master plan in Forest Lake, to minimize the effects of development in locations with constrained outlets.
- **Policy:** Pursue collaborations to preserve and manage the storage associated with the 100-year floodplain along and within waterbodies to reduce the frequency and severity of flooding caused by high water.
- **Policy:** Collaborate with other metropolitan watershed districts to develop consistent standards for stormwater infiltration and reuse practices.
- **Policy:** Foster, encourage, and fund where appropriate the implementation of regional Best Management Practices and Capital Improvement Projects to reduce the rate and volume of runoff.



3.2.4.3 Modeling and Mapping



Modeling and Mapping

Issue F-3: Results from modeling efforts (e.g. District future conditions model) are necessary for identifying flood risks and evaluating alternatives.

Goals and Measurements:

- **Goal F-3:** Maintain and update District hydrology and hydraulic models to reflect changing conditions and adapt to evolving technology.
- **Measure F-3:** Complete an update to the District-wide model (existing conditions) annually throughout the 10-year lifespan of the Plan.



Why These Issues Are Important

Modeling is crucial to addressing the potential uncertainty associated with managing water resources and understanding the implications of emerging issues, including rainfall frequency and magnitude trends, the use of monitoring data, and the interpretation of scientific and technical data, in decision-making processes. Results from modeling efforts are necessary for identifying flood risks and evaluating alternatives. Models can be helpful in assessing the resiliency of the public drainage system and major conveyances in the context of altered hydrology, identifying flood storage areas where projects may be most effective, estimating the timing and location of flood peaks, and mapping floodplain areas within the District. The District also utilizes its flood modeling and mapping to administer District rules for stormwater and floodplain management.

The District plans to complete maintenance of their modeling products to ensure the continued value of the models and their results. This maintenance includes annual updates to models to reflect changing infrastructure and land use, correcting deficiencies and errors, and adding new detail and data where and when it becomes available.

Continued >>



➤➤ Most notably, the NOAA Atlas 14 Precipitation Frequency Estimates have been incorporated into the model, which consider the available historic record including recent decades that have seen increasing rainfall in the District. The District has developed a District Modeling Update Policy to guide implementation of this maintenance effort.

Additionally, the District recognizes the growing concern over discrepancy between the floodplain mapped by the District and the Flood Insurance Rate Maps (FIRMs) published by FEMA and administered under local community ordinances. The District has assisted several partner cities with submitting current District modeling products to FEMA to improve the accuracy and relevance of the FIRMs. However, the process for updating FIRMs can be costly and time intensive, and many of the FIRMs within the District are still based upon outdated information, resulting in substantial discrepancies when compared with District flood maps. These discrepancies have led to confusion with landowners on the application of District and municipal rules and how to understand their potential risk for flooding. The District will continue to assist municipalities, landowners, and other stakeholders by providing current District modeling products for multiple purposes, including updating FIRMs.

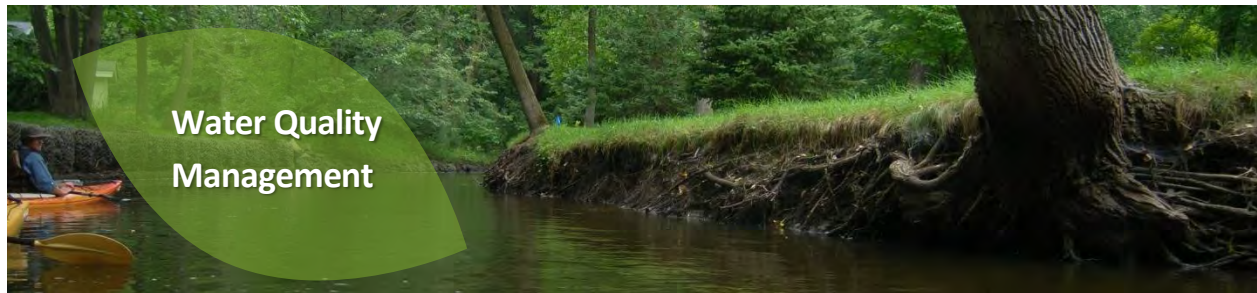
District Policies

- **Policy:** Minimize, avoid and reduce flood damages using a floodplain management program, including analyses completed by the District, which is focused on identifying and assessing flood prone areas, characterizing flood damages and regulating through RCWD Rule E the placement of structures within the floodplain.
- **Policy:** Recognize the potential uncertainty associated with managing water resources and understand the implications of emerging issues including rainfall frequency and magnitude trends, the use of monitoring data, and the interpretation of scientific and technical data, in the decision-making process.
- **Policy:** Complete annual model updates per the District Modeling Update Policy.
- **Policy:** Provide available District modeling and mapping products to stakeholders as requested to facilitate informed land use and stormwater management decisions.



3.2.5 Water Quality Management

3.2.5.1 Accelerated Sedimentation



Accelerated Sedimentation

Issue WQ-1: Accelerated sedimentation creates water quality problems and loss of storage in District resources (e.g. Long and Locke Lake sediment basins), requiring maintenance dredging.

Why These Issues Are Important

As changes in land use and rainfall patterns continue to occur within the RCWD, increases in runoff volume, flow, and velocity are experienced in portions of the watershed. These hydrologic changes can cause sedimentation rates to accelerate, leading to negative ecological and economic impacts. Important fish, mussel, and macroinvertebrate habitat is lost when sedimentation rates are high, causing declines in species diversity and population size.

Continued >>

Goals and Measurements:

- **Goal WQ-1a:** Employ District regulatory authority and collaborate with partners (e.g. state, municipalities) on inspections to minimize sediment loading from erosion associated with land disturbance, land development, increases in impervious surface, or other changes in landscape construction sites that contribute to accelerated sedimentation.
- **Measure WQ-1a:** Reduce the average number of sediment-related permit violations per active construction site to less than one per site per year by the end of the 10-year Plan lifespan.
- **Goal WQ-1b:** Pursue collaborations to implement agricultural and urban BMPs to address sediment delivery to District water resources.
- **Measure WQ-1b:** Annual implementation of cost share programs for water quality BMPs results in a total reduction of TSS loading to receiving waters of 100 tons over the 10-year lifespan of the Plan.
- **Goal WQ-1c:** Reduce in-channel sediment delivery throughout the RCWD, and particularly in Lower Rice Creek and Middle Rice Creek, through the implementation of programs and practices.
- **Measure WQ-1c:** Pursue implementation of at least one BMP that address in-channel sediment delivery in Lower Rice Creek, and one BMP addressing in-channel sediment delivery in Middle Rice Creek, over the 10-year life cycle of the Plan.



➤➤ Eroded sediment carries algae-fueling nutrients to downstream resources. Further, accelerated sedimentation can lead to a reduction in the storage capacity of lakes, ponds, and plunge pools, resulting in costly maintenance dredging efforts to restore storage capacity. Rice Creek flows through two lakes prone to rapid sedimentation: Long Lake and Locke Lake. Sedimentation basins have been constructed upstream of Long Lake and within Locke Lake that require maintenance dredging. The District also maintains other sediment basins such as those found on Ramsey County Ditch 2 within New Brighton’s Hansen Pond, on Ramsey County Ditch 4 within Roseville’s Oasis Pond, and on Ramsey-Washington Judicial Ditch 1 just upstream of U.S. Highway 61.

Quantifying the amount of sediment from the various upstream sources is critical to ensuring effective management. Studies, such as the *Lower Rice Creek Sediment Study and Plan* (2018), that quantify sediment sources and sinks within the District are a key strategy to define areas of concern and target implementation efforts. The RCWD will continue to seek partnerships that help with costs associated with quantifying sediment sources and sinks as well as maintenance dredging activity.

Sources of sediment include, but are not limited to, unstable portions of creeks and ditches, erosion from construction sites, lakeshore and bluff erosion, runoff from agricultural landscapes, and areas that urbanized prior to modern stormwater management rules and practices. While the RCWD has existing programs (e.g. construction site permitting/inspection) designed to mitigate issues associated with accelerated sedimentation, more work is needed to classify natural background vs. accelerated in-channel and shoreline erosion rates. Continuation of geomorphic monitoring (as outlined in the RCWD Monitoring Program Plan) will be necessary to better define these phenomena. In addition, completing an overland sediment source assessment will be important for identifying areas on the landscape that contributed the greatest amount of sediment downstream to District water resources.

District Policies

- **Policy:** Use the District rules and the Permit Review, Inspection, and Coordination Program to mitigate the increase in the rate and volume of runoff resulting from land disturbance, land development, increases in impervious surface, and other changes to the landscape.
- **Policy:** Foster, encourage, and fund the use of conservation and management practices, and the implementation of BMPs, to reduce the rate and volume of runoff.
- **Policy:** Implement the RCWD Water Quality Grant Program and Stormwater Management Cost Share. These programs promote water quality improvement by focusing on the reduction of phosphorus, sediment, and the overall volume of stormwater runoff leading to lakes and rivers.
- **Policy:** Identify opportunities for multi-purpose drainage management projects targeted to reduce sediment delivery from and into public drainage systems.
- **Policy:** Utilize existing studies that have identified and prioritized bank erosion sites on trunk conveyance systems. Refine past studies and conduct new diagnostic studies as needed.
- **Policy:** Pursue implementation of stream channel stabilization and restoration projects to reduce sedimentation into and along the RCWD’s trunk conveyance systems.



3.2.5.2 Aquatic Invasive Species



Aquatic Invasive Species

Issue WQ-2: Aquatic invasive species (AIS) may impact water quality in District resources. The District is involved in managing AIS for water quality purposes. AIS can also have deleterious effects on habitat and recreational lake use. The DNR is the primary State agency responsible for management and control of invasive species.

Goals and Measurements:

- **Goal WQ-2a:** Mitigate adverse water quality impacts of common carp by reducing and maintaining their density with a long-term, sustainable approach.
- **Measure WQ-2a:** Develop three system-specific common carp management plans, with priority to Clear-Mud-Howard Lakes, Peltier-Centerville Lakes, and Silver Lake by 2029. Implement plans over the long-term to reduce carp density below their adverse impact threshold (100 kg/ha) on a per system basis. Achieve 100 kg/ha carp density in the Long-Lino Chain within the 10-year life of the plan.
- **Goal WQ-2b:** Partner with lake associations and homeowner groups to manage curly-leaf pondweed to improve water quality and native plant diversity.
- **Measure WQ-2b:** Annually implement curly-leaf pondweed management programs in District lakes that have lake association and/or landowner support with DNR technical guidance.

Why These Issues Are Important

Aquatic invasive species (AIS) are species that are not native to the aquatic ecosystem under consideration, and whose introduction causes, or is likely to cause, economic or environmental harm or harm to human health. The DNR is the primary agency responsible for statewide coordination and implementation of invasive species control and management (see <https://www.dnr.state.mn.us/invasives/ais/index.html>).

The District's local involvement in AIS management varies depending on the species, as shown in **Figure 3-5**. Consistent with the District's mission, the RCWD takes an active role in managing those AIS that impact water quality or contribute to algae blooms and decreased water clarity. Other AIS that do not directly impact water quality, but may affect ecology or recreation, are not managed by the District. In these cases, the District may provide guidance and technical support to other agencies or organizations who lead management efforts for these AIS.

Continued >>



➤➤ Research suggests that curly-leaf pondweed (*Potamogeton crispus*) and common carp (*Cyprinus carpio*) are linked to water quality degradation and algae blooms. For this reason, the District plays an active role in managing these species. Curly-leaf pondweed is an invasive aquatic plant with an unusual life cycle that can grow at a very high density. Unlike native lake plants, curly-leaf begins growing each fall, survives under lake ice, grows rapidly to high density in the spring, and dies mid-summer. Displacement of native aquatic plants and decaying plant matter contribute to algae blooms. Due to its direct link with water quality, the RCWD has provided matching funds to lake associations for herbicide treatments to control curly-leaf pondweed. Additionally, District staff have procured permits and managed herbicide contractors.

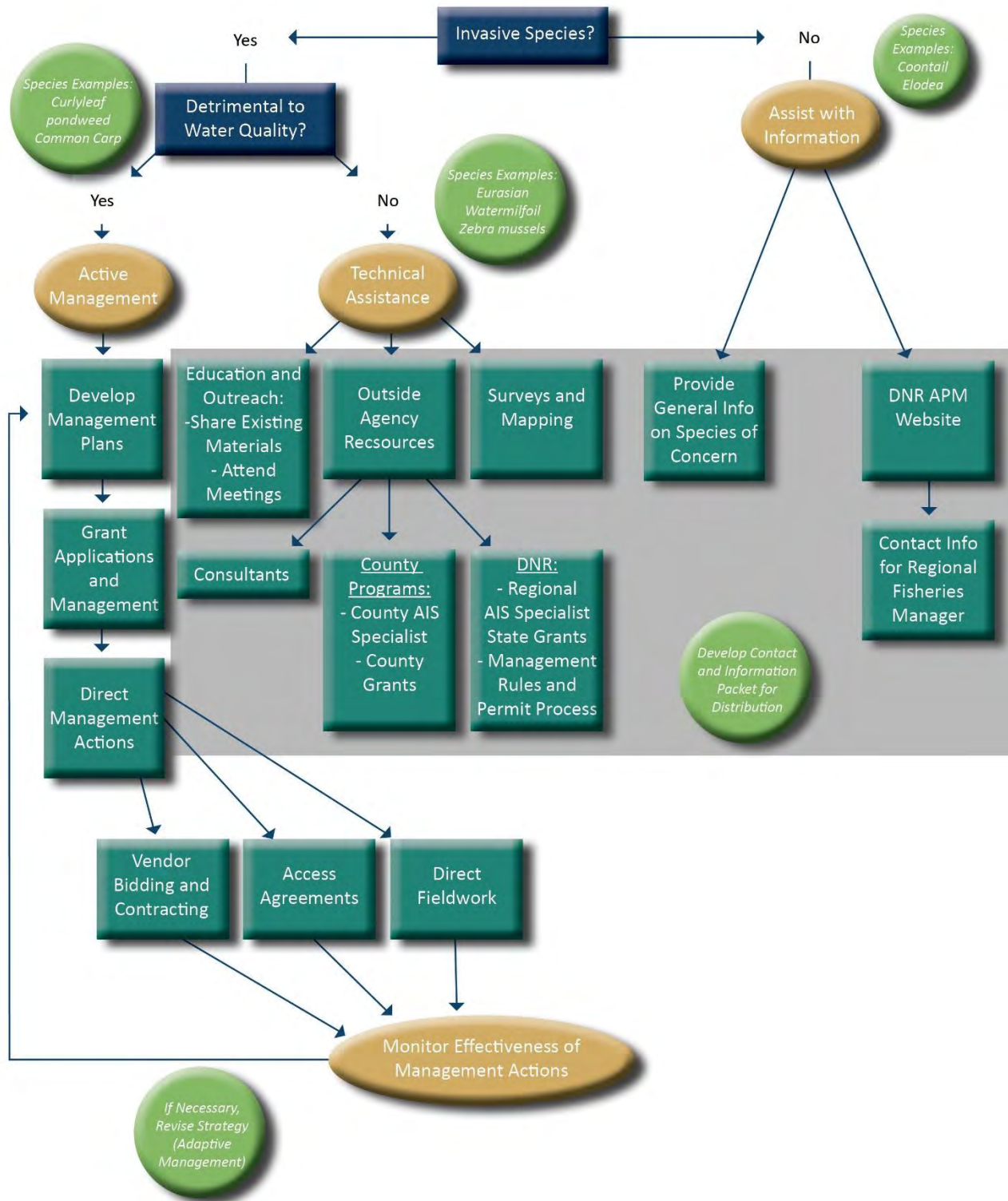
Common carp are large, omnivorous fish that are ubiquitous within the District. Their feeding disrupts shallow-rooted plants, muddies the waters, and releases nutrients (phosphorus) into the water causing increased algae blooms. Given the currently available management tools, it is not economically feasible to eradicate common carp from the District. Thus, the management goal for common carp is to attain and maintain a population density below which they negatively affect water quality (approximately 90 pounds/acre). These efforts are guided by the *Rice Creek Watershed District Common Carp Management Plan*, adopted by the RCWD Board of Managers in 2018. Additional system-specific plans that may be developed, such as the *Long Lake/Lino Chain of Lakes System – Carp Management Plan* (also adopted in 2018), will further refine carp management goals and activities within the District.

District Policies

- **Policy:** Engage in AIS management as specified in the approved RCWD Aquatic Invasive Species Policy (**Figure 3-5**).
- **Policy:** Utilize and engage citizens to promote sustainable stewardship of lakes.
- **Policy:** Promote and foster activities, which result in sustainable, healthy, aquatic ecosystems.



Figure 3-5: Rice Creek Watershed District Aquatic Invasive Species Services Flow Chart



3.2.5.3 Wetlands



Wetlands

Issue WQ-3: Managing wetlands is critical to many District interests including water quality and flood control. The availability of banked wetland credits (public or private) is vital to District projects.

Goals and Measurements:

- **Goal WQ-3:** Manage wetlands in a manner which improves diversity and ecological integrity on a District-wide basis, consistent with the Wetland Conservation Act and augmenting Comprehensive Wetland Protection and Management Plans (CWPMP) and local opportunities for preservation, enhancement, and restoration, while balancing multiple resource issues.
- **Measure WQ-3:** Continue implementation of the WCA and CWPMPs; Complete annual reports summarizing implementation of the CWPMPs.



Why These Issues Are Important

RCWD's jurisdictional area includes many wetlands (**Figure 2-10**). Wetlands are particularly abundant in the northern, less developed portions of the District, and are commonly located adjacent to lakes, rivers, streams and drainage systems. Some of the wetlands have historically been partially or completely drained, modified, filled, or converted to other uses. Since that time, the public has recognized the value of wetlands and afforded them with special regulatory protections. Wetlands within the District present unique water quality and quantity management challenges as they cycle between acting as a phosphorus source and a phosphorus sink, while providing critical natural flood storage.

The RCWD is the Local Government Unit (LGU) responsible for the implementation of state Wetland Conservation Act (WCA), except for within the cities of Hugo and Circle Pines, or associated projects on state lands, such as those involving MnDOT and the DNR. The goal of the WCA is to achieve no net loss in the total acreage function and value of Minnesota wetlands. Both WCA and District rules specify sequencing processes to avoid and minimize wetland impacts and replacement requirements for unavoidable impacts to wetlands.

Continued >>



➤➤ In addition, the RCWD maintains a set of rules that govern wetlands within special areas of the District, which are known as CWPMP areas (**Figure 3-6**). The CWPMP rules were developed as a component of Resource Management Plans (RMPs), which were developed for several locations in the District experiencing rapid urbanization, and included wetland management, public drainage systems, and water quality/quantity management considerations. The CWPMPs, RMPs, and Rule F were implemented as an effort to balance the responsibilities of the RCWD as LGU for the WCA, drainage authority for MS 103E public drainage systems, and as a manager of water quality and quantity.

Throughout the years of administering the RMP rules, the District has corrected and removed, through rule revision, problematic facets of the rules related to the RMPs and wetland management under the CWPMPs. The rule revisions have clarified language and provisions and removed rule standards that proved to be difficult to apply at the site scale. The refinement of these rules increased the District’s efficiency in implementing the rules and made them easier for applicants to understand, while still maintaining the original intent of the RMPs. As such, the District is no longer implementing the RMPs as independent special rules but has maintained the wetland management provisions presented through the CWPMPs.

The goals outlined in the CWPMPs are still a priority for the District and will continue to be implemented through the associated Rule F. Minor revisions to Rule F (CWPMP) may continue to be expected to modify some of the standards that are problematic to implement. The District continues to seek the involvement of municipal partners in the implementation of the CWPMPs, since their role as land use authorities is reliant upon the understanding of wetland complexes existing on the landscape and the associated rules for activities affecting these wetlands.

In addition to the wetlands regulated under WCA, a separate class of wetlands are defined by Minnesota Statute 103G as “public water” and are regulated by the DNR (**Figure 2-10**). The statutory definition of public waters includes public waters and public water wetlands. Public water wetlands include all types 3, 4, and 5 wetlands as defined in United States Fish and Wildlife Service (USFWS) Circular No. 39 (1971 edition), not included within the definition of public waters, that are 10 or more acres in size in unincorporated areas or 2.5 acres or more in incorporated areas. The DNR is the LGU for all Protected Waters and Public Water Wetlands unless the DNR waives the authority to the local LGU.

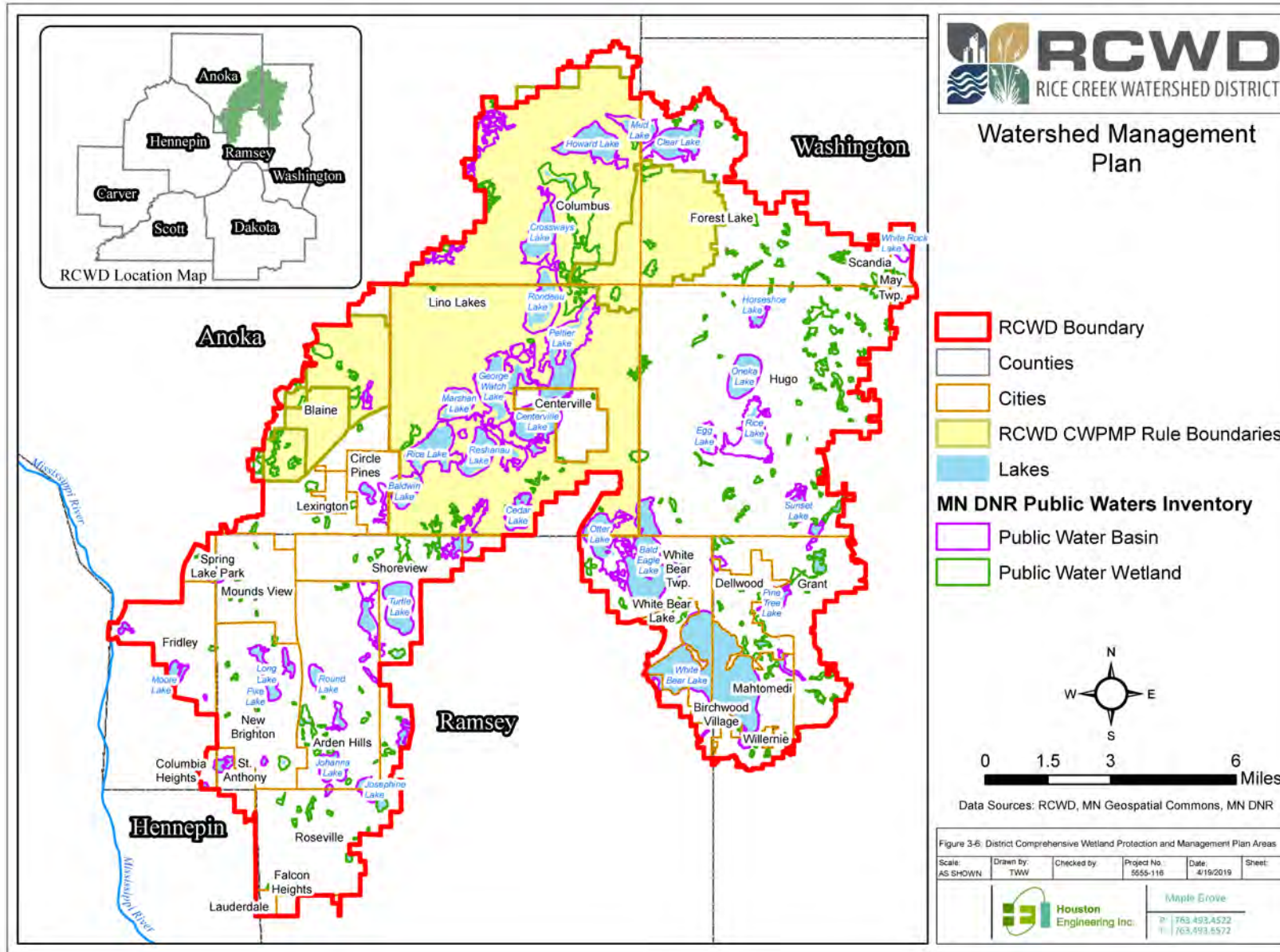
The U.S. Army Corps of Engineers also has responsibility for regulating the filling of wetlands under Section 404 of the Clean Water Act. The various state and federal agencies, rules, and laws involved can be complex and confusing for communities implementing municipal projects, developers, landowners and the general public.

District Policies

- **Policy:** Manage wetland resources using the flexibility afforded by state and federal rules, including the implementation of CWPMPs.
- **Policy:** Manage wetlands and establish wetland management goals based on benchmark, reference, and ecological condition.
- **Policy:** Operate a wetland permit program as an integrated component of the District’s development review program, both under watershed district regulatory authority and as the LGU responsible for implementing the WCA.



Figure 3-6: Rice Creek Watershed District Comprehensive Wetland Protection and Management Area



3.2.5.4 Nutrient Enrichment, Algae, and Cultural Eutrophication



Nutrient Enrichment, Algae, and Cultural Eutrophication

Issue WQ-4: Nutrient enrichment and cultural eutrophication have resulted in increased frequency and severity of algae blooms in District lakes, impacting public recreation and ecological integrity. Many lakes do not meet state nutrient standards.

Goals and Measurements:

- **Goal WQ-4:** Protect and improve water quality conditions in District resources by managing nutrient loading and restoring aquatic ecosystems.
- **Measure WQ-4:** Decrease the number of District lakes classified as "restoration" and increase the number of District lakes classified as "protection" by 2 over the next 10 years using the District's Lake Classification System outlined in Section 2.5.1.1. Annual implementation of cost share programs for water quality BMPs results in a cumulative total reduction of total phosphorus loading to receiving waters of 300 pounds per year over the 10-year lifespan of the Plan.



Why These Issues Are Important

Nutrient enrichment, or "eutrophication", is caused by an increase in nutrient loading (phosphorus and nitrogen) from natural background levels. While eutrophication is a naturally occurring process, accelerated nutrient delivery to surface water caused by humans is termed "cultural eutrophication". Often, this accelerated nutrient delivery comes from changes in watershed land use from pre-settlement conditions. In most freshwater systems, phosphorus is the primary limiting factor to the growth of algae. When phosphorus concentrations are high, algae blooms are often stimulated, resulting in conditions that may not be suitable for aquatic recreation and/or aquatic life. Shallow lakes, deep lakes, wetlands, and riverine systems all respond differently to nutrient enrichment.

Shallow lakes often exist in one of two stable states: the clear-water state, with abundant aquatic plants and low nutrient concentrations, and the turbid-water state, with few plants, high nutrient concentrations, and frequent algae blooms. Nutrient enrichment can "flip" shallow lakes from the clear-water state to the turbid-water state. Enrichment can occur via typical external nutrient loading (i.e. stormwater or agricultural runoff), or from disruption of the lake ecosystem.

Continued >>



➤➤ Invasive fish, such as common carp (*Cyprinus carpio*), are a prime example of an ecosystem disruptor; they can dramatically alter a shallow lake ecosystem by destroying native plants and stirring-up nutrient-rich lake sediments. Native plants stabilize sediment, take-up and store nutrients, and provide refuge for algae-eating zooplankton. Native plants are essential to improve and protect water clarity. Nearly all shallow lakes lacking native plants are in the turbid-water state and suffer from frequent algae blooms. Alternatively, some invasive plants (e.g. curly-leaf pondweed) can be detrimental to a healthy shallow lake ecosystem, and directly contribute to internal nutrient loading.

In deep lakes, algae blooms are a more singular characteristic response to excess phosphorus delivery; dramatic shifts in lake ecology are typically not observed in the short-term. However, if nutrient delivery to deep lakes is not addressed over time, enhanced algal productivity and other long-term shifts in lake ecology become considerably more difficult to reverse. As with shallow lakes, nutrient enrichment can occur via external loading from stormwater and agricultural runoff. Internal loading via sediment-phosphorus release can also play a significant role in deep-lake nutrient dynamics – especially in lakes that have a long history of watershed loading, which can lead to sediment nutrient enrichment.

In riverine systems, the amount of time nutrients are available to algae (i.e. residence time) is the primary response factor. If residence time is low, enhanced algal productivity may not be observed. Conversely, if residence time is high, the response may be similar to a lake system.

Several lakes and streams in the RCWD have issues related to nutrient enrichment and cultural eutrophication. In 2008, the State of Minnesota approved nutrient water quality standards for lakes, and in 2015, approved river eutrophication standards; these standards were developed by the MPCA to comply with the federal Clean Water Act. The 303(d) list of Impaired Waters, created and regularly updated by the MPCA, identifies waterbodies not meeting state standards for their identified beneficial uses, typically as a recreational resource or their ability to support desired aquatic life. A list of lakes in the RCWD currently impaired for excess nutrients is provided in **Table 2-4**. With the river eutrophication standards being relatively new at the time of this plan update, no stream/river systems have been listed as impaired in the District, but that is subject to change based on future monitoring efforts and MPCA assessments.

Under governance of the Federal Clean Water Act, bodies of water placed on the impaired waters list must undergo a Total Maximum Daily Load study (TMDL). A TMDL study is a process that determines the sources of an identified pollutant and allocates pollutant load reductions, or a “pollution diet”, necessary to achieve water quality standards. Once a TMDL has been completed, an implementation plan must be developed to identify activities necessary to attain designated beneficial uses. Participation in the development of TMDL implementation plans is a key strategic interest of the RCWD. **Table 3-3** is a list of approved lake nutrient TMDLs within the RCWD, and the associated Load Allocation Phosphorus Reduction to achieve the water quality standard. Load Allocation Reductions are high in Baldwin, George Watch, Marshan, Peltier, and Rice Lakes due to large internal and upstream loads determined by the TMDL. Annual total phosphorus load reduction goals have also been provided for applicable District lakes in **Table 2-3**.

Continued ➤➤



Table 3-3: RCWD Excess Nutrient TMDLs and Associated Load Allocation Daily Phosphorus Reductions

Impaired Water	Lake or Stream Identifier	Affected Use	Year* Listed	Pollutant or stressor	TMDL Approval	TMDL Load Allocation Phosphorus Reduction (lbs/year)*
Baldwin Lake	02-0013-00	Aquatic Recreation	2010	Excess Nutrients	2013	7,332**
Bald Eagle Lake	62-0002-00	Aquatic Recreation	2002	Excess Nutrients	2012	2,169
Centerville Lake	02-0006-00	Aquatic Recreation	2002	Excess Nutrients	2013	56**
East Moore Lake	02-0075-01	Aquatic Recreation	2002	Excess Nutrients	2015	0.00***
George Watch Lake	02-0005-00	Aquatic Recreation	2002	Excess Nutrients	2013	13,383**
Golden Lake	02-0045-00	Aquatic Recreation	2002	Excess Nutrients	2009	245****
Island (Basin S. of I-694)	62-0075-01	Aquatic Recreation	2002	Excess Nutrients	2015	26**
Island (Basin N. of I-694)	62-0075-02	Aquatic Recreation	2002	Excess Nutrients	2015	27**
Little Johanna Lake	62-0058-00	Aquatic Recreation	2004	Excess Nutrients	2015	176**
Marshan Lake	02-0007-00	Aquatic Recreation	2002	Excess Nutrients	2013	9,113**
Peltier Lake	02-0004-00	Aquatic Recreation	2002	Excess Nutrients	2013	9,849**
Pike Lake	62-0069-00	Aquatic Recreation	2002	Excess Nutrients	2015	142**
Reshanau Lake	02-0009-00	Aquatic Recreation	2006	Excess Nutrients	2013	577
Rice Lake	02-0008-00	Aquatic Recreation	2010	Excess Nutrients	2013	9,345**
Silver (West) Lake	62-0083-00	Aquatic Recreation	2002	Excess Nutrients	2010	9**
South Long Lake	62-0067-02	Aquatic Recreation	2002	Excess Nutrients	2015	601**
Valentine Lake	62-0071-00	Aquatic Recreation	2002	Excess Nutrients	2015	22**

*Load Allocation Phosphorus Reduction was calculated by subtracting the total TMDL Load Allocation from the determined existing load, rounded to nearest whole number.
 **Based on growing season load (June 1 through September 30, or 122 days)
 **East Moore Lake TMDL has only Wasteload Allocations.
 ****Based on 2020 condition.

➤➤ The RCWD has worked diligently to address the impacts of nutrient enrichment and cultural eutrophication by conducting diagnostic studies and assessments to mitigate excess nutrient loading to District waterbodies.

Table 3-4 is a list of works completed by the RCWD that aim to address 303(d) impairments and protect District resources already meeting water quality standards. These studies and assessments are essential tools in targeting actions, such as implementation of best management practices (BMPs), that diminish the effect of cultural eutrophication and will be relied upon by District staff to prioritize protection and TMDL implementation efforts. Further, the breadth of these works allows the RCWD to adequately and equitably apportion the benefits of lake management across the watershed. While these works all help to identify where BMPs can be targeted, more in-depth studies such as the Southwest Urban Lakes Study (2009) and Clear Lake Diagnostic Study and Management Plan (2012) provide detailed nutrient budgets that allow for a much better understanding of lakeshed nutrient dynamics, and how a given lake may respond to prioritized implementation activities.

Table 3-4: Studies Addressing 303(d) Impairments and Protecting District Lakes Meeting Standards

Study	Year Completed
Southwest Urban Lakes Study	2009
Rice Lake Subwatershed Stormwater Retrofit Assessment	2009
Golden Lake Stormwater Retrofit Assessment	2011
Clear Lake Diagnostic Study and Management Plan	2012
Moore Lake Stormwater Retrofit Analysis	2013
South Bald Eagle Lake Subwatershed: Urban Stormwater Retrofit Analysis	2016
Southeast White Bear Lake Stormwater Retrofit Analysis	2017

District Policies

- **Policy:** Encourage landowners and cities to improve water quality, reduce runoff volume, and enhance ecological systems using cost-share programs.
- **Policy:** Implement the RCWD Water Quality Grant Program and Stormwater Management Cost Share. These programs promote water quality improvement by focusing on the reduction of phosphorus, sediment, and the overall volume of stormwater runoff leading to lakes and rivers.
- **Policy:** Utilize and engage citizens to promote sustainable stewardship of lakes.
- **Policy:** Collaboratively manage lakes and shoreland resources, by empowering lake associations, lakeshore residents and communities, and engaging state agency management efforts.
- **Policy:** Develop attainable water quality targets, while recognizing water quality standards developed by the State of Minnesota and natural year-to-year variability in water quality.



3.2.5.5 Surface Water Monitoring



Surface Water Monitoring

Issue WQ-5: Water quality and quantity data are needed to assess and effectively manage water resources in the District.

Goals and Measurements:

- **Goal WQ-5:** Monitor District resources to aide in the planning and evaluation of RCWD management activities.
- **Measure WQ-5:** Annually update and implement the RCWD Monitoring Schedule, guided by the RCWD Monitoring Program Plan (**Appendix F**).



Why These Issues Are Important

Surface water monitoring is a core function of the RCWD. The Surface Water Monitoring and Management Program (see **Section 4**) is guided through the Monitoring Program Plan (**Appendix F**). The Monitoring Program Plan establishes specific monitoring goals and objectives, describes program organization, and identifies data quality objectives. It details the monitoring and measurement of flow, stage, physical characteristics (e.g. temperature and dissolved oxygen), pollutant concentrations and loads, and sediment dynamics. Of specific note, chloride monitoring is not currently identified in the Monitoring Program Plan. Future revisions of the Monitoring Program Plan will outline a chloride monitoring strategy that the RCWD will use to assist with regional chloride management efforts. During future revisions, the District will also consider the need for additional monitoring efforts aimed at emerging contaminants consistent with the District's mission. The physical locations of District monitoring efforts are identified in the plan, though they are subject to change annually based on the type of monitoring work being conducted.

Continued >>



➤➤ Monitoring data collected is used to inform an array of RCWD activities. First, monitoring at long-term, fixed sites provides insight on resource condition and long-term water quality trends. This information is important for prioritizing implementation activities that aim to restore impaired waters (on the 303(d) list) and protect resources currently meeting state standards. Second, the RCWD conducts synoptic (project specific) sampling designed to detect and quantify changes resulting from management. Synoptic monitoring allows District staff to determine if projects achieve predicted water quality benefits, if similar projects should be pursued in the future, and how similar projects might be optimized to attain greater pollutant reductions. Lastly, one-time (investigative) samples are also collected by the District, typically to address a perceived transient or short-term water quality problem. This type of monitoring can be useful in determining pollutant “problem areas” that may necessitate establishment of a long-term site or a special study to better define the problem. Long-term, synoptic, and one-time monitoring data are all used in the calibration of hydrologic, hydraulic, and water quality models that are relied upon by the District in implementation, collaboration, and regulatory efforts.

In addition to monitoring efforts conducted by RCWD staff, collaborative efforts with volunteers and District partners play a vital role in collecting water quality data. Through the Metropolitan Council’s Citizen-Assisted Monitoring Program (CAMP) volunteers monitor many lakes throughout the RCWD. Several other organizations monitor District lakes and share collected data with the RCWD. Further, the District partners with the United States Geological Survey (USGS) to operate a stream gauging station on Rice Creek in Mounds View. Working cooperatively results in more information collected each year, allowing the District to focus on management plans and more specialized research projects. Volunteer and partner monitoring efforts are further described in the Surface Water Monitoring and Management Program.

District Policies

- **Policy:** Regularly communicate with the District’s engineer and other partners to identify monitoring data needs for calibrating hydraulic, hydrologic, and water quality models.
- **Policy:** Maintain long-term monitoring sites used to assess resource condition and detect long-term trends.
- **Policy:** Whenever possible, front-load all District management projects with monitoring plans designed to detect changes.
- **Policy:** Develop a regular geomorphic and habitat monitoring program for stream and ditch resources in the District.
- **Policy:** Consider project-specific monitoring protocols in the design process of all capital improvement projects constructed by the District.



3.2.5.6 Surface Water/Groundwater Interactions



Surface Water/Groundwater Interactions

Issue WQ-6: Surface water can infiltrate into the soil and recharge groundwater, creating implications for managing runoff, groundwater dependent natural resources, and groundwater supplies. Many agencies and organizations are responsible for managing various aspects of groundwater within the District.

Goals and Measurements:

- **Goal WQ-6:** Protect groundwater-reliant District resources by implementation of surface water management activities.
- **Measure WQ-6:** Collaborate with partners to promote implementation of at least 1 BMP annually that benefits groundwater-reliant natural resources, such as stormwater infiltration practices or stormwater reuse projects.



Why These Issues Are Important

Surface water/groundwater interactions within the RCWD are described in plan **Section 2.3**.

Concerns about the sustainability of groundwater supplies not only impact municipal demands, but also resources that may depend on groundwater, such as wetlands, lakes, and streams.

The District's role in the management of groundwater resources is primarily as a collaborator and advisor through funding stormwater reuse projects and directing infiltration where appropriate. Recognizing the important relationship between surface water and groundwater resources, the District may choose to help fund projects which demonstrate the potential for reduced groundwater use and pollutant loading reduction. The RCWD is also responsible for conforming with groundwater plans developed by relevant counties and will review and submit comments to the DNR for water appropriation permits.

The District considers groundwater resources during the RCWD permit review process. Requirements for controlling the amount of runoff volume through infiltration are adjusted in a proposed development location when it shows evidence of previous contamination or an inability to infiltrate runoff because of localized soil conditions. **Continued >>**



➤➤ As part of the permit review process, stormwater plans may be reviewed against priorities established in county groundwater plans.

Stormwater reuse for irrigation is a management tool with the potential for multiple benefits, including reduced groundwater use, managed runoff volumes, and decreased surface water pollutant loading. These projects harvest and reuse stormwater for irrigation on golf courses, public parks, turf grasses, and other landscaping. The irrigated, reclaimed water is then allowed to either evaporate or percolate through soils, potentially recharging local groundwater supplies. Irrigation water reuse projects benefit groundwater resources by eliminating the need to pump valuable groundwater supplies for residential/industrial irrigation.

Groundwater that is saved can then be utilized for drinking water supplies or resources that may depend on groundwater, such as wetlands, lakes, and streams (RCWD, 2016). The stormwater captured in these projects would otherwise drain into streams and lakes, carrying nutrients and other pollutants. There are several water reuse projects operating within the District, and there is interest within the District to implement additional projects. However, funding availability and an uncertain regulatory environment creates hurdles for pursuing additional projects.

Many agencies and organizations are responsible for managing the various aspects of groundwater within the RCWD. Cities, townships, counties, the Minnesota Department of Health (MDH), and the MPCA all have responsibility for managing groundwater used as drinking water. Groundwater withdrawals are permitted by the DNR. In 1987, metropolitan counties were given the authority to prepare and adopt groundwater plans through MS 473.8785 (now MS 103B.255) that provided a mechanism for counties to set priorities, address issues, and build local capacity for the protection and management of groundwater. Washington County adopted its second-generation groundwater plan in 2014. The Ramsey Conservation District (RCD) prepared updates to the 1995 groundwater plan in 2009, but the county board declined to submit the draft for BWSR approval. Anoka County does not have an adopted groundwater plan. Rather, it addresses groundwater related issues in its Water Resources Report, which is intended to be published every 5 years. Watershed districts typically serve in an advisory capacity when a plan is developed.

District Policies

- **Policy:** Continue to evaluate and monitor county groundwater plans and groundwater related programs and participate in collaborative efforts related to groundwater resources.
- **Policy:** Achieve a better understanding of local surface water and ground-water dynamics and interactions.
- **Policy:** Guide the use of stormwater infiltration BMPs in sensitive areas such as vulnerable DWSMAs.
- **Policy:** Guide the use and promotion of stormwater reuse irrigation practices to promote recharge and offset groundwater use for non-essential irrigation.
- **Policy:** Support agencies and local units of government through the Permit Review, Inspection, and Coordination Program.



3.2.6 Funding

3.2.6.1 Financing and Funding Sources



Financing and Funding Sources

Issue FD-1: The District needs reliable sources of funding and sound financial management policies in order to carry out its mission.

Goals and Measurements:

- **Goal FD-1:** Develop and implement an effective framework for sourcing District and external financing and revenue to implement projects and programs to achieve the District's goals.
- **Measure FD-1:** Develop effective and actionable framework by 2022. Implementation of developed framework to assess 100% of District program and capital improvement projects to address financing and funding needs consistent with the framework.



Why These Issues Are Important

The financing and funding of District efforts are carried out using a variety of funding methods, aimed to provide a balance between equity in paying for activities and a streamlined process minimizing administrative costs. These financial methods can be grouped into two subcategories: 1) District-derived funds and 2) outside funding sources. These funding sources are introduced in this section to orient the reader but are further expanded upon in **Section 5**.

There are several District-derived funding mechanisms available (**Table 3-5**). In order to both serve the District as a whole and address specific issues, the RCWD uses a variety of funding sources through MS 103B, 103D and 103E. The ad valorem tax is applied as a property tax to all taxable property within the District. Under MS 103D and 103B, this tax can be used for a variety of operations, including implementation and maintenance of District projects through programs, operation and maintenance of District facilities, and general administrative expenses.

Continued >>



➤➤ The District has also established water management districts (WMDs) within the watershed for the purpose of collecting revenues and paying for costs of projects initiated under 103D. Fees and stormwater charges can be collected by the District based on services provided for permit application and review, and projects with local benefits. Lastly, under 103D and 103E, District projects may be paid for by assessment of the benefited properties, as determined by appraisers or viewers.

Table 3-5: Summary of District-Derived Funding Sources

District-Derived Funding Mechanism	District Operation
Ad Valorem Levies	Administration
	District-wide programs
	Projects of common benefit
	Operations and maintenance of District facilities
Water Management District (WMD) Charges	Projects within a WMD (103D)
Fees	Permit application and reviews
Stormwater Charges	Projects with defined local benefits
Benefitted Lands Assessment	Petition projects under watershed law (103D)
	Petition projects under watershed law (103E)

In addition, there are several funding mechanisms available to the District from outside resources, including state grant programs and legislative funding dollars. State grant programs include Clean Water Fund dollars, which have historically been highly competitive. In 2017, the Board of Water and Soil Resources launched the Watershed-Based Funding Pilot Program, intended to move towards more systematic Clean Water Funding for local water management authorities on a watershed basis for the purposes of implementing comprehensive watershed management plans. As this program is new, there are uncertainties about how much funding will be allocated on an annual basis, and how funds will be distributed among partnering counties. The District may also receive direct legislative funding dollars in the form of state bonding. This form of funding requires intensive lobbying efforts.

Lastly, the District may choose to borrow funds to finance activities over the interim timeframe between project execution and receipt of dedicated project funding. For example, the District previously received a low-interest Clean Water Partnership Act Revolving Fund loan from the MPCA for a whole-lake alum treatment. Alternatively, the District may borrow funds from federal, state, member county, or financial institutions authorized to do business in Minnesota under 103D.

Separate from funding sources are challenges regarding who is fiscally responsible for project costs within the District. The RCWD has a long history of applying the concept that the responsibility for completing a project should be borne by and in proportion to the relative benefits received.

Continued ➤➤



➤➤ When the benefit is shared District-wide, ad valorem revenue is used. Projects that are regional or District-wide in nature (e.g. flood damage reduction along trunk conveyance systems and public drainage systems, ecological impact avoidance and water quality), are also funded with ad valorem revenue. There can also be a municipal benefit, based on the magnitude of the runoff event. When benefit accrues locally (e.g. municipal drainage system improvement), the cost is borne locally (e.g. by the municipality or water management district). Projects often provide a mixture of regional and local benefit, and therefore cost may need to be allocated by components within an individual project (**Section 5**). The complexity of identifying a project's benefit requires project cost allocation to be considered on a case-by-case basis.

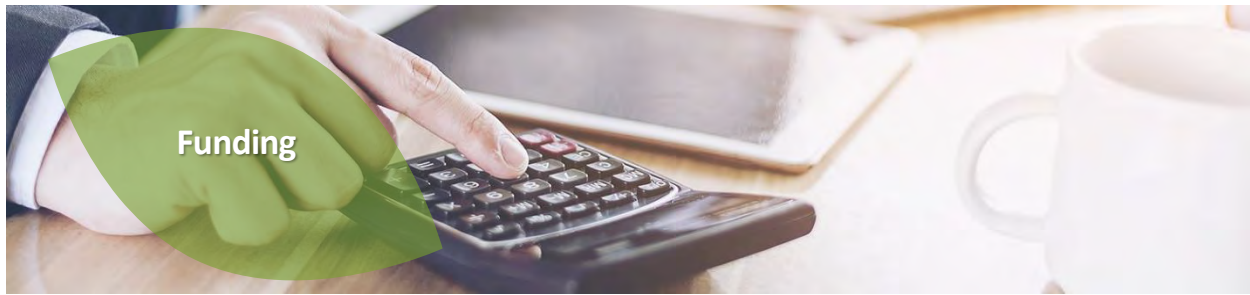
It is important to establish sound financial management policies to ensure financial stability of the District for the benefit of residents and businesses. Fund balance reserves are an important component in ensuring the overall financial health of a community by giving the District enough funds to meet contingency and cash-flow timing needs. Fund balance may also be accrued from time-to-time as a means for the District to self-finance major capital improvement projects. In establishing an appropriate fund balance, the District needs to consider the demands of cash flow, need for emergency reserves, ability to manage fluctuations of major revenue sources, credit rating and long-term fiscal health.

District Policies

- **Policy:** As specified in the General Fund Balance Policy, the District will maintain an unassigned General fund balance of not less than 40% of budgeted operating expenditures; however, this need could increase and will fluctuate with each year's specific budget objectives.



3.2.6.2 Funding Distribution



Funding Distribution

Issue FD-2: The Board of Managers continues to refine its process for prioritizing the funding and implementation of projects and programs using a variety of funding sources that are available to the District.

Goals and Measurements:

- **Goal FD-2:** Prioritize funding of projects and programs to most effectively meet the goals of the District.
- **Measure FD-2:** As a part of each annual budgeting cycle, re-evaluate prioritization of District capital projects for the upcoming 5 year period.



Why These Issues Are Important

The Board of Managers has final responsibility in prioritizing funding and implementation of projects and programs to achieve the goals of the District. The Board strives to prioritize requests for financial assistance to preferentially place District-led and cooperative regional projects within those geographic locations which provide the most flood control and water quality benefits to the region. The intent of prioritizing is to facilitate decisions regarding which projects provide the greatest benefit within the District compared to the fiscal investment, while realizing this may not always be possible.

Some of the factors which the Board of Managers may use to establish priority include:

- Location;
- Sustainability;
- Consistency with District Programs;
- Consistency with local plan priorities;
- Capital and maintenance costs;
- Expected benefits; and
- Multiple benefits.

Continued >>



➤➤ The RCWD is committed to treating its LGUs, County partners, and landowners equitably; addressing needs and concerns in a respectful and responsive manner. When a new concern and/or request for assistance is received, RCWD will evaluate the issue considering the urgency of the problem, the nature of the District’s responsibility, and the capacity of the District to respond, including available funding and staffing considerations. In all cases, the matter will be fairly considered and evaluated. Since District water resources are not confined by county, municipal, or other political boundaries, the regional benefit from these projects is not limited by these boundaries, therefore prioritization should not be based on political boundaries within the District. Rather, decisions need to be made by geographic and hydrologic needs. When the prioritization of proposed projects based on the factors above are comparable, the Board will strive to ensure that geographic funding equity is maintained across the District.

District Policies

- **Policy:** The District will develop metrics and/or processes to assist with prioritization of projects.
- **Policy:** The District will complete an annual review of proposed capital improvement projects for the forthcoming five-year period and identify the proposed timing and prioritization of these projects.



3.2.7 Collaborations

3.2.7.1 Collaborations with Local, State, and Federal Partners



Collaborations with Local, State, and Federal Partners

Issue C-1: The RCWD has a long history of collaboration and partnership with federal, state, and local agencies. However, demands for District collaboration continue to increase.

Goals and Measurements:

- **Goal C-1:** Continue collaboration with local, state, and federal partners through project implementation, outreach programs, and city/county partner meetings to better carry out the District’s mission.
- **Measure C-1:** Hold one or more city/county partner meetings annually. Annually implement cost-share programs with public partners.



Why These Issues Are Important

The District partners extensively with its 28 member cities and townships and 4 counties (Washington, Ramsey, Anoka and Hennepin). Much of this local collaboration is focused around funding or coordinating implementation of capital improvement projects and programs (see **Section 4**) consistent with the District’s mission. The District also aids municipalities in coordination of Local Water Planning efforts (see **Section 6**).

The District also has a long history of collaboration with state and federal entities to better carry out its mission. For example, as the LGU responsible for implementing the WCA, the District frequently coordinates with the U.S. Army Corps of Engineers for permitting impacts to both WCA and public water wetlands under Section 404 of the Clean Water Act. Similarly, the RCWD coordinates and collaborates with state agencies like the MPCA, MDH, and DNR on issues such as surface and groundwater quality and quantity. The District also collaborates with other watershed districts located throughout the Twin Cities metropolitan area on issues common to these metropolitan watershed districts, including volume control standards and water reuse viability.

Continued >>



➤➤ The District’s communication and outreach programs are a critical component in achieving these collaborations. In recent years, the District has initiated twice yearly city/county partner meetings to discuss issues and programs impacting the District and its partners. Through these efforts, the District has been able to better engage its partners to understand needs and increase collaboration.

District Policies

- **Policy:** Develop educational materials and programs for targeted audiences including local governments, citizens, educators and the development community.
- **Policy:** Hold one or more city/county partner meetings annually to convey information on current issues and programs to District partners and to receive feedback on specific needs from these partners.



3.2.7.2 Collaborations with Private Partners



Collaborations with Private Partners

Issue C-2: The District must collaborate with private partners (e.g. landowners, businesses) to better carry out its mission.

Goals and Measurements:

- **Goal C-2:** Collaborate with private partners through voluntary action or cost-share incentives by effectively implementing the Natural Waterway Management Program, Stormwater Management Cost Share, and Water Quality Grant Program to achieve District and landowner goals.
- **Measure C-2:** Annually fund existing cost-share incentive programs.



Why These Issues Are Important

The District's collaboration with private landowners and businesses takes many different forms. In addition to collaborating on BMPs through the District's regulatory program, the District actively engages and funds private projects through the Water Quality Grant Program and the Mini-Grants Program. These programs provide multiple benefits, including targeting sediment and nutrient removals from stormwater runoff in critical locations, and fostering a culture of land stewardship within the community. Applications for these grants are evaluated based on their overall likelihood in achieving the program's goals. Private landowners are also eligible to apply for capital improvement grants through the District's Stormwater Management Cost Share Program.

Collaboration with private landowners is often required when the District fulfills its obligation of maintaining public drainage systems and District facilities. Much of the land surrounding the public drainage systems and District facilities is held in private ownership. While the District has the right to access these properties to complete inspection and maintenance, the District recognizes a need to avoid disruption of valued site features. Therefore, the District routinely collaborates with these private landowners to develop strategies for accessing and completing the work in a way that provides mutual benefit to the District and landowner. **Continued >>>**



➤➤ Although the District’s authority to manage non-103E drainage systems and watercourses is limited, the District does engage in collaboration with private partners to address existing issues. For instance, Rice Creek is designated as a recreational water trail for canoers and kayakers (Figure 3-7). The RCWD Natural Channel Management Policy was developed to specify triggers and actions related to maintaining these systems. Inclusive in this policy are actions for managing the Rice Creek Water Trail for recreational use. Maintenance activities performed by the District as part of the Natural Waterway Management Program include, but are not limited to, the removal of fallen trees, debris jams, and beaver dams. This work often requires permission and collaboration from private landowners to access the channel and complete maintenance activities.

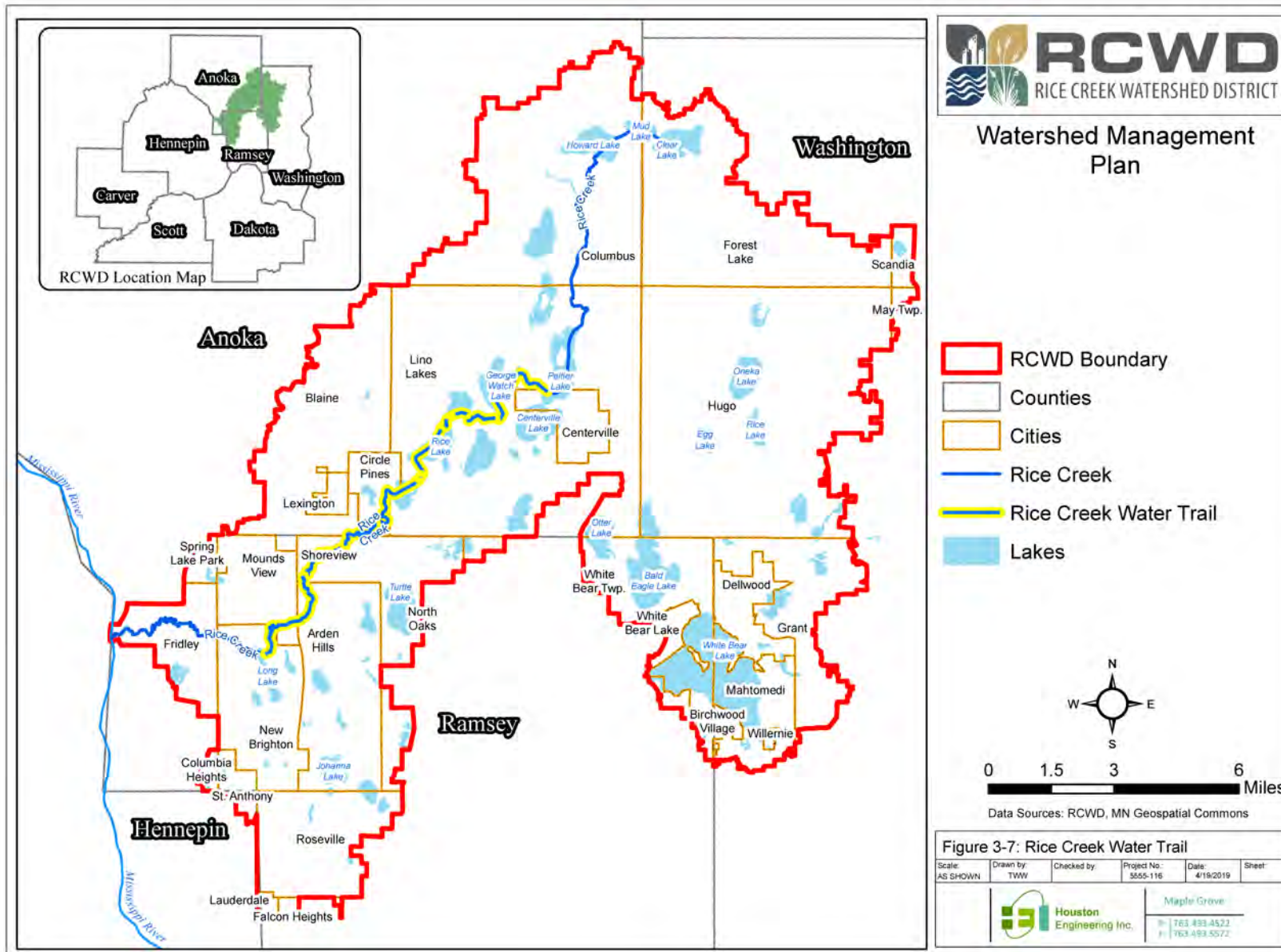
The District has implemented several cost-share programs to incentivize landowners in managing drainage systems when project outcomes are consistent with the District’s mission. Examples include the Stormwater Management Cost Share Program and the Water Quality Grant Program. Funding availability and cost-share levels for both programs are described in Section 4.

District Policies

- **Policy:** Continue to implement the RCWD Natural Channel Management Policy in management of non-103E natural conveyance systems.
- **Policy:** Implement the RCWD Water Quality Grant Program and Stormwater Management Cost Share Program to promote the reduction of phosphorus, sediment, and the overall volume and rate of stormwater runoff leading to lakes and rivers.



Figure 3-7: Rice Creek Water Trail



3.2.8 Regulatory

3.2.8.1 District Rules



District Rules

Issue R-1: The District has adopted a set of rules to guide its decision-making regarding stormwater management, soil erosion and sediment control, floodplain alterations, wetland alterations and other activities within the boundaries of the District.

Goals and Measurements:

- **Goal R-1:** Ensure that implementation of District rules adequately protects RCWD resources while providing enough flexibility that the program does not unreasonably hinder land use.
- **Measure R-1:** Annually implement the District's rules through the permitting program; solicit stakeholder input on District rules every 5 years.



Why These Issues Are Important

Upon authority provided under MS 103B and 103D, the District has adopted a set of rules to guide its decision-making regarding stormwater management, soil erosion and sediment control, floodplain alterations, wetland alterations, and other activities within the boundaries of the District. District rules, when triggered by landscape alteration, work to mitigate impacts such alterations may have on RCWD water resources. In addition to projects and programs, regulation is one of the three primary tools of the District in water resources management. No single one of these tools may fully address the needs and goals of RCWD's resources.

For example, floodplain management rules (see **Section 3.2.4**) are a primary tool to prevent increases in flood damage from development and redevelopment. Also, erosion and sediment control rules manage the potential effects of earth disturbance in sediment and nutrient delivery to water resources. There are other regulations providing similar intended outcomes, all of which are critical to the District's management of its public drainage systems, District facilities, and water quality for the public good.

Continued >>



➤➤ As new scientific data and research is made available, and as the execution of the permit program identifies strengths, weakness, and gaps in the rules, the District identifies potential modifications in the rules to better protect its resources and streamline operations, eventually preparing and adopting a revised set of rules. Historically, the District has evaluated the need for a rule modification at varying intervals. To be more deliberate in the approach for rule modification and address the needs of its constituents, the District has recently completed an evaluation of the need for rule revisions at an interval of every two to three years.

The overall purpose of a rule modification is to seek a balance between the protection or improvement of water resources in the District and the land use needs of constituents. There are several different reasons for the District to investigate potential rule changes. Sometimes, a portion of a rule may be linked to multiple variance requests. These variances are granted when the District finds circumstances unique to the property which prevent a literal administration of a rule. However, repeated variances to a specific provision of a rule indicate that the repeating circumstance is not unique. In these cases, modification of the rule may provide for more efficient and effective administration. The District will ensure that rule modifications and variance requests still provide requisite protection to RCWD natural resources.

Another reason that a rule revision may be pursued is to incorporate emergent techniques, technologies, or unforeseen issues. These may include modeling practices and programs; soil, precipitation, and land use data; and engineering design practices. The District may assess each of these topics to determine their applicability, what recent research shows, how each issue might be regulated, or how other LGUs regulate similar issues.

Rule revisions may also be made to provide clarity or reduce redundancy. Providing clarity within the rules decreases the cost for the District to administer the rules, while also reducing the applicant's costs to demonstrate compliance. The District also strives to avoid overlap with other jurisdictions' regulatory requirements such as Municipal Separate Storm Sewer System (MS4) and National Pollutant Discharge Elimination System (NPDES) regulations, to promote efficient and effective resource management among regulators with similar goals. Current District rules may be accessed via the District website (<http://www.ricecreek.org>).

To enable greater flexibility in stormwater management and encourage proactive planning efforts, the District has provided municipalities and public road authorities the option to prepare a Comprehensive Stormwater Management Plan (CSMP) as an alternative way to meet the requirements of Rules C.6 and C.7 (Water Quality Treatment & Peak Stormwater Runoff Control) for development within a defined area. Due to the unique properties of each potential plan, an interested applicant must meet with the District to discuss its CSMP prior to submitting a draft plan. CSMP are approved only by resolution of the District Board of Managers, which may include conditions on the approval.

District Policies

- **Policy:** Re-evaluate the necessity of rule revisions at an interval of two to three years.
- **Policy:** Utilize an approach for the development of rule modifications that considers a balance between the protection and/or improvement of District water resources and the land use needs of constituents.



3.2.8.2 District's Role as WCA Authority



District's Role as Wetland Conservation Act (WCA) Authority

Issue R-2: The District (or other municipalities) is responsible for implementation of WCA (as augmented by the CWPMPs) to achieve no net wetland loss while recognizing the need to develop land and manage the maintenance/repair of public drainage systems.

Goals and Measurements:

- **Goal R-2:** Fulfill the District's responsibility as the designated WCA LGU, as outlined in MN Rule 8420.
- **Measure R-2:** Implement the District's wetland permitting program and annually report the LGU administration of the rule.



Why These Issues Are Important

The WCA was enacted as MR 8420 in 1991. The overarching goal of the WCA is to achieve no net loss of wetland quality, quantity, and biological diversity. Under the WCA, activities such as draining, excavating, and filling of wetlands are regulated by law. The WCA does not apply to public waters or public water wetlands, which are regulated by the DNR. The LGU has the primary responsibility for administering the WCA and for making key determinations. The District is the WCA LGU for all wetlands within its boundaries, except for 1) DNR-regulated public water wetlands and 2) those wetlands within the boundaries of the cities of Hugo and Circle Pines.

Within the RCWD, the cities of Hugo and Circle Pines have assumed LGU authority for the WCA administration. All cities within the watershed assuming LGU authority must conform to the wetland standards set forth by the District rules in addition to the WCA. For activities on State land the LGU is the State agency with administrative responsibility for that land (e.g. the MnDOT for work in the state highway right of way) permitting process.

Continued >>



➤➤ There are various agencies involved in the permitting process for wetland disturbances. In Minnesota, a joint application process has been established to streamline the agency review and permitting process. Proposed activities which affect a wetland cannot begin until all agencies authorize a project. Often, Technical Evaluation Panels (TEP) are convened as a mechanism to review permitting issues related to wetland projects. The TEP varies based on location, but generally includes a representative from the Board of Water and Soil Resources (BWSR), the local county Soil and Water Conservation District (SWCD), and the LGU. The DNR is also a TEP member when the project affects public waters.

A provision of the WCA allows the LGU to develop an alternative to the WCA rules, known as a CWPMP. The RCWD has developed several CWPMPs that govern wetlands within special areas of the District that were experiencing rapid urbanization, and included wetland management, public drainage systems, and water quality/quantity management considerations. The CWPMPs and implementing rules were developed as an effort to balance the responsibility of the RCWD as LGU for WCA, drainage authority for MS 103E public drainage systems, and water quality and quantity management. The District implements the CWPMPs through Rule F for areas within Blaine, Lino Lakes, Forest Lake, and Columbus (**Figure 3-6**).

District Policies

- **Policy:** Operate a wetland permitting program as an integrated component of the District’s regulatory program, both under watershed district regulatory authority and as the Local Governmental Unit responsible for implementing the Wetland Conservation Act.
- **Policy:** Manage wetland resources using the flexibility afforded by state and federal rules, including the development of Comprehensive Wetland Protection and Management Plans.
- **Policy:** Recognize municipal partners in establishment of CWPMPs and engage them for efficient and effective administration. Investigate modification of existing District Rule language regarding CWPMPs for efficient and effective administration.



3.2.8.3 Permitting and Enforcement



Permitting and Enforcement

Issue R-3: Permits are issued in accordance with District rules to protect public health and welfare and the District's natural resources.

Goals and Measurements:

- **Goal R-3:** Create efficiency and flexibility in the permitting process, while maintaining the intent of the rules.
- **Measure R-3:** Survey permit applicants to consider solutions to issues of stormwater and wetland permit flexibility, at least once during the 10-year implementation period of the Plan.



Why These Issues Are Important

The District administers its rules and the WCA through a permitting program. Permits are issued to applicants that fully demonstrate compliance with District rules. Following permit issuance, the District checks that construction is consistent with the approved plans and per permit stipulations and conditions. Should work be deemed non-compliant, an enforcement process guides subsequent engagement by the District and correction of inadequacies.

Permitting and enforcement processes continue to evolve as new rules are adopted and feedback is received from District staff, applicants, and other stakeholders. The District frequently evaluates whether modifications to the regulatory process can decrease compliance efforts and costs for applicants and/or reduce staff time while maintaining protections of District water resources. To inform these modifications, the District values the input and suggestions from all applicants, particularly its municipal, county, and state partners.

One key component of efficient permit administration is open and clear communication with project applicants and their agents.

Continued >>



➤➤ The District uses several different methods to facilitate communication with applicants, including pre-application District meetings, permit guidance documents, permit program schedules, modeling and data sharing, and the District website (<http://www.ricecreek.org>). The District will continue to adapt its communications to address the needs of permit applicants and keep pace with evolving technology and the District’s understanding of its water resources.

A city or township may opt to assume the responsibility of administering District Rules C (Stormwater), D (Erosion and Sediment Control), E (Floodplains), and F (Wetlands) and the WCA within its municipality, subject to several conditions, including adoption of the District rules within its municipal ordinances or creating their own ordinances that are consistent with the outcomes of the Watershed Management Plan. To date, two municipalities have elected to accept administration of these rules: Hugo and Circle Pines. The District completes annual audits of the permit review process for each municipality enforcing District rules to evaluate their proper administration of the rules. **Section 6** provides additional detail on the process for municipal administration of District rules.

District Policies

- **Policy:** To implement the permitting program efficiently and without undue delay, delegate certain permit decisions to the District Administrator that do not have the potential for significant water resource impact, are not of significant public interest, and do not raise significant policy questions.
- **Policy:** Develop and maintain an online geospatial data sharing platform targeted to information needs for District permit applicants.
- **Policy:** Enable cities and townships to assume the responsibility of administering District rules within their municipality provided they enact ordinances matching District rules (or create their own ordinances that are consistent with the outcomes of the Watershed Management Plan) and meet other specified conditions.



3.2.9 Communication, Outreach, and Education

3.2.9.1 Communication Opportunities and Strategies



Communication Opportunities and Strategies

Issue CO-1: Identifying and implementing communication strategies for stakeholders to facilitate informed decision making related to District resources.

Goals and Measurements:

- **Goal CO-1:** Communicate with District constituents to define RCWD priorities and available data, to highlight activities and projects, and receive constituent input.
- **Measure CO-1:** Participate in at least six constituent meetings annually (homeowners' associations, lake associations, neighborhood groups, or other City-hosted events). Post monthly updates to District social media outlets. Complete an information sheet and maintain current project information on the District website for all RCWD capital improvement projects. Complete an annual report and post on the District website each year.



Why These Issues Are Important

Communicating with broad audiences about RCWD priorities, activities, projects, and data is critical to the fulfillment of the District's mission. Outreach is focused to assist with the implementation of BMPs that benefit surface water quality, address water quantity issues, and reduce reliance on groundwater for non-essential use (e.g., lawn irrigation). The RCWD also intends to seek opportunities that promote personal responsibility in protecting water resources which can result in improved District resources and a more engaged community.

It is important that targeted strategies be used with specific audiences and in consideration of the communication goal.

The District may provide information to increase basic knowledge regarding the District and its programs, projects, policies, activities, or BMPs and/or to educate and influence action or behavior changes.

To educate and influence action or behavior changes is the most challenging goal and requires significant resources to adequately implement.

Continued >>



➤➤ Education methods appropriate for the District include workshops (resident, contractor, local governments, etc.) and opportunities to apply information (hands-on learning opportunities for specific audiences across all age groups). These methods may often reach a smaller audience but have a larger impact. A combination of using information, outreach, and education in communication strategies is needed for overall success.

Programming and resources pertaining to water quality and water quantity issues that are tailored to municipal staff are key components in achieving community engagement, because local staff are often the first community contact regarding such issues. Programs like the partnership Master Water Steward program provide an educational opportunity for citizens within the District and opportunities for the District to expand its efforts in project implementation, information, outreach, and education. Newsletters, articles, and newsletter style updates can be used for a variety of targeted and general audiences and can be distributed by the District or its partners.

District Policies

- **Policy:** Encourage residents, landowners, and cities to improve water quality, reduce runoff volume, and enhance ecological systems using cost-share and incentive programs.
- **Policy:** Provide incentives to private landowners to avoid and minimize wetland impact and restore wetlands.
- **Policy:** Utilize and engage citizens to promote sustainable stewardship of lakes, wetlands, and other bodies of water. Volunteer programs include the Master Water Steward Program and Stream Health Evaluation Program (SHEP) are implemented in partnership with other organizations and utilize trained volunteers to enhance the District’s implementation of projects, programs, and other activities.
- **Policy:** Support communities and regional partners in their outreach efforts by providing content, resources, and appropriate assistance. This may include access to shared content and materials, creation of targeted materials, expertise, and cost-share and incentive programs for partners to use with (including but not limited to) newsletters or community publications, social media and websites, community events or presentations, school programs, targeted audience or topic outreach, or implementation of a BMP program.
- **Policy:** Share information on District programs, projects, policies, priorities, and activities with stakeholders (including cities, townships, counties, legislators and legislative staff, state officials and staff, and partner organizations) using appropriate methods and strategies. These may include city-county partner meetings, legislative updates, newsletters, direct mailing efforts, information sheets on projects, supporting communication and other efforts of partner organizations, District or regional tours, and other targeted strategies.
- **Policy:** Inventory, manage, and provide access to public drainage system records to improve operational efficiency, make common information accessible to constituents and improve the basic understanding of public drainage systems.
- **Policy:** Share infrastructure information developed through the Municipal Separate Storm Sewer System (MS4) program for District-owned facilities to educate the public about how water resources are managed, the programs and policies and projects of the District, and to encourage public involvement.



3.2.9.2 Resources for Adequate Outreach, Communication, and Education



Resources for Adequate Outreach, Communication, and Education

Issue CO-2: Ensuring enough resources for effective outreach materials, such as branded materials and websites.

Goals and Measurements:

- **Goal CO-2:** Ensure adequate resources are available to District constituents to ensure broad communication of the District's mission.
- **Measure CO-2:** Distribute at least six articles per year to partners and media on topics supporting the District's mission. Produce and provide stormwater-related outreach materials to District partners at least two times per year.



Why These Issues Are Important

Communication, outreach, and education efforts pertaining to RCWD priorities, policies, activities, projects, and gathered data are important to successfully meet the District's mission. Adequate resources are needed to ensure these efforts are appropriately targeted and effective.

These resources include: District-branded materials that highlight RCWD priorities, activities, projects, and data; District staff presence at community events and requested presentations; District-produced materials, articles, or purchased resources for use by partners or volunteers across the watershed district; District staff participation in outreach and education collaboratives and partnerships; and District support of regional or community programs targeting residents' knowledge and actions towards water quantity and quality.

In combination, these resources create opportunities for effective outreach, increased resident engagement, and meeting the needs of District partners. This supports the District's efforts towards its mission.

Continued >>



➤➤ The District maintains a staff position dedicated to these external efforts and to assist other District staff with specialized communication needs for District projects, programs, and activities for specific or targeted audiences. District staff are often requested to support or assist with communication needs of collaborative projects or organizations.

In addition to traditional communication and outreach efforts, the RCWD is often relied upon as a technical resource for water quality and quantity BMP guidance and as a data warehouse. This is largely because of the Districts monitoring work and catalogue of resource studies conducted. Maintaining staff capacity to properly serve requests for BMP technical input and communication of technical data is an ongoing function of the RCWD.

District Policies

- **Policy:** Provide data in a manner that maximizes use by the public, share and distribute data and information in the most efficient manner possible, and minimize the duplication of data collection through cooperative data collection efforts and information sharing.
- **Policy:** Develop informational, outreach, and educational materials and programs for targeted audiences including local governments, legislators, citizens, educators, the development community, special interest organizations like lake associations and home owners’ associations, and other audiences that use the services of the District.
- **Policy:** Provide support and materials for community partners in their communication, outreach, and education efforts when possible, especially when those efforts are in collaboration with the District and its programs or requirements.
- **Policy:** Utilize and support collaborative outreach to enhance content, materials, and resources for communication, outreach, and education by the District.

Want to Get Involved?

Find collaboration opportunities for private citizens (Section 3.2.7.2)

This section highlights collaboration opportunities with private partners. Read more to see how you can fit into your watershed management activities.

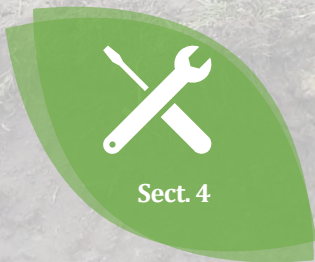
Look at different collaboration opportunities for landowners and businesses

There may be opportunities for you to apply for cost-share funding to implement high quality water quality projects.

Attend a workshop

The District offers informational workshops on a variety of volunteer programs, including a master stewards program. To learn more about best practices and water quality, find an upcoming event online.





4. Implementation Plan



The implementation plan is composed of three main elements: 1) Administration, 2) Implementation Programs, and 3) Capital Improvement Projects

4.1 Administration

District administration includes office operations, office administration and support, maintaining a staff complement capable of implementing the District’s programs and providing technical assistance and support to stakeholders, and the execution of the duties and responsibilities of the Board of Managers. District staff and consultants also manage an extensive library of information related to water resources within the District. This information includes, but is not limited to, hydrologic, hydraulic, water quality, regulatory, programmatic, and project-related data. Data is managed through the use of hardware, software, and online services.

4.2 Implementation Programs

Implementation programs are designed to carry out the District’s mission and make progress towards established measurable goals. The programs, their operational aspects, and various associated projects (which are not capital improvement projects) are summarized within this section. The programs described are funded by ad valorem levy through the District’s general fund and are used to guide the District’s annual budgets and financial commitments. A list of existing implementation programs with approximate annual budget ranges is presented within **Table 4-1**.



Table 4-1: Approximate Annual Budget by Implementation Program

Plan Section	Implementation Program	Estimated Annual Budget Range: Low	Estimated Annual Budget Range: High	Planned No. of Years for Expenditure
4.2.1	Public Drainage System Inspection, Maintenance and Repair	\$450,000	\$600,000	Annual
4.2.2	Natural Waterway Management	\$0	\$20,000	Annual
4.2.3	District Facilities Inspection, Operations and Maintenance	\$25,000	\$100,000	Annual
4.2.4	Modeling and Planning Program	\$150,000	\$250,000	Annual
4.2.5	Water Quality Grant Program	\$200,000	\$250,000	Annual
4.2.6	Carp and Curly Leaf Pondweed Management Program	\$200,000	\$300,000	Annual
4.2.7	Mini-Grants Program	\$0	\$10,000	Annual
4.2.8	Surface Water Monitoring and Management Program	\$200,000	\$400,000	Annual
4.2.9	Groundwater Management and Stormwater Reuse Assessment Program	\$15,000	\$40,000	Annual
4.2.10	Municipal Capital Improvements – Early Coordination Program	\$10,000	\$20,000	Annual
4.2.11	Boundary Management Program	\$0	\$50,000	Annual
4.2.12	Rule Revision/Permit Guidance	\$30,000	\$60,000	Annual
4.2.13	Permit Review, Inspection, and Coordination Program	\$900,000	\$1,250,000	Annual
4.2.14	Watershed Communication and Outreach	\$30,000	\$75,000	Annual
4.2.15	Minnesota Water Steward Program	\$15,000	\$30,000	Annual
4.2.16	Watershed Plan Maintenance	\$0	\$200,000	Three years (2027-2029)
	Total	\$2,225,000	\$3,655,000	



4.2.1 Public Drainage System Inspection, Maintenance and Repair Program



There are three main purposes of this implementation program. The first objective of this program is to inspect and maintain the public drainage systems within the RCWD. The response to deficiencies noted by the drainage inspector and requests for maintenance are completed through this program, as is the preparation of an annual inspection report. This program includes completing technical analyses and related activities

associated with maintenance requests and recommendations, the completion of repair reports, and repair of the drainage system. Extensive repairs are not addressed by this program, but rather by capital improvement projects (**Section 4.3**).

Secondly, this program aims to create accessible and accurate records for efficient management, maintenance, and repair of the District's approximately 119 miles of public drainage systems. Specifically, the Public Drainage System Inspection, Maintenance, and Repair Program functions to 1) maintain historic information pertaining to the public drainage systems in an accessible, publicly searchable, and organized electronic format, 2) archive new drainage system records as they are created; 3) maintain a geospatial database identifying structures, conditions and repairs with respect to the alignment of the system; and 4) identify and maintain the record of the as-constructed and subsequently improved condition.

Lastly, this program serves to pursue multipurpose drainage projects as a means of accomplishing efficient public drainage system management while accruing water quality and ecological benefits. Multipurpose drainage management projects target critical pollution source areas to reduce erosion and sedimentation, reduce peak flows and flooding, and improve water quality, while protecting 103E public drainage system efficiency and reducing the need for drainage system maintenance. The District anticipates using this program to pursue projects aimed at water quality and drainage management. The Hansen Park Comprehensive Water Management Project, completed in September of 2018, is an excellent example of a multipurpose drainage management project. This project included a series of water quality and flood control enhancements to an existing dam and pond along Ramsey County Ditch 2 in New Brighton's Hansen Park.

Example Activities

- Inspect each public drainage system a minimum of once every five years
- Maintain and repair public drainage systems in a manner consistent with the RCWD Maintenance/Repair Flowchart

Primary Issues Addressed

- Minnesota Statute 103E Public Drainage Systems: System Maintenance, Repair, and Management Approach

Estimated Annual Funding:

- \$450,000 - \$600,000



4.2.2 Natural Waterway Management Program



The purpose of this program is to inspect, analyze, and implement actions impacting natural channels within the District. The District Drainage Inspector is charged with inspecting natural channels per the Public Drainage System Inspection Policy and the Natural Channel Management Policy. The District Drainage Inspector also completes a spring flood inspection at known problem locations, where ice and debris collect.

The RCWD Natural Channel Management Policy was developed to specify actions related to maintaining these systems. Maintenance activities performed by the District as part of the Natural Waterway Management Program aim to address issues that have a significant hydraulic impact to the waterway. Examples include, but are not limited to, the removal of fallen trees, debris jams, and beaver dams.

Example Activities

- Implement the RCWD Natural Channel Management Policy
- Share communication about the District's role in non-103E drainage systems

Primary Issues Addressed

- Non-103E Drainage Systems: Management of Non-103E Systems

Estimated Annual Funding:

- \$0 - \$20,000



4.2.3 District Facilities Inspection, Operations and Maintenance Program



The District Facilities Inspection, Operations and Maintenance Program addresses the need to inspect and maintain District facilities. The locations of District facilities are shown in **Figures 3-3** and **3-4**. Examples of District facilities include, but are not limited to, sedimentation basins, water control structures, lake outlet structures, wetland banking sites, water reuse irrigation projects, stream restoration and stabilization projects, storm sewer diversions, and iron-enhanced sand filters. Example

maintenance activities provided as part of this program include sediment dredging projects (e.g. Long Lake inlet, Locke Lake, Oasis Pond, and Hansen Park), structural repairs, preserving access to facilities through easements, and managing vegetation through mowing and herbicide treatment. Larger-scale construction activities that do not fall under this program will be implemented through the Maintenance of District Facilities Capital Improvement Program (**Section 4.3.15**).

Important aspects of this program include maintaining an inventory of District facilities and archiving documentation that will become part of a long-term record, assessing work that has been done and what repairs are needed, and developing inspection, operation and maintenance plans and procedures. To clarify the District's authorities to access these sites for inspection and maintenance, this program also includes the development and negotiation of easements and access agreements to memorialize these authorities. This program is intended to result in a system that supports the long-term management of records and information concerning District facilities and the completion of management activities in a deliberate and efficient manner.

Example Activities

- Maintain an inventory of District facilities and documentation that can be shared with partners
- Develop an inspection, operation and maintenance plan/protocol

Primary Issues Addressed

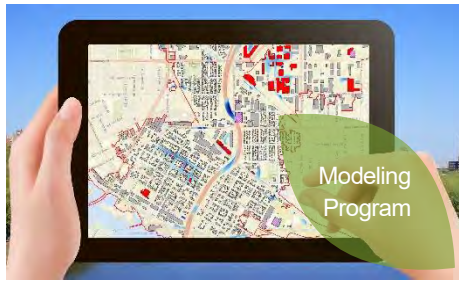
- District Facilities: Management of District Facilities

Estimated Annual Funding:

- \$25,000 - \$100,000



4.2.4 Modeling and Planning Program



Through this program, the District supports local water planning by providing technical and/or financial assistance to develop or review 1) comprehensive stormwater management plans, 2) local water management or comprehensive plans, and 3) targeted stormwater retrofit assessments. Comprehensive stormwater management plans identify potential regional stormwater quality and quantity management opportunities and provided coordinated public drainage system planning activities.

The District reviews local water management plans and comprehensive plans prepared by the District's member communities and participates in the associated planning processes.

Targeted stormwater retrofit assessments identify and prioritize the most effective projects for implementation within a subwatershed. These assessments have historically been led by local SWCDs and focus primarily on developing implementation guides for water quality improvement practices and projects while also identifying potential solutions, including volume reduction, for local and regional flooding issues. The District prefers to structure financial partnerships for these assessments by providing matching funds for other sources of external grant revenue.

A variety of modeling maintenance/distribution activities are funded through the Modeling and Planning Program. The RCWD protects its investment in data collection and processing by managing, archiving, and displaying data through a variety of media, including geospatial (GIS) web browsers. This data can then be shared with District partners and/or the general public as determined by the Board of Managers. The RCWD Public GIS Viewer is a web-based interactive map, which hosts a variety of geospatial data useful to permit applicants, agency partners, and other interested parties in developing their projects. This data includes hydrographic features, topographic data, aerial imagery, parcel data, soils information, and regulatory boundaries. The RCWD also manages a GIS-integrated permit and project database that tracks a variety of data regarding each permit application while facilitating the streamlining and automation of workflows in regulatory and cost-share programs.

The District website is and will continue to be regularly updated to make information including meetings, schedules, and operations more accessible to the public and other stakeholders. The District is enhancing old databases and developing new databases to better manage the large amounts of information that has been and is being collected. The information includes streamflow, water quality data, field surveys, GIS data, and District-wide modeling. The goal is to ensure that these databases will efficiently house long-lasting, accessible data that will continue to be important assets as the District grows.

The Modeling and Planning Program includes activities for developing information needed as input to create or maintain existing hydrologic, hydraulic, and water quality models to address resource issues, design projects, and evaluate landscape-scale conditions within the District. The program also establishes modeling and maintenance needs. By clearly identifying and articulating the modeling needs, goals and objectives, and application purposes, the District can reasonably ensure selection, use, and maintenance of the proper model(s).



As part of the Modeling and Planning Program, the District will complete maintenance of its modeling products to ensure the continued value of the models and their results. This maintenance includes scheduled updates to models (per the District Wide Modeling Program Maintenance Policy) to reflect changing infrastructure and land use, correcting deficiencies and errors, and adding new detail and data where and when it becomes available. Following updates, model results are uploaded to the District's GIS Viewer to provide accessibility for users.

2020 WMP Subwatershed Assessment Priority List

- | | |
|--------------------------------|-----------------------|
| 1. Centerville Lake | Anoka County |
| 2. Lake Josephine | Ramsey County |
| 3. Bald Eagle Lake (RWJD1) | Washington County |
| 4. Lower Rice Creek (Direct) | Anoka/Ramsey Counties |
| 5. Karth Lake | Ramsey County |
| 6. Clearwater Creek (W of 35E) | Anoka County |
| 7. Spring Lake | Anoka/Ramsey Counties |
| 8. NE White Bear Lake | Washington County |
| 9. Reshanau Lake | Anoka County |
| 10. Island Lake | Ramsey County |
| 11. Marshan Lake | Anoka County |
| 12. Lake Washington | Washington County |

Example Activities

- Provide technical and/or financial support to develop regional stormwater management plans
- Assist municipalities, landowners, and other stakeholders by providing current District modeling products for multiple purposes, including updating Flood Insurance Rate Maps (FIRMS)

Primary Issues Addressed

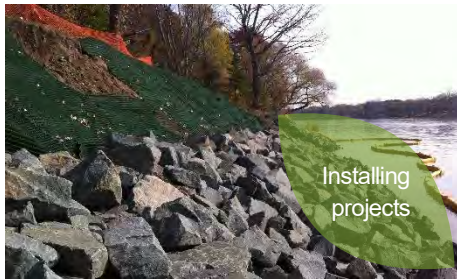
- Water Quality Management: Accelerated Sedimentation
- Water Quality Management: Nutrient Enrichment, Algae, and Cultural Eutrophication
- Flooding: Addressing Existing Flooding Issues
- Flooding: Modeling and Mapping
- Flooding: Impacts of Future Development on Downstream Rate and Volume
- Collaborations: Collaborations with Local, State, and Federal Partners

Estimated Annual Funding:

- \$150,000 - \$250,000



4.2.5 Water Quality Grant Program



The Water Quality Grant Program provides funding and assistance for landowners to install Best Management Practices (BMPs) or projects that aim to improve the quality of surface waters within the District. Raingardens, shoreline or streambank stabilizations, wetland restorations, agricultural water quality practices, and critical area slope stabilization are some of the practices that may be eligible for this program. Through the

District-wide ad valorem levy, the Board of Managers make funds available each year for projects within the program. Program guidelines and funding are reviewed and approved annually by the Board of Managers.

Grant applications are reviewed and prioritized by the District's staff and Citizen Advisory Committee who make recommendations to the Board of Managers. The Board holds final approval authority for all applications. The program utilizes a partnership with the Soil and Water Conservation Districts of Anoka and Washington counties, and the Ramsey County Parks and Recreation Soil and Water Conservation Division, to provide technical assistance to landowners interested in installing water quality improvement projects on their property. Interest in this program should be directed to the county conservation district where the project is located or to the RCWD for a project located within the Hennepin County portion of the District.

As detailed eligibility criteria is updated for this program on an annual basis, current information is available on the District website (<http://www.ricecreek.org>).

Example Activities

- Identify, test, and when appropriate, implement innovative water quality improvement products, equipment, methods, and BMPs to address sites with limited land area for conventional means to control the volume and rate of runoff
- Provide technical assistance to landowners interested in implementing BMPs or clean water projects aimed at improving the quality of surface waters within the District

Primary Issues Addressed

- Water Quality Management: Accelerated Sedimentation
- Water Quality Management: Nutrient Enrichment, Algae, and Cultural Eutrophication
- Collaborations: Collaborations with Private Partners

Estimated Annual Funding:

- \$200,000 - \$250,000



4.2.6 Carp and Curly-leaf Pondweed Management Program



The purpose of this program is to manage the water quality of District surface water resources through prevention, management, and reduction of the common carp (*Cyprinus carpio*) and curly-leaf pondweed (*Potamogeton crispus*). This program manages carp through the *Rice Creek Watershed District Common Carp Management Plan* and system-specific plans, such as the Long Lake/Lino Chain of Lakes System Carp

Management Plan. Curly-leaf pondweed is managed through matching funds to lake associations for herbicide treatments, procuring permits, and managing herbicide contractors. These two AIS are of particular concern in the RCWD due to their scientifically substantiated negative impacts to surface water quality.

Priority Lakes for Development of System-Specific Common Carp Management Plans

1. Clear-Mud-Howard Lakes
2. Peltier-Centerville Lakes
3. Silver Lake

Example Activities

- Develop management plans to guide actions for prevention, management, and reduction of common carp and curly-leaf pondweed
- Implement actions to manage common carp and curly-leaf pondweed, including vendor bidding and contracting, access agreements, and direct field work

Primary Issues Addressed

- Water Quality Management: Aquatic Invasive Species (AIS)

Estimated Annual Funding:

- \$200,000 - \$300,000



4.2.7 Mini-Grants Program



The RCWD Mini-Grant Program provides eligible applicants with small grants (up to \$500 per project) to implement projects that can justifiably improve water quality in the watershed. A primary objective of this grant program is to provide educational value from implemented projects, so community members including school districts, can become engaged in water resource stewardship and learn from real-life project examples.

As detailed eligibility criteria is updated for this program on an annual basis, current information is available on the District website (<http://www.ricecreek.org>).

Example Activities

- Provide small grants (up to \$500 per project) to implement projects that can justifiably improve water quality
- Educate public on projects implemented through Mini-Grants Program

Primary Issues Addressed

- Water Quality Management: Nutrient Enrichment, Algae, and Cultural Eutrophication
- Communications and Outreach: Education Opportunities
- Collaborations: Collaborations with Private Partners

Estimated Annual Funding:

- \$0 - \$10,000



4.2.8 Surface Water Monitoring and Management Program



The Surface Water Monitoring and Management Program is focused on developing robust District monitoring information to implement projects, programs and activities to maintain, restore and/or enhance the conditions of lakes and streams. District monitoring efforts are guided through the Monitoring Program Plan, executed by the Lake and Stream Specialist. The District has a stream and lake monitoring network that continues to be refined to maintain relevance to current water quality concerns. The RCWD, in cooperation with several partners, assesses water quality trends to drive activities and projects aimed at protecting, maintaining and improving District water quality. These monitoring programs use various indicators of water quality to characterize the general health of lakes and streams including, but not limited to, the amount of nutrients (phosphorus and nitrogen), algae (i.e., chlorophyll-a), and the clarity of the water (measured by suspended sediment and Secchi-disk depth). Water temperature, dissolved oxygen, specific conductance, and pH are also measured throughout the water column.

Counties and soil and water conservation districts continue to be important partners for lake quality and water level monitoring. The DNR also works closely with the District for lake vegetation and fisheries management, and stream channel restoration. The USGS has also established a stream flow monitoring gage on the main stem of Rice Creek that is operated year-round. The District also supports the Citizen Assisted Monitoring Program (CAMP), which is managed by the Metropolitan Council. This network of volunteers monitors many lakes across the District, collecting water samples approximately twice monthly to analyze phosphorus, nitrogen, and chlorophyll-a. The volunteers also note the water temperature, Secchi-disk depth, and make general observations about the lake. The District also participates in a volunteer biological monitoring effort called the Stream Health Evaluation Program (SHEP), which is run by the Friends of the Mississippi River. This stream monitoring program is designed to collect reliable and accurate biological stream health data in accordance with strict MPCA monitoring protocols.

Several other organizations monitor District lakes and share the data with the RCWD. The Ramsey County Environmental Services Division monitors several lakes for nutrient and chemical composition. By working cooperatively, more information is collected, allowing the District to focus on management plans and more specialized research projects.

The Monitoring Program Plan is updated biannually, establishing monitoring goals and objectives, describing program organization, and identifying data quality objectives. It includes standard operating procedures for sample collection and quality assurance and management procedures characterizing laboratory quality assurance objectives. The Monitoring Program Plan also identifies physical locations where monitoring occurs. Data collected from these monitoring locations is needed for assessing long-term trends and calibrating hydrologic, hydraulic and water quality models.



Further, site-specific monitoring may occur to determine the water quality/quantity mitigation effectiveness of installed District projects and BMPs, to determine the efficacy of projects implemented and identify the most cost-effective approaches to improving District resources. The physical locations can include boundaries between cities where maximum flows between communities need to be monitored and controlled to prevent flooding.

Example Activities

- Utilize the Monitoring Program Plan to assess water quality trends to drive activities and projects aimed at protecting, maintaining and improving District water quality
- Identify monitoring data needs for calibrating hydraulic, hydrologic, and water quality models

Primary Issues Addressed

- Water Quality Management: Surface Water Monitoring
- Water Quality Management: Accelerated Sedimentation
- Water Quality Management: Nutrient Enrichment, Algae, and Cultural Eutrophication

Estimated Annual Funding:

- \$200,000 - \$400,000



4.2.9 Groundwater Management and Stormwater Reuse Assessment Program



The Groundwater Management and Stormwater Reuse Assessment Program provides technical assistance to governmental entities that manage groundwater. This assistance includes RCWD staff review of county groundwater plans, well head protection plans, and source water protection plans, to provide feedback on how these plans correlate to District resource management. Since portions of these plans are referenced in District rules, the District archives mapping and GIS

layers for purposes of permit reviews. This program also provides feasibility assessments to identify and study future potential stormwater reuse project areas.

Example Activities

- Guide the use of stormwater infiltration BMPs in sensitive areas such as vulnerable DWSMAs
- Promote and provide feasibility assessments to identify and study future potential stormwater reuse project areas

Primary Issues Addressed

- Water Quality Management: Surface Water/Groundwater Interactions
- Collaborations: Collaborations with Local, State, and Federal Partners

Estimated Annual Funding:

- \$15,000 - \$40,000



4.2.10 Municipal Capital Improvements- Early Coordination Program



The Municipal Capital Improvement – Early Coordination Program has been a successful yearly program that provides funds to work with cities, and other local and state agencies to identify voluntary capital improvement opportunities for water quality and water quantity conservation. Projects identified may be stand-alone efforts or proposed in conjunction with municipal road reconstruction or other related redevelopment efforts. This program aims to work with municipalities to access funds from the District’s Water Quality Grant Program (4.2.7) and Stormwater Management Cost Share Program (4.3.6).

Example Activities

- Collaborate with partners to develop or provide funding to capital improvement projects for water quality and flood control during road reconstruction and other efforts of municipalities
- Engage local partners to evaluate feasibility of implementing regional projects and their use to meet the District's volume control and water quality requirements

Primary Issues Addressed

- Collaborations: Collaborations with Local, State, and Federal Partners

Estimated Annual Funding:

- \$10,000 - \$20,000



4.2.11 Boundary Management Program



The legal RCWD boundary has had several changes and corrections to address discrepancies between hydrologic boundaries and political boundaries. There are several portions of the RCWD boundary that do not match the hydrologic boundary. The purpose of the Boundary Management Program is to review and, as necessary, correct the RCWD legal boundary in the future as additional topographic and survey data becomes available and as significant discrepancies are identified. This

process begins with a comprehensive review of the RCWD's common hydrologic boundary with one or more of the bordering watershed districts or water management organizations (WMO) and collaborating with those WMOs on review of a proposed boundary change. The goal of this program is to promote the most accurate understanding of the hydrologic boundary and best alignment with the RCWD legal boundary to facilitate sound resource management.

Example Activities

- Review and, as necessary, correct the RCWD legal boundary as additional topographic and survey data becomes available and as development along the boundary occurs

Primary Issues Addressed

- Collaborations: Collaborations with Local, State, and Federal Partners

Estimated Annual Funding:

- \$0 - \$50,000



4.2.12 Rule Revision/Permit Guidance



The purpose of this program includes completing periodic review, evaluation, and modification of the District rules and to propose amendments to those rules to the Board of Managers. Periodic updates to the rules are needed to adapt to evolving research and understanding of water quantity and quality issues related to development. Input from local, state, and federal partners is critical in this process as it identifies alignment between the needs of permit applicants and the protection of District resources.

The District administers its rules and Minnesota's Wetland Conservation Act through its permitting program. One key to efficient permit administration is data sharing and housing the permitting process online. The Rule Revision/ Permit Guidance Program facilitates the development and maintenance of an online geospatial data sharing platform targeted to providing information needs for District permit applicants and an electronic means of permit submittal. This program also provides updates to District permit guidance documents, which provide details and examples of how District rules are applied to projects and how applications are reviewed by District staff.

Example Activities

- Complete periodic review, evaluation, and modification of the District rules
- Update District permit guidance documents

Primary Issues Addressed:

- Regulatory: District rules
- Regulatory: Permitting and Enforcement
- Collaborations: Collaborations with Local, State, and Federal Partners

Estimated Annual Funding:

- \$30,000 - \$60,000



4.2.13 Permit Review, Inspection, and Coordination Program



As the name implies, the purpose of this implementation program is to accomplish permit review, inspection, and coordination to better implement the rules of the District and promote efficient, open, and clear communication with project applicants and their agents. Current District rules may be accessed via the District website (<http://www.ricecreek.org>).

As permit review, inspection, and coordination have differing activities and expenses, this program breaks these into subprogram narratives below.

Permit Review

The purpose of this program is to implement the rules of the District through the receipt and review of permit applications and issuance of permits, to ensure that regulated projects fully demonstrate compliance with District rules. Following permit issuance, the District checks that construction is consistent with the approved plans, permit stipulations, and conditions. Should work be deemed non-compliant, an enforcement process guides subsequent engagement by the District and correction of inadequacies.

The Permit Review, Inspection, and Coordination Program includes the annual audit of the permit review process for the cities of Hugo and Circle Pines, which have assumed regulatory enforcement authority for several District rules. The purpose of these audits is to evaluate the Cities' proper administration of the rules. Annual WCA and CWPMP reporting to BWSR on meeting WCA's no-net loss goal is also included in this program. In addition to the District's regulatory permit process, the Permit Review, Inspection, and Coordination Program includes review of and compliance with the MPCA NPDES MS4 General permit, as the District is an MS4 entity.

Permit Inspection

The Permit Review, Inspection, and Coordination Program enforces the rules of the District through inspection of permitted projects. District inspection staff complete this effort by periodically visiting each site, confirming that work is completed per the approved plans and permit conditions, and communicating observed non-compliant items to the permittees. District inspection staff also participate in project meetings, provide clarification of District requirements as needed, and coordinate with municipal staff including sharing of inspection reports and other publicly available data. The intent is to achieve voluntary compliance with permit requirements. However, the District may initiate enforcement measures if compliance is not achieved within the required timeframe of the permit. Inspection staff are also responsible for permit close out processes and release of surety to the permit applicant after final compliance has been verified.



Preapplication Early Coordination

One key to efficient permit administration of District rules is open and clear communication with project applicants and their agents. As part of the Permit Review, Inspection, and Coordination Program, RCWD provides and encourages voluntary meetings and communication with prospective permit applicants and their consultants prior to permit application and/or project design to address potential concerns with RCWD rules and permit requirements. The intent of these meetings is to increase and improve communication, decrease compliance efforts and costs, and implement the permitting program efficiently and without undue delay.

Example Activities

- Receive and review permits to ensure compliance with District rules
- Inspection of permitted projects by periodically visiting each site, confirming that work is completed per the approved plans and permit conditions, and communicating observed non-compliant items to the permittees

Primary Issues Addressed

- Regulatory: District's Role as WCA Authority
- Regulatory: Permitting and Enforcement
- Flooding: Impacts of Future Development on Downstream Rate and Volume
- Minnesota Statute 103E Public Drainage Systems: System Maintenance, Repair, and Management Approach
- Collaborations: Collaborations with Private Partners
- Collaborations: Collaborations with Local, State, and Federal Partners

Estimated Annual Funding:

- \$900,000 - \$1,250,000



4.2.14 Watershed Communication and Outreach Program



The Watershed Communication and Outreach Program includes a variety of activities such as the development of educational materials, newsletters and annual reports, coordination of volunteer activities, and public speaking events about District activities. Also included are general media campaigns, involvement in the East Metro Water Resource Education Program, Blue Thumb and Metro Watershed Partners, citizen

and local government unit surveys, and municipal training. One component of this program is to create new or leverage existing materials to encourage installation of small-scale BMPs on private property, and to ensure they are adequately maintained. The activities undertaken within this program also allow the District to meet its stormwater education requirements under the MPCA NPDES MS4 General Permit, as the District is an MS4 entity.

In recent years, the District has initiated twice yearly city/county partner meetings to discuss issues and programs impacting the District and its partners. Through these efforts, the District has been able to better engage its partners to understand needs and increase collaboration. One purpose of this program is to continue these meetings to facilitate communication between the District and its partners and better accomplish the District's mission.

Example Activities

- Share information on District programs, projects, policies, priorities, and activities with critical stakeholders (including cities, counties, legislators and legislative staff, state officials and staff, and partner organizations) using appropriate methods and strategies. These may include city-county partner meetings, legislative updates, newsletters, direct mailing efforts, information sheets on projects, supporting communication and other efforts of partner organizations (MAWD, etc.), District or regional tours, and other targeted strategies.
- Utilize the Citizen Advisory Committee and Technical Advisory Committee to engage private citizens/businesses and local/state/federal agencies respectively, and inform them about resource management issues, District activities, and opportunities to partner

Primary Issues Addressed

- Communications and Outreach: Resources for Adequate Outreach
- Communications and Outreach: Education Opportunities
- Collaborations: Collaborations with Local, State, and Federal Partners
- Minnesota Statute 103E Public Drainage Systems: Stakeholder Outreach on Drainage System Roles and Expectations

Estimated Annual Funding:

- \$30,000 - \$75,000



4.2.15 Minnesota Water Steward Program



The Minnesota Water Steward Program is a volunteer program that certifies and supports community leaders who work to implement pollution prevention projects that educate community members, reduce pollutants from stormwater runoff and allow more water to soak into the ground before running into storm sewer systems. The District continues to be an active partner with this program, which also includes Freshwater Society and other participating cities, watershed management

organizations, and non-profits.

The purpose of the District's involvement in the Minnesota Water Steward Program is to utilize trained volunteers to enhance the District's implementation of projects, programs, and other activities. As part of the Minnesota Water Steward Program, the RCWD provides an intensive training for selected individuals who are interested in partnering in future water management stewardship projects within the District.

Example Activities

- Provide intensive training as part of the Minnesota Water Steward Program

Primary Issues Addressed

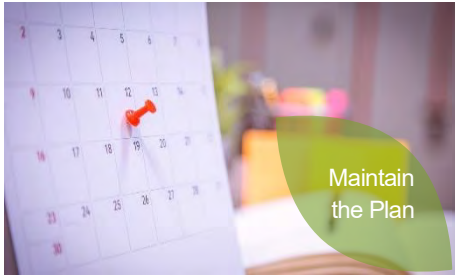
- Communications and Outreach: Education Opportunities
- Collaborations: Collaborations with Private Partners

Estimated Annual Funding:

- \$15,000 - \$30,000



4.2.16 Watershed Plan Maintenance Program



This WMP is intended to summarize and prioritize District issues, set measurable goals, and identify focused implementation activities, projects, and programs to guide the District over the next ten years. While this plan has the best intentions for accuracy and comprehension, unforeseen issues, priorities, activities, and projects will undoubtedly emerge and require updates to the plan. The purpose of the Watershed Plan Maintenance Program is to proactively budget resources to plan

for these changes, so the District is positioned to respond when WMP maintenance or amendments are necessary. This program will also facilitate strategic planning, plan writing, and outreach related to the development of the next generation of the WMP.

Example Activities

- Respond to WMP maintenance or amendments as necessary
- Facilitate strategic planning, plan writing, and outreach related to the development of the next generation of the WMP

Primary Issues Addressed

- *All*: Administration

Estimated Annual Funding:

- \$0 - \$200,000



4.3 Capital Improvement Projects

According to MS 103B.251, the District may certify payment for capital improvements identified in an approved and adopted plan.

The capital improvements, herein “capital improvement projects, or CIPs,” for this WMP are specifically identified within **Table 4-2** and summarized in the following sections. The estimated cost for projects identified varies in quality and should be considered suitable for planning purposes only. To fund its capital improvement projects, the District will seek out grants and other external sources of funding when possible, and otherwise will use District sources of funds as described in **Section 5** as well as contributions of project partners. Budget amounts in **Table 4-2** anticipate use of these funding sources collectively.

In addition to capital improvement projects identified in **Table 4-2**, the District has been identified as a project funding partner in many of its member communities’ approved local water management plans. Projects may be considered for implementation by the RCWD Board through this WMP, where they fit within the District’s CIP list below. The community projects are summarized within **Appendix G**.

Table 4-2: Proposed Capital Improvement Projects for the Rice Creek Watershed District 2020-2029

Plan Section	Capital Improvement	Location	Proposed Implementation Year Begin	Proposed Implementation Year End	Estimated Average Annual Budget*	Total Estimated Budget*
4.3.1	Anoka County Ditch 53-62 Repair	Blaine, Circle Pines	2020	2024	\$300,000	\$1,500,000
4.3.2	Anoka Ramsey Judicial Ditch 1 Repair	Blaine, Mounds View, Circle Pines	2028	2029	\$250,000	\$500,000
4.3.3	Anoka Washington Judicial Ditch 3 Repair	Hugo, Lino Lakes	2020	2027	\$375,000	\$3,000,000
4.3.4	Ramsey County Ditch 4 Repair	Roseville, Arden Hills	2025	2027	\$400,000	\$1,200,000
4.3.5	Anoka County Ditch 15/Judicial Ditch 4 Stormwater Master Planning and Implementation	Columbus, Forest Lake	2020	2029	\$300,000	\$3,000,000
4.3.6	Stormwater Management Grant Program	District-Wide	2020	2029	\$300,000	\$3,000,000

(cont.) Table 4-2: Proposed Capital Improvement Projects for the Rice Creek Watershed District 2020-2029

Plan Section	Capital Improvement	Location	Proposed Implementation Year Begin	Proposed Implementation Year End	Estimated Average Annual Budget*	Total Estimated Budget*
4.3.7	Ramsey County Ditches 2,3, and 5 Basic Water Management Project	New Brighton, St. Anthony Village, Roseville	2020	2029	\$2,200,000	\$22,000,000**
4.3.8	Bald Eagle Lake Water Management Project	Hugo, Lino Lakes, White Bear Twp.	2020	2029	\$150,000	\$1,500,000
4.3.9	Clear Lake Water Management Project	Forest Lake	2020	2029	\$25,000	\$250,000
4.3.10	Anoka Chain of Lakes Water Management Project	Multiple Cities	2020	2029	\$250,000	\$2,500,000
4.3.11	Silver Lake Water Management Project	New Brighton, St. Anthony Village, Columbia Heights	2020	2029	\$25,000	\$250,000
4.3.12	Golden Lake Water Management Project	Circle Pines, Lexington, Blaine	2020	2029	\$50,000	\$500,000
4.3.13	Southwest Urban Lakes Implementation	Multiple Cities	2020	2029	\$200,000	\$2,000,000
4.3.14	Regional Water Management Partnership Projects	District Wide	2020	2029	\$150,000	\$1,500,000
4.3.15	Maintenance of District Facilities	District-Wide	2020	2029	\$300,000	\$3,000,000
4.3.16	Middle Rice Creek Water Management Project	Arden Hills, Shoreview, Blaine, Circle Pines, Lino Lakes	2020	2029	\$50,000	\$500,000
4.3.17	Lower Rice Creek Water Management Project	Fridley, New Brighton, Mounds View, Spring Lake Park	2020	2029	\$200,000	\$2,000,000
Total					\$5,525,000	\$48,200,000
<p>* Funding of budgeted items anticipated from all potential sources, including, but not limited to, ad valorem, Watershed Management Districts, and grants. The District will evaluate the need and availability for state and federal grant funding prior to project implementation</p>						
<p>** Due to the scale of the flooding and water quality issues and associated projects to address this issue, it is imperative to the success of the project that the State has a significant role in funding the project.</p>						

4.3.1 Anoka County Ditch 53-62 Repair

Anoka County Ditch (ACD) 53-62 is a public drainage system that serves as the outlet for an eastern portion of the City of Blaine and a portion of Circle Pines. This system discharges into Golden Lake. Land development in the contributing drainage area to ACD 53-62 has and continues to add additional runoff volume to the drainage system, straining the capacity of the system for smaller rainfall events. In addition, prior to 2014 very little maintenance had occurred along the system, enabling sediment to further challenge the capacity of the system. In 2014 and 2017, the District completed extensive repairs along the entire lengths of Branches 1 and 2, respectively. These repairs included tree removal, excavation of accumulated sediment, and replacement of culverts.

The Main Trunk and Branches 5 and 6 of ACD 53-62 have a similar need for extensive repair to restore capacity and function to the public drainage system. Current deficiencies include lack of access due to tree growth; deadfall and other vegetative obstructions; sediment accumulation; deteriorated and/or improperly placed culverts; and eroded banks. Due to the scale of repairs required, repair of each branch will likely be completed as an individual project. As with repairs to Branches 1 and 2, repairs to the Main Trunk, Branch 5, and Branch 6 may be funded through a combination of Water Management District charges, direct billing to road authorities (for culvert replacement under public roadways) and District-wide (ad valorem) funds (see **Section 5**).

Total Estimated Budget: \$1,500,000

4.3.2 Anoka Ramsey Judicial Ditch 1 Repair

Anoka Ramsey Judicial Ditch 1 (ARJD 1) drains a southern portion of Blaine and northern portion of Mounds View before flowing into Rice Creek. The contributing drainage area to ARJD 1 is nearly entirely developed and has been for some time. Historic development has not only increased runoff volume to the system but has also resulted in modifications to the system that have decreased capacity (e.g. weirs in the open channel) and/or created challenges for future maintenance (e.g. buildings adjacent to or on top of piped portions of the system).

Portions of the ARJD 1 drainage system have undergone extensive repair, including the Main Trunk in 1986. The District reconstructed a portion of Branch 4 to restore the outlet for the branch. However, other branches of the system have experienced very limited maintenance and in need of extensive repair. An engineer's report completed in 2013 (*Anoka Ramsey Judicial Ditch 1 Historical Review*) described deficiencies noted along the ARJD 1 drainage system, including vegetative obstructions, deteriorated culverts, and sediment accumulation. Most of these deficiencies were identified along Branches 1 and 2. The repair of ARJD 1 will focus on addressing these deficiencies on Branches 1 and 2 but may include repairs that address other known concerns along this drainage system. Funding for the project may be through Water Management District Charges, direct billing to road authorities (for culvert replacement under public roadways) and District-wide (ad valorem) funds (see **Section 5**).

Total Estimated Budget: \$500,000



4.3.3 Anoka Washington Judicial Ditch 3 Repair

The Anoka Washington Judicial Ditch 3 (JD 3) public drainage system is in the Cities of Centerville, Hugo, and Lino Lakes and discharges via Clearwater Creek to Peltier Lake. As the outlet for a rapidly developing portion of the District, JD 3 receives an increasing volume of runoff and has seen additional crossings constructed over the system. Development has also resulted in ponds being constructed in-line with the system, outlet control structures placed along the system, and several wetland banks sited adjacent to the system. While benefiting stormwater management of adjacent neighborhoods, these facilities have also added complexity to inspection and maintenance of the drainage system.

Varying topography, soil types, and land use along the system have resulted in differing deficiencies along the system, though nearly the entire drainage system needs extensive repair. Branches 1, 2, 3, and 4 and the portion of the Main Trunk upstream of Interstate Highway 35E (I-35E) exhibit the reduced efficiency of a relatively flat drainage system that has experienced little maintenance since it was originally constructed. Deficiencies in these portions of the drainage system include poor access, vegetative obstructions, sediment accumulation, and deteriorating and/or misplaced culverts. The portion of the Main Trunk downstream of I-35E, however, has a much steeper grade with a less significant amount of accumulated sediment, but instead exhibits scoured and sloughing banks due to channel velocities and less stable (sandy) soils. Necessary repairs in this portion of the drainage system primarily include stabilization and/or reconstruction of ditch banks, and construction of best management practices to reduce channel velocities. Reducing erosion in this portion of the drainage system will substantially decrease sediment and phosphorus delivery to Peltier Lake.

Because of the extent and varied nature of necessary repairs, the work will be completed in at least three separate phases: 1) Branch 3 and the Main Trunk upstream of I-35E; 2) Branches 1, 2, and 4; and 3) the Main Trunk downstream of I-35E. Since JD 3 is defined as a trunk conveyance system, funding of project work will be through District-wide (ad valorem) funding and through direct billing to road authorities (for reconstruction of culverts under roadways and trails). Repairs aimed at stabilizing the lower Main Trunk, reducing channel velocities, and reducing scour and erosion may also be eligible for state water quality grant funding due to associated nutrient and sediment loading reductions for Peltier Lake.

Total Estimated Budget: \$3,000,000

4.3.4 Ramsey County Ditch 4 Repair

Ramsey County Ditch 4 (RCD 4) is in the Cities of Arden Hills and Roseville and serves as the outlet for one of the most densely developed portions of the District. The system discharges first to Little Lake Johanna and then shortly downstream to Lake Johanna. RCD 4 has been extensively modified from its original condition in conjunction with development of the surrounding landscape, including replacement of portions of open channel with storm sewer piping, realignment, construction of an impoundment (Oasis pond) and armoring of the open channel. Urbanization and changing precipitation patterns have led to increased channel velocities and erosion-prone banks and bends in the channel requiring repeated maintenance and resulting in increased downstream sediment delivery.

An extensive repair of the RCD 4 open channel is required to facilitate access, restore capacity, and reduce the need for future maintenance. Components of the repair include tree removal, sediment



excavation, re-sloping and stabilization of channel banks, and velocity-reducing best management practices. Funding for the project may be through Water Management District Charges, and District-wide (ad valorem) funds (see **Section 5**). Repairs aimed at stabilizing the open channel and reducing channel velocities may also be eligible for state water quality grant funding due to associated nutrient and sediment loading reductions for Little Lake Johanna and Lake Johanna.

Total Estimated Budget: \$1,200,000

4.3.5 Anoka County Ditch 15/Judicial Ditch 4 Stormwater Master Planning and Implementation

Anoka County Ditch 15 (ACD 15) and Anoka/Washington Judicial Ditch 4 (JD 4) are two interconnected public drainage systems that serve as an outlet for the Cities of Columbus and Forest Lake. The system discharges to Upper Rice Creek before it flows into Peltier Lake. Recent repairs to the Main Trunk of JD 4, including the Browns Preserve project, have restored function to the outlet of these drainage systems. However, planned development of the lands utilizing ACD 15 and JD 4 as an outlet will require a stormwater conveyance system with a capacity and alignment that is likely not provided by the current components of ACD 15 and JD 4. Further, to meet District and State stormwater management rules, detention and retention facilities will be required for each development, which can decrease the area of developable land particularly if regional planning is not completed in advance.

Maximizing the acreage and value of developable land may require the development of stormwater master plans for the land currently using ACD 15 and JD 4 as an outlet. Since the projected land use configuration is critical in determining the alignment and size of stormwater management facilities, the Cities of Columbus and Forest Lake will lead the development of stormwater master plans for ACD 15 and JD 4, respectively. These plans will evaluate multiple scenarios to determine the most cost-effective alignment and sizing of both conveyance and detention system required to meet District rules. The preferred alternatives may require the realignment, partial abandonment, impoundment, or transfer of authority of portions of these public drainage systems.

Following the development of the stormwater master plans, the Cities and District may collaborate on multiple projects that implement the recommendations of the plans. These projects may include construction of ponds, storm sewers, ditches, infiltration features, and other best management practices. Funding of project components required to meet District Rule requirements may be borne by the landowners benefitting from those components, via a City stormwater charge, Watershed Management District charge, or ad valorem funds (see Section 5).

Total Estimated Budget: \$3,000,000

4.3.6 Stormwater Management Grant Program

The purpose of this capital improvement project is to manage excess runoff and its effects, including the potential to cause flooding, degrade water quality and diminish opportunities for groundwater recharge. The Stormwater Management Grant Program funds capital improvements constructed by counties, cities (see list of potential projects in **Appendix G**), townships, school districts, libraries, and other entities, to enhance water quality (e.g. sediment, nutrient, & chloride management), alleviate flooding issues, or



increase groundwater recharge. The intent of the program is to provide financial assistance to District partners for structural solutions that result in the control of stormwater runoff beyond what is required by District rules, especially when opportunities are associated with redevelopment, linear projects like street and utility improvements, and storm sewer improvement projects.

Grants dollars are available only for best management practices not being implemented to comply with District rules, (i.e. projects that either are not regulated by District Rule C, or projects that provide benefits above-and-beyond Rule C permit requirements). Each year, the District's Board of Managers will establish guidelines to govern the application process, review criteria and funding distribution for this program. Funding for the project will be provided by District-wide (ad valorem) funds (see **Section 5**). Detailed eligibility criteria is updated for this program on an annual basis and current information is available on the District website (<http://ricecreek.org>).

Total Estimated Budget: \$3,000,000

4.3.7 Ramsey County Ditches 2, 3 and 5 Basic Water Management Project

Ramsey County Ditches 2, 3, and 5 (RCD 2, 3, and 5) are public drainage systems managed by the District that drain stormwater runoff from approximately 5,300 acres of urban land within Ramsey County. The lands drained by RCD 2, 3, and 5 lie almost entirely within the Cities of New Brighton, St. Anthony, and Roseville. The public drainage system conveys stormwater runoff from urban catchments downstream to Pike Lake and Long Lake and ultimately to the Mississippi River via Rice Creek.

An extreme rainfall event on July 16, 2011 heightened the awareness of flooding and flood risk along the RCD 2, 3 and 5 public drainage systems. The consequences of this event prompted the cities to evaluate the adequacy of their existing stormwater conveyance and management facilities. Cities recognize that certain components of stormwater management facilities are the responsibility of the cities, some belong to the RCWD, and some are shared between the cities and the RCWD.

In August of 2013, the City Councils of New Brighton and St. Anthony each passed a resolution petitioning the RCWD to undertake a Basic Water Management Project to develop a comprehensive stormwater management plan. The City of Roseville joined the partnership with approval of an amended petition by all three cities in June 2014 (see **Appendix H**). The comprehensive stormwater management plan is expected to result in recommendations to the District Board of Managers and respective City Councils for a water management project, or a series of projects, to address stormwater management, flood damage reduction, and water quality enhancement within the drainage area of RCD 2, 3 and 5.

The project as outlined in the petitions includes four phases. Phase One of the project (completed in June 2014) established project goals and objectives, technical design criteria, a flood prone area inventory and project siting to provide direction on development of the comprehensive plan. Phase Two began in June 2018, and entailed the development of the regional, comprehensive stormwater management and flood damage reduction plan that identifies capital improvements or other actions that will be further analyzed and considered. Following the development of this plan, Phase Three will develop implementation



timelines and cost allocations. Phase Four concludes the process with implementation and construction of one or more project components.

Project funding is anticipated to be derived from several sources including municipal contributions, the RCD 2,3 and 5 Water Management District (see **Section 5**), District-wide (ad valorem) funds, local City contributions, State water quality grant funding (e.g. the Clean Water Fund grant program), and State legislative appropriation. Due to the scale of the flooding and water quality issues and associated projects to address this issue, it is imperative to the success of the project that the State has a significant role in funding the project.

Total Estimated Budget: \$22,000,000

4.3.8 Bald Eagle Lake Water Management Project

This capital improvement project is intended to address the issue of lake water quality and quantity impacting Bald Eagle Lake. Bald Eagle Lake is a 1,012-acre lake in portions of Ramsey, Washington, and Anoka counties. Bald Eagle Lake has been the subject of a Lake Management Plan (LMP) sponsored by the Bald Eagle Area Association in partnership with other organizations. The Bald Eagle Lake LMP was completed in June 2003 and later revised in November 2004. More recently, a TMDL study was completed in 2009, expanding beyond the LMP that identifies water quality issues that impact the lake; the stormwater management, watershed and in-lake factors contributing to those issues; and potential projects necessary to remedy the issues.

Based upon the available water quality monitoring information and technical analyses, more than 60% of the total phosphorus within Bald Eagle Lake comes from the internal release from sediments. An alum treatment was conducted in 2014 and 2016 as a means to reduce the internal release of phosphorus from sediment, along with other watershed activities identified in the TMDL.

In 2016, the Ramsey Conservation District completed an Urban Stormwater Retrofit Analysis for the South Bald Eagle Lake watershed. This analysis identified several opportunities to address external nutrient loading to the lake. Practices that address external loading will be critical to the long-term success of the alum treatments and will provide mitigation toward the remaining 40% of nutrient loading to Bald Eagle Lake. In 2019, the District was awarded a BWSR Clean Water Fund grant to aid in establishing an iron-enhanced sand filter on Ramsey County Ditch 11 in White Bear Township to treat urban stormwater runoff flowing to the lake from portions of downtown White Bear Lake. This project is scheduled to be implemented in 2020-2021.

Funding for the project may be provided by grants and District-wide (ad valorem) funds, although some funding may be provided by the Bald Eagle Lake Water Management District (see **Section 5**).

Total Estimated Budget: \$1,500,000



4.3.9 Clear Lake Water Management Project

Clear Lake, located in the City of Forest Lake, is the headwaters of Rice Creek. The purpose of this capital improvement project is to correct existing stormwater runoff, erosion, and sediment problems that are contributing excess nutrients to Clear Lake and causing physical damage to public rights of way in the project area.

In 2012, the Clear Lake Diagnostic Study was completed to better understand the lake’s watershed dynamics, and to identify opportunities to reduce nutrient loading to the lake. The City of Forest Lake also completed the Trunk Highway 61 Aesthetics and Water Quality Improvements Planning Study in 2012. As a result of these studies, a 2015 cooperative effort with the City of Forest Lake led to the installment of a series of BMPs to benefit Clear Lake water quality. The District anticipates further participation in projects to address water quality in Clear Lake including but not limited to ditch realignment, floodplain reconnection, iron-enhanced sand filters, tree trenches, stormwater ponds, stormwater reuse facilities, and common carp management. These projects may be accomplished directly by the District or through technical and financial collaboration with the City of Forest Lake, Forest Lake Area Schools, and/or the Clear Lake Association.

Total Estimated Budget: \$250,000

4.3.10 Anoka Chain of Lakes Water Management Project

This capital improvement project addresses the issue of degraded water quality in Peltier and Centerville Lakes and the rest of the Chain of Lakes. These lakes are in the cities of Lino Lakes and Centerville in Anoka County. Multiple diagnostic studies have been completed to identify sources of, and solutions for, the water quality degradation. First, two TMDLs to address excess nutrients in Peltier and Centerville Lakes and the remaining Chain of Lakes were initiated in 2007 and completed in 2013. The TMDL and Implementation Plan documents have identified a number of possible improvement projects for each lake, including, but not limited to, a backflow preventer to ensure a one-way flow of water from Centerville Lake into Peltier Lake. Second, the Anoka Conservation District completed Subwatershed Stormwater Retrofit Assessments for the Rice Lake and Centerville Lake subwatersheds. These assessments provided updated and detailed assessments of watershed nutrient loading sources. They also provided lists of cost-effective projects and practices for nutrient load mitigation. Lastly, the District completed a series of diagnostic studies [Appendix J] to explore nutrient loading sources specifically for Centerville Lake. These diagnostic studies found that: 1) watershed nutrient loading was relatively low, 2) backflow nutrient loading from Peltier to Centerville Lake was very low, 3) the population of common carp was moderate to low, and below the threshold for ecological damage, 4) internal nutrient loading from sediment phosphorus release was high, and 5) inactivating nutrient in the sediment with a chemical binder (e.g. aluminum sulfate) would be effective. Managing internal nutrient loading in Centerville Lake will be necessary to meet water quality goals.

In 2017, the District completed a drawdown of Peltier Lake as a pilot project to reduce the abundance of curly-leaf pondweed, an exotic invasive aquatic plant known to contribute to excessive phosphorus levels during the peak summer algae production season. Future drawdowns of Peltier Lake may be a critical component of the capital improvement project.



The RCWD, in conjunction with its project partners, will need to prioritize actions identified in the Implementation Plans and diagnostic studies, and subsequently implement these actions and other regional BMP's including stormwater reuse projects. Specifically for Centerville Lake, sediment-phosphorus must be addressed to meet water quality goals; a project to mitigate sediment phosphorus release in Centerville Lake is a priority. Funding of project components is anticipated to be derived from municipal funding, District-wide ad valorem funding, local funding (for example, via a water management district), and State water quality grants.

Total Estimated Budget: \$2,500,000

4.3.11 Silver Lake Water Management Project

This capital improvement project aims to address degraded water quality in Silver Lake, a 75-acre lake located in Anoka and Ramsey counties. An excess nutrient TMDL was approved for Silver Lake in 2010 and its Implementation Plan was approved in 2011. As outlined in the Implementation Plan, the Silver Lake watershed is fully developed with minimal existing water quality treatment. Limited opportunities are available to reduce external loading. Small, incremental nutrient load reductions are possible through retrofits as redevelopment occurs and through the implementation of BMPs throughout the subwatershed. Examples of BMPs include increasing ponding and filtration in the Silver Lake watershed using regional ponding, rain gardens, native plantings, and reforestation; retrofit detention ponds; encouraging shoreline restoration; and educating property owners about proper fertilizer use and low-impact lawn care practices. Additional implementation strategies could also include in-lake reductions of phosphorus loading through strategies such as fisheries management and in-lake alum treatments. Funding for this capital improvement project includes District-wide ad valorem and municipal funds.

Total Estimated Budget: \$250,000

4.3.12 Golden Lake Water Management Project

Golden Lake is a 57-acre lake that flows into Rice Creek below the Rice Creek Chain of Lakes. In 2009, an excess nutrient TMDL was approved for Golden Lake. The TMDL outlined implementation strategies to pursue, including a water quality pond in Circle Pines just north of the Golden Lake inlet, a potential alum treatment, lake drawdown, and vegetation management.

In an effort to identify specific opportunities to mitigate nutrient loading to Golden Lake, the Anoka Conservation District completed a Stormwater Retrofit assessment for the Golden Lake Subwatershed in 2011. This assessment led to construction of an iron-enhanced sand filter pond retrofit in the City of Blaine in 2015. Further, several additional retrofit approaches were identified in a variety of locations, including maintenance of, or alterations to, existing stormwater infrastructure, residential curb-cut rain gardens, and permeable pavement. The purpose of this capital improvement project is to further pursue such opportunities to reduce nutrient loading to Golden Lake, while also considering the lake's internal phosphorus load. Funding for this capital improvement project include District ad valorem and municipal funds.

Total Estimated Budget: \$500,000



4.3.13 Southwest Urban Lakes Implementation Project

Since its inception, the RCWD has received numerous inquiries for assistance for improving the water quality of degraded urban lakes in the southwest portion of the watershed. These reports came from homeowners and lake associations on lakes that experienced decades of concentrated urban runoff, contributing toward flooding and side-effects of nutrient loading. This capital improvement project encompasses actions taken to manage hydrology within the southwest part of the watershed in order to reduce runoff volume, manage flooding and address the degraded water quality of surface water resources that results from excess runoff within a developed urban area. This capital improvement project is generally identified within the individual management action plans contained within the report titled *Southwest Urban Lakes Study* dated April 2009. The Southwest Urban Lakes Study assessed the water quality of 24 lakes in the southwest portion of the RCWD, particularly in relation to state water quality standards, and resulted in the development of management action plans for each lake. These data and other metrics together inform the current management plans enacted by the RCWD to improve water quality, manage flooding, and improve wildlife quality for lakes throughout the southwest portion of the RCWD.

This study serves as the TMDL for seven basins in this portion of the District: Island Lake, North Basin; Island Lake, South Basin; Little Lake Johanna; Long Lake, South Basin; Moore Lake, East; Pike Lake; and Lake Valentine.

Each management action plan establishes a list of projects for further investigation. Over 200 potential retrofit BMPs—as well as activities to manage carp—are identified in the management action plans. A further feasibility assessment is needed for many of the projects before the District proceeds with implementation. Also, alternative BMPs using newer technologies may be considered. For example, the use of iron-enhanced sand filters to remove excess dissolved phosphorus from stormwater runoff was not originally contemplated in the Southwest Urban Lakes Study but has since shown to be a cost-effective option as either a stand-alone project type or when used as a retrofit to other previously constructed or contemplated projects. The RCWD intends to pursue implementation of iron-enhanced sand filters in conjunction with its implementation of the Southwest Urban Lakes Study. Stormwater reuse irrigation projects are another modern project type that will allow for runoff volume management in this urbanized area of the watershed.

The RCD 4 watershed has long been subject to severe flooding during large rain events. While much of the ditch system is currently piped, a portion of Ramsey County Ditch 4 (RCD 4) between County Road C and Terrace Drive is open channel and as of 2019 is under consideration for redevelopment. This opens a window of opportunity to undertake a series of projects that may add substantial storage volume and runoff rate control to the RCD 4 corridor. Replacing a portion of the RCD 4 open channel with pipe would also decrease the conveyance of sediment and nutrients downstream from the erodible channel itself while decreasing the cost and frequency of future maintenance efforts. The District intends to study the potential benefits of work in this area and, if determined by the Board to be worthy of investment, partner with the City of Roseville and the developers to implement beneficial water quality and runoff storage projects. The District may also consider transferring authority for portions of the RCD 4 drainage system to the City of Roseville as a condition of the District’s financial involvement in this effort.



The Southwest Urban Lakes Implementation project is anticipated to be funded by District ad valorem funds, local (municipal) funding, and State water quality grant funding.

Total Estimated Budget: \$2,000,000

4.3.14 Regional Water Management Partnership Projects

Although several TMDLs have been completed for lakes and streams throughout the RCWD, the majority of District resources are not the focus of a TMDL. For these resources, preservation and enhancement of water quality remains a priority for the District. The District and its municipal and county partners have opportunities to address this issue either through stand-alone projects or augmentation to planned infrastructure projects. One key to implementing these projects is early coordination with these District partners to recognize opportunities and begin assessing the feasibility and effectiveness of these concepts. Particularly, implementation of stormwater reuse projects identified in community Local Water Management Plans (**Section 6**) and identified as “feasible” in the RCWD 2017 Reuse Assessment (RCWD, 2017) will be addressed through this Capital Improvement Program. Further, implementation of projects identified in a 2017 Southeast White Bear Lake Stormwater Retrofit analysis completed by the Washington Conservation District will be targeted through Regional Water Management Partnership funds.

Funding for this capital improvement project will likely be through District ad valorem funds, municipal funding, and State water quality grant funding.

Total Estimated Budget: \$1,500,000

4.3.15 Maintenance of District Facilities

The RCWD owns and operates several structures and properties that are components of District-led projects designed to control flooding and improve water quality throughout the District, as summarized in **Section 3.2.3**. To preserve their function, the District completes routine maintenance and inspection of these facilities through the District Facilities Inspection, Operations, and Maintenance Program as described in **Section 4.2.3**. However, some facilities require more extensive repairs that are of a scale and nature consistent with a capital improvement project.

Two of the District Facility repairs that are known to be of a substantial capital scale are dredging of the Long Lake and Locke Lake Sediment Basins, which capture sediment from Middle Rice Creek and Lower Rice Creek, respectively. Periodic dredging is necessary to maintain the effectiveness of these sediment basins. The required dredging interval is dependent on the frequency and magnitude of rainfall events within the District. Dredging of each basin requires facilitation of access, siting for dewatering operations, off-site hauling, and extensive regulatory coordination. The cost of maintenance of these and other District Facilities is anticipated to be provided through Watershed Management District and ad valorem funding.

Total Estimated Budget: \$3,000,000



4.3.16 Middle Rice Creek Water Management Project

This capital improvement project addresses the degraded condition of a trunk conveyance system, Middle Rice Creek, which flows from Baldwin Lake to Long Lake in southern Anoka County and northern Ramsey County. The Middle Rice Creek corridor flows through six suburban communities within the riparian corridor nearly entirely publicly owned. As the surrounding landscape was settled, much of the stream was straightened to increase flow efficiency. However, this straightening led to channel instability, disconnection of floodplain, and a more rapid delivery of sediment downstream to Long Lake.

The Middle Rice Creek capital improvement project is identified in the Middle Rice Creek Assessment and Stabilization Feasibility Study dated June 13, 2008 and prioritizes the restoration and re-meandering of more than 16,000 feet of Middle Rice Creek. Re-meandering efforts at two locations along Middle Rice Creek have been completed to date. The capital improvement project will complete a restoration of the remaining locations in the feasibility study and will address sediment and water volume loads from outfalls into Middle Rice Creek. Further, in 2018, the RCWD, Ramsey County, and the City of Arden Hills completed a Green Infrastructure and Stormwater Reuse Feasibility study for the Rice Creek Commons area. Because much of Rice Creek Commons drains to Middle Rice Creek, recommendations generated in this study will be addressed through the Middle Rice Creek Water Management Capital Improvement Project. Funding for this capital improvement project is anticipated to be provided through District-wide ad valorem funding, county and municipal funding, and State water quality grant funding.

Total Estimated Budget: \$500,000

4.3.17 Lower Rice Creek Water Management Project

Lower Rice Creek, which flows from Long Lake to Locke Lake, is almost entirely in public ownership and connects several city and county parks. Lower Rice Creek is the primary water source for Locke Lake and currently experiences heavy sediment loading, placing it at risk of becoming impaired due to elevated total suspended solids. District research has identified streambank stabilization along Lower Rice Creek as the primary means to reduce sedimentation to Locke Lake, and reduce the frequency of required dredging of the Locke Lake Sedimentation Basin.

The recent Phase Four assessment of Lower Rice Creek in September 2018 identified several stabilization and restoration activities that can be implemented as stand-alone projects or in combination to improve water quality in Locke Lake prior to its discharge to the Mississippi River. These restoration efforts will decrease bank erosion, thereby reducing sediment and nutrient loading to Locke Lake and the Mississippi River, while improving habitat in Lower Rice Creek for fish and invertebrates. The assessment also concluded that decreasing early flows to Lower Rice Creek will reduce channel velocities and, consequently, sediment loading. This capital improvement project includes best management practices in the direct watershed to Lower Rice Creek downstream of Long Lake, designed to reduce runoff rates and volumes. In 2019, the District was awarded a BWSR Clean Water Fund grant to begin bank stabilization work on a stretch of Lower Rice Creek. This project is scheduled to be implemented in 2020-2021.

In 2013, the Anoka Conservation District completed a Stormwater Retrofit analysis for Moore Lake, which is within the Lower Rice Creek portion of the District. This analysis assessed several stormwater retrofit approaches within the subwatershed to mitigate phosphorus and suspended solid loading to the lake.



Approaches identified include; maintenance of existing treatment practices, residential curb-cut rain gardens; new stormwater ponding opportunities; permeable pavement; hydrodynamic separators; and stormwater re-direction. These approaches to Moore Lake water quality mitigation will be addressed through the Lower Rice Creek Water Management Capital Improvement Project.

Funding for this capital improvement project is anticipated to be provided through District ad valorem funding, municipal funding, State water quality grant funding, and Lower Rice Creek Water Management District funding (see **Section 5**).

Total Estimated Budget: \$2,000,000



4.4 Implementation Table

To meet requirements established in MR 8410.0105 Subpart 1, actions related to administration, implementation programs, and capital improvement projects are housed within the **Implementation Table (Table 4-3)** at the end of this section. The Implementation Table contains:

- A brief description of each action;
- The issue(s) addressed by implementation;
- District priority for implementation;
- Anticipated partnering entities;
- When implementation will occur within the 10-year timeframe of the plan;
- Estimated annual and total cost of action implementation; and
- The funding source(s) for each action.

The Implementation Table will be used to identify, plan, and implement specific actions and capital improvement projects to address District issues and make progress towards stated goals. However, implementation timing and anticipated costs are not intended to be absolute. The District will periodically reassess and revise the priorities of action items contained within the Implementation Table and update schedule and probable costs. Unforeseen actions not included in the Implementation Table but consistent with the goals and policies of the District will be added on an annual basis.

4.4.1 Annual Work Plans

The Annual Work Plan (AWP) contains action items from the Implementation Table that have the highest priority for initiation (or completion) within the coming year. The AWP can be used as a tool to form the basis for the operating budget for the coming year while maintaining continuity with past activities and District priorities. An assessment of the accomplishments of previous years and incomplete action items will aid in determining additions to the coming year AWP.

The District plans to use the AWP as a tool for communicating priorities to the Citizen Advisory Committee, the Technical Advisory Committee, and counties. The District will use the input received to finalize action items, adjust priorities and determine probable costs within the AWP. The AWP is expected to serve as a tool for establishing a preliminary budget for certification to the counties. Once the AWP is established, the District may consult with the Technical Advisory Committee for coordination of potential watershed projects with local capital improvement plans.

4.5 Evaluation Process

Pursuant to Rule 8410, the District will evaluate the actions within the Implementation Table and evaluate progress towards Plan goals. This will be accomplished through a District annual activity report (at least every two years) and through BWSR's Level II Performance and Assistance Program (PRAP) report. The Level II PRAP report and analysis looks at an LGU's implementation of their plan's action items and their compliance with BWSR's operational performance standards. This review is routine and is conducted once every 10 years. To aide in BWSR's review and streamline the District's evaluation process,



the District's annual activity report will review BWSR's Performance Standards checklist for basic and high-level performance compliance, and review actions in the Implementation Table to evaluate progress made towards plan goals. Each action will be rated with a progress rating of "not started," "on-going progress," or "completed/target met." Accomplishments to date and next steps will also be highlighted for each action to summarize progress made towards plan goals using plan measures. See **Figure 4-1** below for a hypothetical example of the type of information this evaluation will contain.

Periodically evaluating success provides the Board of Managers with a mechanism to evaluate progress and make the necessary adjustments needed for improvement. Efforts over the past decade restored public drainage system function, decreased flooding, stabilized stream banks through stream restoration, reduced sediment loading into lakes, and expanded education efforts for multiple program areas. These successes now form the basis for the RCWD to expand collaboration efforts with local and state partners to achieve RCWD goals.

Figure 4-1: Example action evaluation procedure for actions listed in Table 4-3.

Rice Creek Watershed District		Assessing Progress Toward 2020 WMP Implementation		Plan Year: 2020	
Indicator symbol for Progress Rating: <input type="checkbox"/> = not started <input type="radio"/> = on-going progress <input checked="" type="checkbox"/> = completed/target met					
4.2.2: NATURAL WATERWAY MANAGEMENT PROGRAM – The purpose of this program is to inspect, analyze, and implement actions impacting natural channels within the District.					
Planned Actions or Activities	Proposed Timeframe	Actual Timeframe	Accomplishments to Date	Progress Rating	Next Steps
1. Implement the RCWD Natural Channel Maintenance Policy.	2020 – 2029	2020 - ???	The District received four inquiries from private landowners about removing downed trees on Lower Rice Creek in 2020. Per the Natural Channel Maintenance Policy, one of the four trees <u>was</u> removed by the District as it presented a hydraulic limit for flows moving through Rice Creek. The other three were simply navigational barriers and the landowners were advised to remove them on their own, if desired.	<input type="radio"/>	The District intends to continue implementing the Natural Channel Maintenance Policy in future years.
2. Share communication about the District's role in non-103E drainage systems.	2020 – 2029	2020 - ???	No communications were developed in 2020 on this issue.	<input type="checkbox"/>	The District intends to prepare outreach materials on this topic in 2021 for distribution to communities and via the District website.

Want to Get Involved?

Apply for mini grants for grassroots stewardship efforts

Through the District's Master Stewards Program, apply for funding to build projects such as rain gardens to filter stormwater before it enters local lakes and streams.

Learn more about regional water projects

Find a project in your neighborhood and get involved! You can attend public meetings to learn more about the project concept and ways to help out.



Table 4-3: RCWD WMP Implementation Table

Action No.	Action	Goal No.	Priority	Partners	Schedule and Annual Budget Totals											Est. 10 Year Total	Funding Source	
					2020	2021	2022	2023	2024	2025	2026	2027	2028	2029				
DISTRICT ADMINISTRATION																		
	Office Expenses					\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$250,000	Ad Valorem	
	Manager Expenses (Per Diem, travel, etc.)					\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$250,000	Ad Valorem	
	Staff Expenses (Wages, interns, benefits, payroll, etc.)					\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$2,000,000	Ad Valorem	
	Equipment					\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$750,000	Ad Valorem	
	Training and Education					\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$250,000	Ad Valorem	
	Outside Consulting / Legal Services					\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$2,500,000	Ad Valorem	
IMPLEMENTATION PROGRAMS																		
Public Drainage System Inspection, Maintenance and Repair Program																		
	1 Inspect each public drainage system a minimum of once every five years.	PDS-1			High	N/A	x	x	x	x	x	x	x	x	x	x		
	2 Maintain and repair public drainage systems in a manner consistent with the RCWD Maintenance / Repair Flowchart.	PDS-1			High	N/A	x	x	x	x	x	x	x	x	x	x		
	3 Establish drainage easements for modifications of the public drainage systems and acquire easements during the development permit process.	PDS-1			High	N/A	x	x	x	x	x	x	x	x	x	x		
	4 Maintain historic information pertaining to the public drainage systems in an accessible, publicly searchable, and organized electronic format.	PDS-1	PDS-3	CO-1	High	N/A	x	x	x	x	x	x	x	x	x	x		
	5 Archive new drainage system records as they are created.	PDS-1			High	N/A	x	x	x	x	x	x	x	x	x	x		
	6 Maintain a geospatial database identifying structures, conditions and repairs with respect to the alignment and geometry of the system.	PDS-1			High	N/A	x	x	x	x	x	x	x	x	x	x		
	7 Determine and maintain the record of the As-Constructed and Subsequently Improved Condition for public drainage systems.	PDS-1			High	N/A	x	x	x	x	x	x	x	x	x	x		
	8 Develop and send project communications to affected landowners and stakeholders in addition to MS 103E legal requirements	PDS-3	CO-1		High	N/A	x	x	x	x	x	x	x	x	x	x		
	9 Release press statements for each major repair project.	PDS-3	CO-1		High	N/A	x	x	x	x	x	x	x	x	x	x		
	10 Pursue multipurpose drainage projects as a means of accomplishing efficient public drainage system management while accruing water quality and ecological benefits.	PDS-1	F-1	WQ-1b	WQ-1c	Medium	BWSR, Counties, Cities, SWCDs, Private Partners	x	x	x	x	x	x	x	x	x		
	Natural Waterway Management Program						\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$100,000	Ad Valorem
	11 Implement the RCWD Natural Channel Management Policy.	NDS-1	C-2		Low	Counties, Cities, SWCDs	x	x	x	x	x	x	x	x	x	x		
	12 Share communication about the District's role in non-103E drainage systems.	NDS-1	CO-2		Low	Counties, Cities, SWCDs	x	x	x	x	x	x	x	x	x	x		
	District Facilities Inspection, Operations, and Maintenance Program						\$62,500	\$62,500	\$62,500	\$62,500	\$62,500	\$62,500	\$62,500	\$62,500	\$62,500	\$62,500	\$625,000	Ad Valorem
	13 Maintain an inventory of District facilities and documentation which can be shared with partners.	DF-1a	CO-2		High	Counties, Cities, SWCDs	x	x	x	x	x	x	x	x	x	x		
	14 Develop an inspection, operation, and maintenance plan/protocol.	DF-1a			High	N/A	x	x										
	15 Prioritize, schedule, and inspect facilities to identify repair needs.	DF-1a			High	N/A	x	x	x	x	x	x	x	x	x	x		
	16 Maintain function of existing District facilities (sediment dredging, vegetation management, structural repairs, preserving access).	DF-1a	F-1		High	Counties, Cities	x	x	x	x	x	x	x	x	x	x		
	17 Abandon facilities that no longer function to meet a District objective.	DF-1a			High	Counties, Cities	x	x	x	x	x	x	x	x	x	x		
	18 Coordinate with landowners and public partners on obtaining access agreements or easements, where lacking.	DF-1b	C-2		High	Counties, Cities, Private Partners	x	x										
	Modeling and Planning Program						\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$2,000,000	Ad Valorem
	19 Provide technical and/or financial support to develop regional stormwater management plans.	F-1	F-2		High	Counties, Cities, SWCDs	x	x	x	x	x	x	x	x	x	x		
	20 Update and maintain the RCWD Public GIS Viewer for assisting permit applicants, agency partners, and other interested parties.	F-2	F-3		High	Counties, Cities, Private Partners	x	x	x	x	x	x	x	x	x	x		
	21 Manage and maintain the District GIS-integrated permit and project database for tracking permit applications while facilitating the streamlining and automation of workflows in regulatory and cost-share programs.	F-2	F-3		High	N/A	x	x	x	x	x	x	x	x	x	x		
	22 Update and maintain the District web site to effectively host information, including meetings, schedules, and operations.	F-3	CO-2		Medium	Counties, Cities, Private Partners	x	x	x	x	x	x	x	x	x	x		
	23 Maintain existing hydrologic, hydraulic, and water quality models in compliance the District-Wide Modeling Program Maintenance Policy.	F-2	F-3		High	N/A	x	x	x	x	x	x	x	x	x	x		
	24 Upload model results to the District's GIS Viewers to provide accessibility for users.	F-3			High	Counties, Cities, SWCDs	x	x	x	x	x	x	x	x	x	x		
	25 Assist municipalities, landowners, and other stakeholders by providing current District modeling products for multiple purposes, including updating Flood Insurance Rate Maps (FIRMS).	F-1	F-3		High	Counties, Cities, SWCDs, DNR, Private Partners	x		x		x				x			
	26 Provide technical assistance for staff review of municipal comprehensive plans.	C-1			Low	Cities								x	x	x		
	27 Implement the District's requirement for review and approval of city local surface water management plans.	C-1			Medium	Cities								x	x	x		
	28 Provide technical assistance to partners for identifying and prioritizing the most effective projects for targeted implementation efforts.	F-1			High	Counties, Cities, SWCDs	x	x	x	x	x	x	x	x	x	x		
	Water Quality Grant Program						\$225,000	\$225,000	\$225,000	\$225,000	\$225,000	\$225,000	\$225,000	\$225,000	\$225,000	\$225,000	\$2,250,000	Ad Valorem
	29 Identify, test, and when appropriate, implement innovative water quality improvement products, equipment, methods, and Best Management Practices to address sites with limited land area for conventional means to control the volume and rate of runoff.	F-1			Medium	Counties, Cities, SWCDs, Private Partners	x	x	x	x	x	x	x	x	x	x		
	30 Provide technical assistance to residents interested in implementing Best Management Practices (BMPs) or clean water projects aimed at improving the quality of surface waters within the District.	WQ-1b	WQ-4	C-1	C-2	Medium	Counties, Cities, SWCDs, Private Partners	x	x	x	x	x	x	x	x	x		
	Carp and Curly-leaf Management Program						\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$2,500,000	Ad Valorem
	31 Develop management plans to guide actions for prevention, management, and reduction of common carp and curly-leaf pondweed.	WQ-2a			Medium	DNR	x	x	x	x	x	x	x	x	x	x		
	32 Pursue grant applications for management of common carp and curly-leaf pondweed.	WQ-2a	WQ-2b		Medium	BWSR, DNR	x	x	x	x	x	x	x	x	x	x		
	33 Implement actions to manage common carp and curly-leaf pondweed, including vendor bidding and contracting, access agreements, and direct field work.	WQ-2a	WQ-2b		Medium	Counties, Cities, SWCDs, DNR	x	x	x	x	x	x	x	x	x	x		
	34 As appropriate, develop contact and information packets to technically assist partners in management of AIS that are not common carp and curly-leaf pondweed.	WQ-2a	WQ-2b		Low	Counties, Cities, SWCDs, DNR	x					x						
	Mini-Grants Program						\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$50,000	Ad Valorem
	35 Provide small grants (up to \$500 per project) to implement projects that can justifiably improve water quality.	WQ-1b	WQ-4	CO-1	Low	Counties, Cities, SWCDs, Private Partners	x	x	x	x	x	x	x	x	x	x		
	36 Educate public on projects implemented through Mini-Grants Program.	CO-1	C-1	C-2	Low	Counties, Cities, SWCDs, Private Partners	x	x	x	x	x	x	x	x	x	x		
	Surface Water Monitoring and Management Program						\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$3,000,000	Ad Valorem

(cont.) Table 4-3: RCWD WMP Implementation Table

Action No.	Action	Goal No.				Priority	Partners	Schedule and Annual Budget Totals										Est. 10 Year Total	Funding Source	
		2020	2021	2022	2023			2024	2025	2026	2027	2028	2029							
37	Utilize the Monitoring Program Plan to assess water quality trends to drive activities and projects aimed at protecting, maintaining and improving District water quality	WQ-1a	WQ-1b	WQ-4	WQ-5	High	N/A	x	x	x	x	x	x	x	x	x	x			
38	Update Monitoring Program Plan biannually.	WQ-5				Medium	N/A		x		x		x		x		x			
39	Identify monitoring data needs for calibrating hydraulic, hydrologic, and water quality models.	WQ-5	F-3			High	N/A	x	x	x	x	x	x	x	x	x	x			
40	Continue Citizen Assisted Monitoring Program (CAMP) efforts with adequate and well-trained volunteer staff.	WQ-5	CO-1			Medium	Met Council, Private Partners	x	x	x	x	x	x	x	x	x	x			
41	Continue Stream Health Evaluation Program (SHEP) efforts with adequate and well-trained volunteer staff.	WQ-5	CO-1			Medium	Friends of the Mississippi River	x	x	x	x	x	x	x	x	x	x			
42	Work collaboratively with partners to receive data collected on District surface water resources.	WQ-5				Medium	Counties, Cities, SWCDs	x		x		x		x		x				
43	Develop a geomorphic and habitat monitoring program for stream and ditch resources in the District.	WQ-1c	WQ-5			Low	DNR	x	x											
44	Develop monitoring plans on District management projects designed to detect changes from implementation.	WQ-5				High	N/A	x	x	x	x	x	x	x	x	x	x			
45	Develop attainable water quality targets for District surface water resources.	WQ-4	WQ-5			High	N/A	x	x	x										
Groundwater Management and Reuse Assessment Program								\$27,500	\$27,500	\$27,500	\$27,500	\$27,500	\$27,500	\$27,500	\$27,500	\$27,500	\$27,500	\$27,500	\$275,000	Ad Valorem
46	Provide technical assistance for staff review of county groundwater plans, well head protection plans, and source water protection plans, to provide feedback on how these plans correlate to District resource management.	WQ-6				Low	Counties, Cities, SWCDs	x		x		x		x		x				
47	Work with partners to achieve a better understanding of local surface and ground water dynamics and interactions.	WQ-6				Low	Counties, Cities, SWCDs		x		x		x		x		x			
48	Guide the use of stormwater infiltration BMPs in sensitive areas such as DWSMAs.	WQ-6	F-2			Low	Counties, Cities, SWCDs	x	x	x	x	x	x	x	x	x	x			
49	Promote and provide feasibility assessments to identify and study future potential stormwater reuse project areas.	WQ-6				Medium	Counties, Cities, SWCDs	x	x	x	x	x	x	x	x	x	x			
50	Collaborate with Metro watershed districts to develop consistent standards for infiltration and water reuse practices.	WQ-6				Medium	Metro WDs	x	x	x	x	x	x	x	x	x	x			
Municipal Capital Improvements- Early Coordination Program								\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$150,000	Ad Valorem
51	Collaborate with partners to develop or provide funding to capital projects for water quality and flood control during road reconstruction and other efforts of municipalities.	F-1	WQ-1c	WQ-4	C-1	High	Cities	x	x	x	x	x	x	x	x	x	x			
52	Engage city partners to evaluate feasibility of implementing regional projects and their use to meet the District's volume control and water quality requirements.	F-1	WQ-1c	WQ-4	C-1	High	Counties, Cities, SWCDs	x	x	x	x	x	x	x	x	x	x			
Boundary Management Program								\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$250,000	Ad Valorem
53	Review and, as necessary, correct the RCWD legal boundary as additional topographic and survey data becomes available and as development along the boundary occurs.	F-3	C-1			Medium	WMOs, BWSR	x	x	x	x	x	x	x	x	x	x			
Rule Revision / Permit Guidance Program								\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$450,000	Ad Valorem
54	Complete periodic review, evaluation, and modification of the District rules.	F-2	WQ-1a	R-1		Medium	N/A	x		x		x		x		x				
55	Survey permit applicants to consider solutions for stormwater and wetland permit flexibility issues	R-3				Medium	Counties, Cities, Private Partners					x								
56	Develop and maintain an online geospatial data sharing platform targeted to providing information needs for District permit applicants and an electronic means of permit submittal.	R-3				Medium	Counties, Cities, Private Partners	x	x	x	x	x	x	x	x	x	x			
57	Update District permit guidance documents.	R-3				High	N/A	x	x	x	x	x	x	x	x	x	x			
Permit Review, Inspection, and Coordination Program								\$1,075,000	\$1,075,000	\$1,075,000	\$1,075,000	\$1,075,000	\$1,075,000	\$1,075,000	\$1,075,000	\$1,075,000	\$1,075,000	\$1,075,000	\$10,750,000	Ad Valorem
58	Receive and review permits to ensure compliance with District rules.	F-2	WQ-1a			High	N/A	x	x	x	x	x	x	x	x	x	x			
59	Following permit issuance, ensure construction occurred consistent with the approved plans and per permit stipulations and conditions	R-3				High	N/A	x	x	x	x	x	x	x	x	x	x			
60	Review and ensure compliance with MPCA NPDES MS4 General permit	C-1	R-3			High	MPCA	x	x	x	x	x	x	x	x	x	x			
61	Implement District's role as LGU for WCA	WQ-3	R-2			High	Counties, Cities, Private Partners	x	x	x	x	x	x	x	x	x	x			
62	Annually audit the permit review process for Cities adopting RCWD rules.	C-1	R-3			High	Cities	x	x	x	x	x	x	x	x	x	x			
63	Inspection of permitted projects by periodically visiting each site, confirming that work is completed per the approved plans and permit conditions, and communicating observed non-compliant items to the permittees.	R-3				High	N/A	x	x	x	x	x	x	x	x	x	x			
64	Participate in project meetings and provide clarification of District requirements as needed	R-3				High	Counties, Cities, Private Partners	x	x	x	x	x	x	x	x	x	x			
65	Provide voluntary meetings and communication with prospective permit applicants prior to permit application and/or project design to address potential concerns with District rules and permit requirements.	R-3				High	Counties, Cities, Private Partners	x	x	x	x	x	x	x	x	x	x			
Water Communication and Outreach Program								\$52,500	\$52,500	\$52,500	\$52,500	\$52,500	\$52,500	\$52,500	\$52,500	\$52,500	\$52,500	\$52,500	\$525,000	Ad Valorem
66	Share information on District programs, projects, policies, priorities, and activities with critical stakeholders (including cities, counties, legislators and legislative staff, state officials and staff, and partner organizations) using appropriate methods and strategies. These may include city-county partner meetings, legislative updates, newsletters, direct mailing efforts, information sheets on projects, supporting communication and other efforts of partner organizations (MAWD, etc.), District or regional tours, and other targeted strategies.	C-1	PDS-3	ODS-1	CO-1	High	Counties, Cities, SWCDs, Private Partners, State Agencies	x	x	x	x	x	x	x	x	x	x			
67	Support city, county, and regional partners in their outreach efforts by providing content, resources, and appropriate assistance. This may include access to shared content and materials, creation of targeted materials, expertise, and cost-share and incentive programs for partners.	C-1	CO-2			Medium	Counties, Cities, SWCDs	x	x	x	x	x	x	x	x	x	x			
68	Re-develop and continue use of the RCWD website to provide access to and distribute data and information.	CO-2	PDS-3			Low	N/A	x	x											
69	Utilize the Citizen Advisory Committee to engage private citizens and businesses and inform them about resource management issues and District activities.	C-1	CO-1			Low	SWCDs	x	x	x	x	x	x	x	x	x	x			
70	Utilize a Technical Advisory Committee to engage local government, state, and federal agencies and inform them about resource management issues, District activities, and opportunities to partner.	C-1	CO-1			Medium	Counties, Cities, State Agencies, Federal Agencies	x	x	x	x	x	x	x	x	x	x			
Master Water Steward Program								\$22,500	\$22,500	\$22,500	\$22,500	\$22,500	\$22,500	\$22,500	\$22,500	\$22,500	\$22,500	\$225,000	Ad Valorem	
71	Provide intensive training as part of the Master Water Steward Program.	WQ-1b	WQ-4	CO-1		Medium	Freshwater Society, SWCDs, Cities, WMOs	x	x	x	x	x	x	x	x	x	x			
Watershed Plan Maintenance Program								\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$200,000	\$200,000	\$200,000	\$600,000	Ad Valorem	
72	Respond to WMP maintenance or amendments as necessary.	CO-2				High	BWSR	x	x	x	x	x	x	x	x	x	x			

Table 4-3: RCWD WMP Implementation Table

Action No.	Action	Goal No.				Priority	Partners	Schedule and Annual Budget Totals										Est. 10 Year Total	Funding Source	
		2020	2021	2022	2023			2024	2025	2026	2027	2028	2029							
73	Facilitate strategic planning, plan writing, and outreach related to the development of the next generation of the WMP.	CO-2				High	BWSR, Counties, Cities, SWCDs									x	x	x		
CAPITAL IMPROVEMENT PROJECTS																				
74	Anoka County Ditch 53-62 Repair	PDS-1	F-1	F-2	WQ-1c	High	Anoka County, Blaine, Circle Pines, Private Partners	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000							\$1,500,000	Ad Valorem, Direct Billing, Water Management District
75	Anoka Ramsey Judicial Ditch 1 Repair	PDS-1	F-1	WQ-1c		High	Anoka County, Blaine, Mounds View, Circle Pines, Private Partners									\$250,000	\$250,000	\$500,000	Ad Valorem, Direct Billing, Water Management District	
76	Anoka Washington Judicial Ditch 3 Repair	PDS-1	F-1	F-2	WQ-1c	High	Anoka County, Hugo, Lino Lakes, State Agencies	\$375,000	\$375,000	\$375,000	\$375,000	\$375,000	\$375,000	\$375,000	\$375,000				\$3,000,000	Ad Valorem, Direct Billing, State Grants
77	Ramsey County Ditch 4 Repair	PDS-1	F-1	F-2	WQ-1c	High	Ramsey County, Roseville, Arden Hills, Private Partners					\$400,000	\$400,000	\$400,000				\$1,200,000	Ad Valorem, Direct Billing, Water Management District	
78	Anoka County Ditch 15 / Judicial Ditch 4 Stormwater Master Planning and Implementation	PDS-1	F-1	F-2		High	Anoka County, Columbus, Forest Lake, Private Partners	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$3,000,000	Ad Valorem, Direct Billing, Water Management District	
79	Stormwater Management Cost Share	F-1	WQ-1b	WQ-4	WQ-6	High	BWSR, Counties, Cities, SWCDs (District-wide)	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$3,000,000	Ad Valorem	
80	Ramsey County Ditches 2,3, and 5 Basic Water Management Project	PDS-1	F-1			High	Ramsey County, New Brighton, St. Anthony Village, Roseville, State Agencies	\$2,200,000	\$2,200,000	\$2,200,000	\$2,200,000	\$2,200,000	\$2,200,000	\$2,200,000	\$2,200,000	\$2,200,000	\$2,200,000	\$22,000,000	Ad Valorem, City, State Grants, State Legislative	
81	Bald Eagle Lake Water Management Project	F-1	WQ-4			High	Anoka County, Ramsey County, Washington County, Hugo, Lino Lakes, White Bear Twp., State Agencies, Private Partners	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$1,500,000	Ad Valorem, Water Management District, State Grants	
82	Clear Lake Water Management Project	F-1	WQ-1b	WQ-4	WQ-6	High	Washington County, Forest Lake, SWCDs, State Agencies	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$250,000	Ad Valorem, City, State Grants	
83	Anoka Chain of Lakes Water Management Project	WQ-4	WQ-6			High	Anoka County, Multiple Cities, SWCDs, State Agencies	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$2,500,000	Ad Valorem, City, State Grants, Water Mgmt District	
84	Silver Lake Water Management Project	WQ-4				High	Ramsey County, New Brighton, St. Anthony Village, Columbia Heights, SWCDs, State Agencies	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$250,000	Ad Valorem, City, State Grants	
85	Golden Lake Water Management Project	WQ-4				High	Anoka County, Circle Pines, Lexington, Blaine, SWCDs, State Agencies	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$500,000	Ad Valorem, City, State Grants	
86	Southwest Urban Lakes Implementation	F-1	WQ-4	WQ-2b	WQ-6	High	Anoka County, Multiple Cities, SWCDs, State Agencies	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$2,000,000	Ad Valorem, City, State Grants	
87	Regional Water Management Partnership Projects	WQ-1b	WQ-4	WQ-6		High	Counties, Cities, SWCDs, State Agencies (District-Wide)	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$1,500,000	Ad Valorem, City, State Grants	
88	Maintenance of District Facilities	DF-1a	DF-1b			High	Counties, Cities, SWCDs, MnDOT, Private Partners (District-Wide)	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$3,000,000	Ad Valorem, Water Management District	
89	Middle Rice Creek Water Management Project	WQ-1c	F-1	DF-1a	WQ-1b	High	Ramsey County, Anoka County, Arden Hills, Shoreview, Blaine, Circle Pines, Lino Lakes, SWCDs, State Agencies	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$500,000	Ad Valorem, City, State Grants	
90	Lower Rice Creek Water Management Project	WQ-1c	F-1	DF-1a	WQ-1b	High	Anoka County, Ramsey County, Fridley, New Brighton, Mounds View, Spring Lake Park, SWCDs, State Agencies, Private Partners	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$2,000,000	Ad Valorem, City, State Grants, Water Management District	
Estimated Annual Total								\$8,315,000	\$8,315,000	\$8,315,000	\$8,315,000	\$8,315,000	\$8,415,000	\$8,415,000	\$8,615,000	\$8,090,000	\$8,090,000	\$83,200,000		



5. Watershed Financing

5.1 Basic Approach

The RCWD intends to distribute costs for administration, implementation programs, and capital improvement projects as equitably and effectively as possible without disproportionately high administrative costs. The financing and funding of District efforts is carried out using the various funding methods available to provide a balance between equity in paying for activities and an effective process. These funding methods include District-derived funds and outside funding sources. In order to both serve the District as a whole and address specific issues, the RCWD uses a variety of District-derived funding mechanisms that are available through the Metropolitan Surface Water Management Act (MS 103B), Watershed District Law (MS 103D) and Drainage Law (MS 103E). (Table 5-1).

Table 5-1: Summary of District-Derived* funding mechanisms

<i>District-Derived Funding Mechanism</i>	<i>District Operation</i>
Ad Valorem Levies	Administration
	District-wide programs
	Projects of common benefit
	Operations and maintenance of District facilities
Water Management District (WMD) Charges	Projects within a WMD deriving local benefit (MS 103D)
Fees	Permit application and reviews
Stormwater Charges	Projects with defined local benefits
Benefitted Lands Assessment	Petition projects under watershed law (MS 103D)
	Petition projects under watershed law (MS 103E)

* Excludes other means of funding (e.g., grants).

The implementation programs described in **Section 4** are activities used to address issues within the District and make progress towards measurable goals. The programs are generally implemented at the watershed level providing wide-ranging benefits and therefore tend to be financed across the entire watershed. Watershed-wide collection of funds is typically more cost-effective administratively.

The RCWD completes investigations and prepares studies and plans necessary to implement construction projects intended to solve issues. Studies and plans are completed in order to identify potential problems, identify reasonable alternatives, and propose necessary actions. Construction projects are needed at times to prevent or correct problems that arise in the District or capitalize on opportunities to improve resources. These projects are a necessary part of the activities of the District, which serve to provide effective management of District resources.

A variety of mechanisms are available to fund the administration and operation of the District and to complete studies, implement programs and plan and construct projects. Only a summary of the various



funds is presented in this Section, with the intent to generally understand their intended use. More than one funding mechanism can be applied to a specific study, program, or project.

5.2 Statutory Authorities

Enabling legislation for the authorities exercised by the District are found in Minnesota Statutes (MS) chapter 103D (the “Watershed District Law”), chapter 103B.201 - .253 (the “Metropolitan Surface Water Management Act”), and chapter 103E (the “Drainage Code”). Each piece of enabling legislation addresses slightly different functions, purposes and authorities of the District. Financing authorities unique to each enabling legislation are outlined below.

5.2.1 Watershed District Law Authorities

MS 103D provides the basic authority for the District to tax, assess and impose charges on a project basis and for various routine administrative programs of the District. Taxes, typically referred to as “ad valorem” tax, use a percentage of market value to determine the District’s share of ordinary property taxes. The District’s ad valorem tax is in addition to those imposed to generate revenue for city and county purposes. Assessments are project-specific and must be based on the improvement to property value resulting from a specific project. Charges, like assessments, are also project specific. Unlike assessments, charges are determined based on the cost of providing a service to or of managing a burden generated from a property.

5.2.2 Metropolitan Surface Water Management Act Authorities

MS 103B provides authority in addition to that found in MS 103D. Specifically, the Metropolitan Surface Water Management Act authorizes additional ad valorem taxes for planning and management activities of water management organizations within the seven-county metropolitan area. These taxes may be levied to fund the administration of the District and to implement programs and capital improvement projects identified in an approved and adopted watershed management plan. Watershed management organizations may accumulate the proceeds of levies as an alternative to issuing bonds to finance improvements.

5.2.3 Drainage Code Authorities

MS 103E provides authority to fund public drainage projects and maintenance activities. The basis of funding under the Drainage Code is benefitted lands assessment – similar to MS 103D assessments as discussed above. The District, upon establishment, became the drainage authority for all public drainage systems within the District boundary as a result of transfer orders from the various counties. In addition to the authorization for benefitted lands assessment under the Drainage Code, the Watershed District Law allows the use of alternative authority under MS 103B and 103D to fund public drainage activities. With the consent of the governing bodies of affected municipalities, the District may fund public drainage activities by ad valorem taxation and charges in addition to benefitted lands assessment.



5.3 Water Management Districts

The RCWD uses water management districts as one of several funding mechanisms for the implementation of activities to solve local and regional issues. The provision for collection of charges (MS 103D.729 and 444.075) allows a watershed district, through the amendment of its plan or during an update to the WMP, the authority to establish one or more water management districts for the purpose of collecting revenues and paying the costs of projects initiated under MS 103B.231, 103D.601, 103D.605, 103D.611, or 103D.730.

To establish a watershed management district, the WMP update, or an amendment to the WMP, must describe the area included, the estimated costs or amount of necessary charges, the methods used to determine the charges, and the duration the water management district will remain in effect. Further, the District is required by statute (M.S. 103D.729 subd. 3) to notify towns, cities, and counties within the affected Watershed Management District area prior to initiating projects and charges. After adoption, the amendment or WMP must be filed with the county auditor and county recorder of each county affected by the water management district. The water management district may be dissolved by the same procedures as prescribed for the establishment of the water management district.

A distinguishing element of the water management district over an assessment, or ad valorem tax is that the watershed district assumes the authority similar to that of a municipality; the ability to establish a system of charges based on a prescribed method, such as a property's contribution of storm water and/or pollutants to a receiving body of water. Thus, funds generated through a water management district can be based upon a mechanism related to a property's contribution to a problem rather than the value of the property. Ultimately the water management district provides a supplemental financing tool for the RCWD and is especially useful in situations when constituents express a desire for a mechanism of localized charges. The water management districts as established below provide the District the ability, but do not obligate the District, to collect charges within each water management district for the purposes and durations describe below.



5.3.1 Bald Eagle Lake Water Management District

In 2010, the RCWD established the Bald Eagle Lake Water Management District (BEL-WMD). Bald Eagle Lake is a 1,012-acre lake in portions of Ramsey, Washington, and Anoka Counties. Bald Eagle Lake was the subject of a 2003 Lake Management Plan (LMP) sponsored by the Bald Eagle Area Association (BEAA) in partnership with other organizations. The Bald Eagle Lake LMP identifies water quality issues that impact the lake including stormwater management, watershed, and in-lake factors as well as potential projects necessary to remedy the issues. A subsequent Total Maximum Daily Load Study on Bald Eagle Lake (2012) further refined nutrient loading sources and identified specific nutrient reduction projects.

The Bald Eagle Lake LMP and TMDL identify a variety of projects required to manage and improve water quality within the lake. Ongoing expenditures are necessary to address in-lake, watershed, and shoreline sources of phosphorus and sediment including, but not limited to:

- Curlyleaf pondweed (*Potamogeton crispus*) control;
- Common carp (*Cyprinus carpio*) control;
- Native habitat protection;
- Shoreland restoration and stabilization;
- Surveys and inventories, including but not limited to, aquatic plant monitoring and fish populations;
- Aluminum sulfate or other tools for managing sediment-phosphorus release; and
- Stormwater management and treatment.

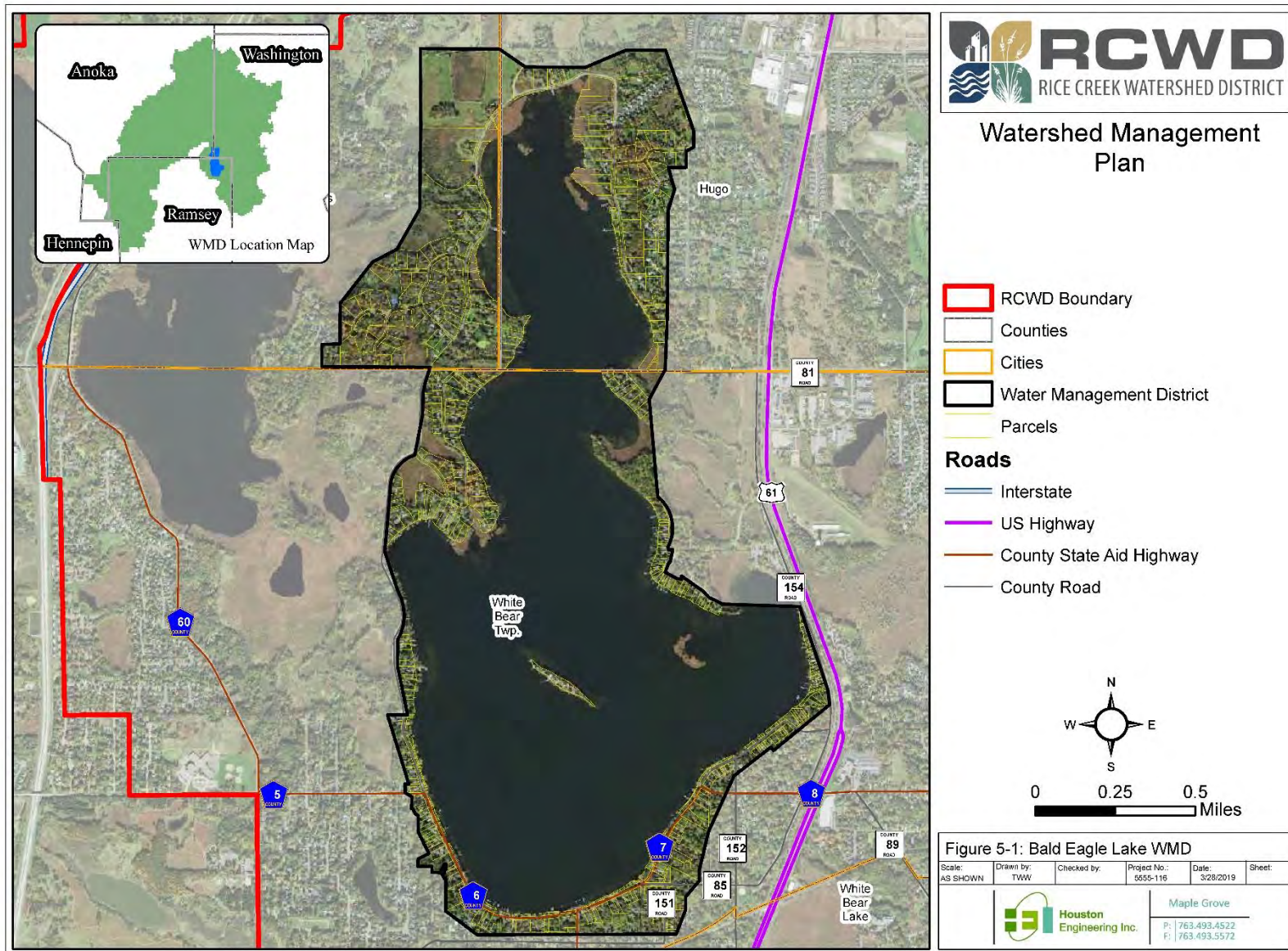
Projects will be selected and implemented annually through a separate work plan and budget that will be incorporated into the District's annual work plan and budget process, including a public notice and hearing. The BEAA will be included in the development of these annual work plan and budgets.



Area Included: The area included in the BEL WMD is limited to riparian properties and those properties that have deeded access to Bald Eagle Lake, as shown in **Figure 5-1**.



Figure 5-1: Bald Eagle Lake WMD





Estimated Costs: Based on the anticipated unfunded on-going expenditures identified above, the total estimated costs to the BEL WMD for the 10-year (2020-2029) budget are \$500,000.



Methods for Determining Charges: Charges to parcels within the BEL WMD will be utilized to fund project components. The budget for these projects will be reviewed with the BEAA prior to implementing charges for that project. The method to determine the charge per parcel is based on the quantity and quality characteristics of runoff, which is related to a parcel’s proximity to the lake. Generally, parcels with direct access to the lake will be charged twice that of parcels with deeded access to the lake. However, annual charges will be capped at \$150 per year per parcel for parcels with direct access and \$75 for parcels with deeded access to the lake. If the annual budget exceeds the funds derived from charges, the excess will be made from other funding mechanisms. Publicly owned lands within the BEL WMD will be exempt from the stormwater charge. This approach may be further defined or revised once the RCWD develops the necessary data required to determine the charge.



Duration: This BEL WMD will be effective over the life cycle of this plan as a source of funding. If the BEL WMD is desired beyond expiration of this plan, the BEL WMD will be addressed in a subsequent Watershed Management Plan

5.3.2 ACD 53-62 Water Management District

In 2011, the RCWD Board authorized a petition to amend the District’s WMP to include repair projects for four public drainage systems (ACD 10-22-32, 31, 46, and 53-62) and to establish water management districts for these repair projects. The District received municipal concurrence to exercise alternative authority for repair of the drainage systems as provided in MS 103D.621, subdivision 4. Pursuant to its alternative authority, in 2013 and 2016 the District initiated repair of portions of the ACD 53-62 public drainage system (Branches 1 and 2) under MS 103B.231 and 103D.605. The District anticipates that it will continue to repair the remaining portions of the public drainage system in disrepair from 2020-2029.



Area Included: The hydrologic boundary of the ACD 53-62 public drainage system comprises the area for the ACD 53-62 WMD as shown in **Figure 5-2**



home



Sect. 1



Sect. 2



Sect. 3



Sect. 4

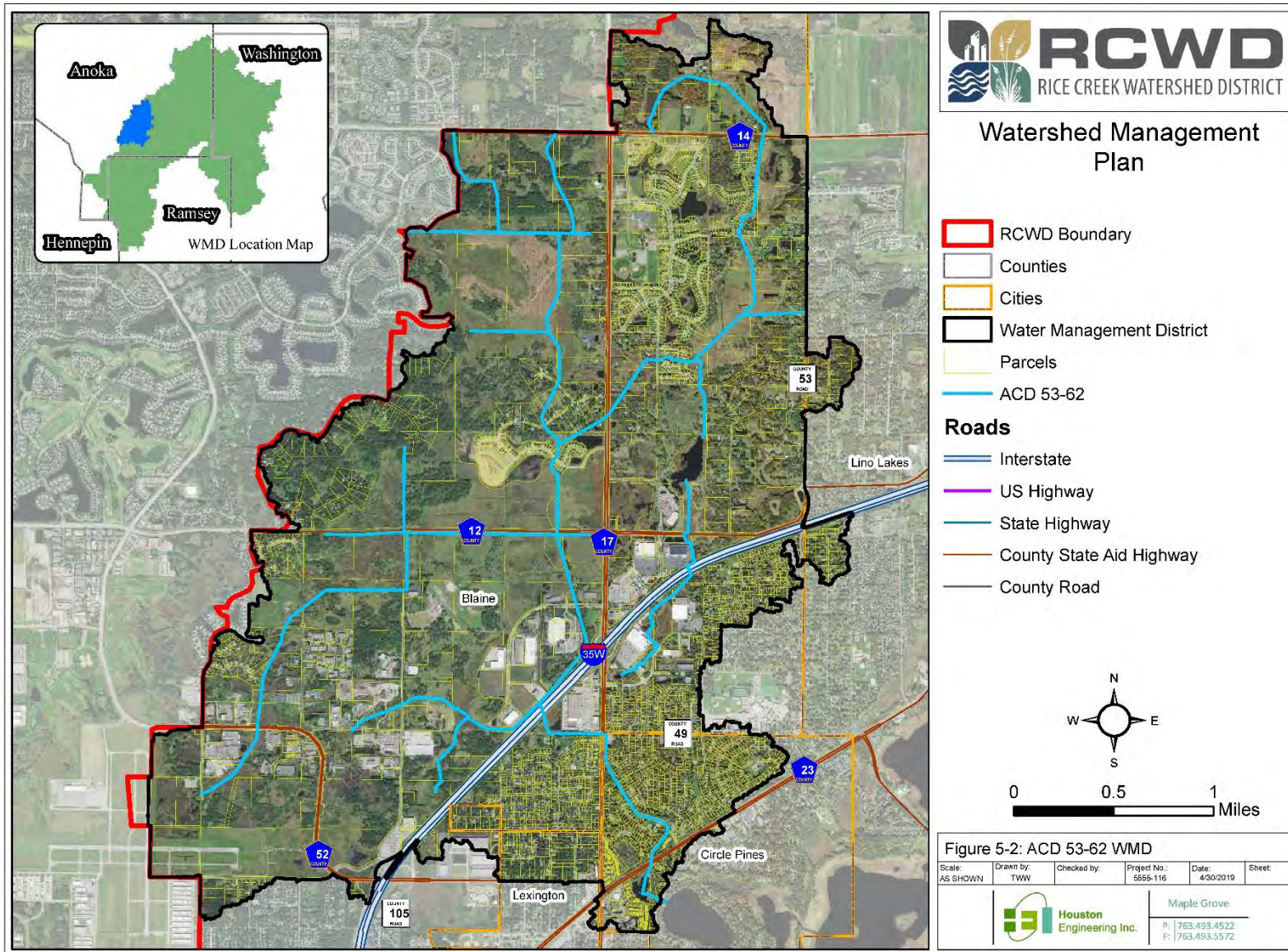


Sect. 5



Sect. 6

Figure 5-2: ACD 53-62 WMD





Estimated Costs: The charge collected may be used for the implementation of features providing benefit to properties within the boundary of the ACD 53-62 WMD. These features yield direct benefit by providing predictable drainage to undeveloped and developed land. The Engineer’s Opinion of Probable Cost for the project is an estimated \$1,500,000 from 2020-2029. No more than 60% of that cost (est. \$900,000) will be paid by the charge collected through the ACD 53-62 WMD. The remaining portion of the estimated project cost, primarily for all or portions of those features which avoid wetland impacts or restore wetlands and maintain historic irrigation function, will be paid for through the District-wide ad valorem levy.



Methods for Determining Charges: A multi-step process will be used to determine the WMD charge. The first step establishes the amount of the total project cost attributed to local versus regional benefit, as defined by the Board of Managers. For each project feature, the Board of Managers will decide whether the project feature results wholly in a local benefit, wholly in a regional benefit or in both local and regional benefits. Those features resulting in a local benefit will be paid for using revenue from the WMD charge. Those features resulting in a regional benefit will be paid for by revenue generated from the ad valorem levy. For those features with both local and regional benefit, the Board of Managers will determine the proportion of the feature resulting in regional benefit and the proportion of the feature resulting in local benefit.

The second step consists of assigning the local benefits to “local benefit categories.” The probable cost of each project feature resulting in local benefits will be apportioned to one or more of three local benefit categories: 1) currently undeveloped lands; 2) currently developed land; and 3) lands zoned for development or redevelopment. The “current land use benefit” will be the sum of the currently undeveloped benefit and the currently developed benefit.

The third step is to apportion the estimated current land use benefit to currently undeveloped and currently developed lands based on the proportion that undeveloped versus developed lands contribute to the current total runoff volume using the following method:

- Determine the curve numbers or runoff coefficients for each current land use within the ACD 53-62 WMD through use of soils and land use data;
- Compute the annual runoff volume for each current land use through use of the curve number or runoff coefficients and the annual average precipitation depth;
- Sum the annual runoff volumes for all current land uses within the ACD 53-62 WMD to determine the total annual runoff volumes for current conditions;
- Determine the portion (percent) of the annual current total runoff volume contributed by currently undeveloped and currently developed lands;
- Multiply the current land use benefit by percentage of the runoff from currently undeveloped lands to determine the currently undeveloped benefit; and
- Multiply the current land use benefit by the percentage of the runoff from currently developed lands to determine the currently developed benefit.



The currently undeveloped benefit and the currently developed benefit are then apportioned to each parcel based on current land use and the portion of runoff volume as follows:

- Assign a dominant land use to each parcel;
- Compute the estimated runoff volume based on that land use for each parcel;
- Divide the estimated runoff volume for each parcel by the total runoff for the current land use condition to determine the per parcel portion (percent) of the total current runoff; and
- Multiply the per parcel percentage of the current land use runoff by either the currently undeveloped benefit or the currently developed benefit, depending upon how the parcel is classified.

The final step in the process is to determine the per parcel charge associated with future municipal development. This will be accomplished by determining the portion of the total runoff contributed by a parcel based on future land use zoning, applied to the future land use benefit using the following approach:

- Determine the curve numbers or runoff coefficients for each future land use within the ACD 53-62 WMD through use of soils and land use data;
- Compute the annual runoff volume for each future land use through use of the curve number or runoff coefficients and the annual average precipitation depth;
- Sum the annual runoff volumes for all future land uses within the ACD 53-62 WMD to determine the total annual runoff volumes for future (no BMPs) conditions;
- Assign a dominant future land use to each parcel;
- Compute the estimated runoff volume based on that land use for each parcel; and
- Multiply the per parcel portion (percent) of the future land use runoff by future land use benefit.

The charge for the current land use and future land use will be summed to obtain the total per parcel charge.



Duration: The ACD 53-62 WMD will be effective until completion of the 10-year life cycle of this WMP.



5.3.3 ACD 15/JD 4 Water Management District

The RCWD petitioned itself for repair of this public drainage system on March 8, 2006 and directed the District Engineer to complete a Repair Report. The 2009 Repair Report recommended the implementation of Alternative 7 - Modified Least Environmentally Damaging Practicable Alternative to provide the necessary level of service for agricultural drainage. This alternative provided the additional purposes of avoiding and minimizing adverse wetland impacts, restoring wetlands, and establishing floodplain boundaries, thereby improving ecological resources and reducing the likelihood of flood damages.

The District received municipal concurrence to exercise alternative authority for repair of the drainage systems as provided in MS 103D.621, subdivision 4. Pursuant to its alternative authority, the District initiated repair of the drainage system under MS 103B.231 and 103D.605.

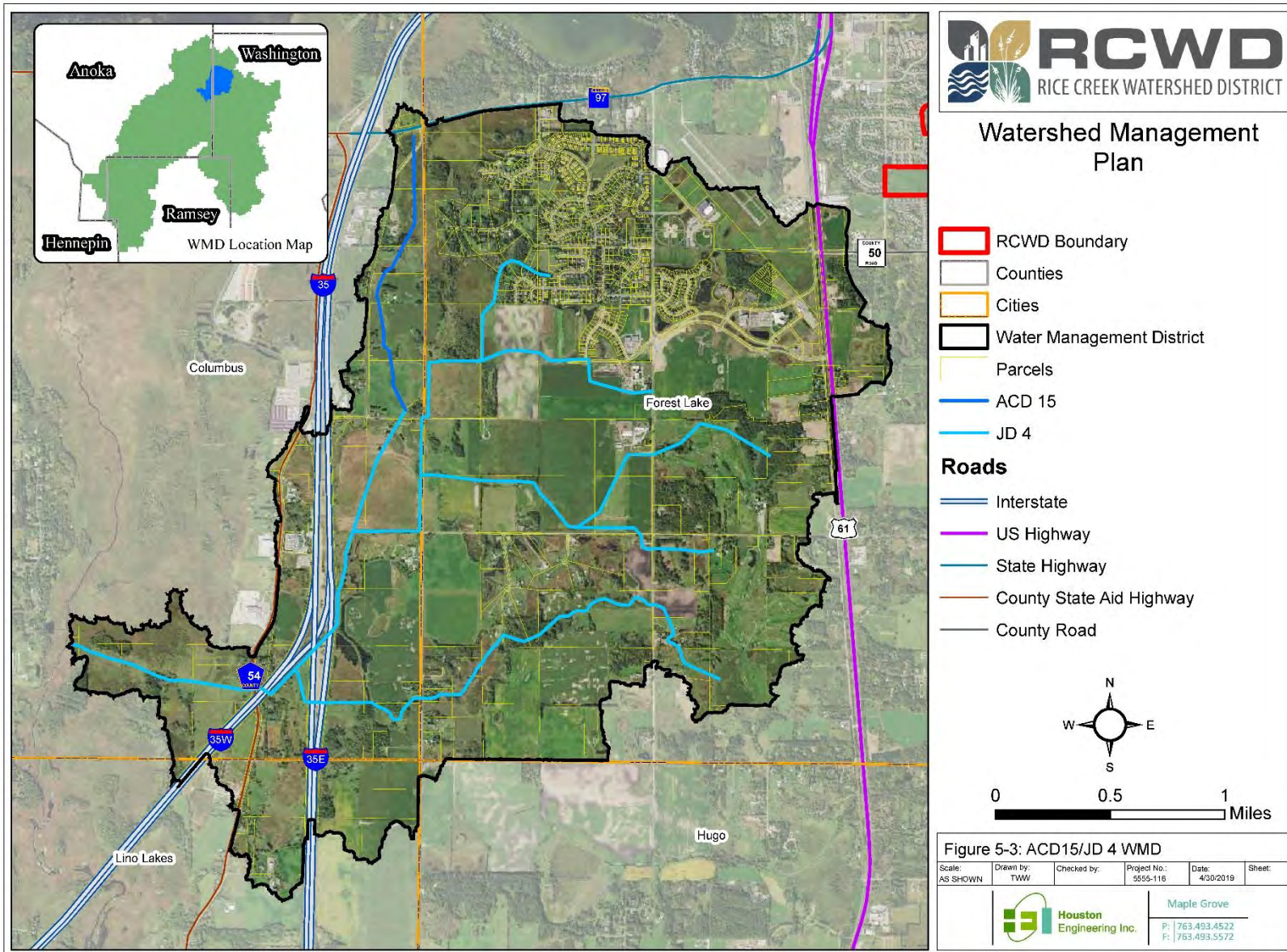
Beginning in 2012, funds collected through the WMD were used to construct specific project features. The specific project features to be planned for, designed, constructed and maintained using the WMD were described by the Engineer's Report as amended. These features included, but were not limited to, an initial project to realign and repair the Main Trunk of JD 4, and subsequent replacement of existing tiles on the Main Trunk, Branch 3, and Branch 4. Some of these project components remain to be completed.



Area Included: The hydrological boundary of the ACD 15/JD 4 public drainage system comprises the area for the ACD 15/JD4 WMD as shown in **Figure 5-3**.



Figure 5-3: ACD 15/JD 4 WMD





Estimated Costs: The charge collected will be used for the continued implementation of those features providing benefit to properties located within the boundary of the ACD 15/JD 4 WMD.

These features yield direct benefit by providing predictable drainage to currently undeveloped and developed land while considering drainage needs as development proceeds. The Engineer’s Opinion of Probable Cost for the project was an estimated \$2,300,000 of which an estimated \$955,000 would be paid by the charge collected through the ACD 15/JD 4 WMD. The remaining portion of the Opinion of Probable Cost, primarily for all or portions of those features which avoid wetland impacts or restore wetlands, have been paid for through the District-wide ad valorem levy. To date, approximately \$290,000 of charges have been collected for the WMD. Remaining WMD fund balance will be used to pay for the continued replacement of tile and maintenance of prior project features.



Methods for Determining Charges: If additional charge collection is necessary for funding completion of remaining project components, the method to determine the charge on a per acre basis will consist of a two-step process: 1) the probable cost of each project feature will be

apportioned across three categories; currently undeveloped, developed, and ecological based upon the anticipated benefits accrued; and 2) the probable cost within the currently undeveloped and developed categories will be apportioned based upon the estimated volume of runoff contributed based on the present and future zoned land use.

The method to determine the per acre charge will generally consist of evaluating the runoff amount by land use type. Specifics of the method of determining the stormwater charge are expected to include:

- Determine the existing and future curve numbers or runoff coefficients for each current and future land use within the ACD 15/JD 4 WMD through use of soils and land use data;
- Compute the annual runoff volume for each current and future land use through use of the curve number or runoff coefficients and the annual average precipitation depth;
- Sum the annual runoff volumes for all current and future land uses within the ACD 15/JD 4 WMD to determine the total annual runoff volumes for current and future conditions;
- Sum the annual runoff volume for each current and future land use. Divide the sum of the annual runoff volumes for current and future land uses by the total annual runoff volume for all current and future land uses, respectively within the ACD 15/JD 4 WMD. This represents a “charge ratio” for a current and future land use; and
- Apply the charge ratio to the total amount of revenue needed for the ACD 15/JD 4 WMD to carry out the projects, programs and activities of the RCWD within the ACD 15/JD 4 WMD. This charge will allow for a credit for water quality and volume control BMPs that are in excess of a permit requirement.

Publicly owned lands currently zoned as parkland within the ACD 15/JD 4 WMD will be exempt from the stormwater charge. The charge for a specific parcel will be determined by area-weighting the per acre charges based on the land use within a parcel.

This approach may be further defined or revised once the RCWD develops the necessary data required to determine the charge.



Duration: This ACD 15/JD4 WMD will be effective until completion of the 10-year life cycle of this WMP.



5.3.4 ACD 10-22-32 Water Management District

The RCWD petitioned itself for a repair of the Anoka County Ditch 10-22-32 public drainage system on June 13, 2007 and directed the District Engineer to complete a Repair Report. In 2010, the District Engineer completed a new Repair Report for this drainage system. The District Engineer then completed a 2011 Addendum to the Repair Report recommending a Revised Engineer’s Recommended Alternative. This alternative envisions that a repair, similar to the Functional Repair Profile Alternative #2 as described in the Repair Report, is initially constructed to serve active agricultural operations by the drainage system with the following modifications: 1) repair only select portions of the system to the Functional Repair condition to provide the level of service necessary for active agricultural operations; and 2) maintain other locations within the system that are not adjacent to or serving active agricultural lands to the existing profile via spot cleaning, removal of vegetative obstructions and replacement of non- or low-functioning culverts.

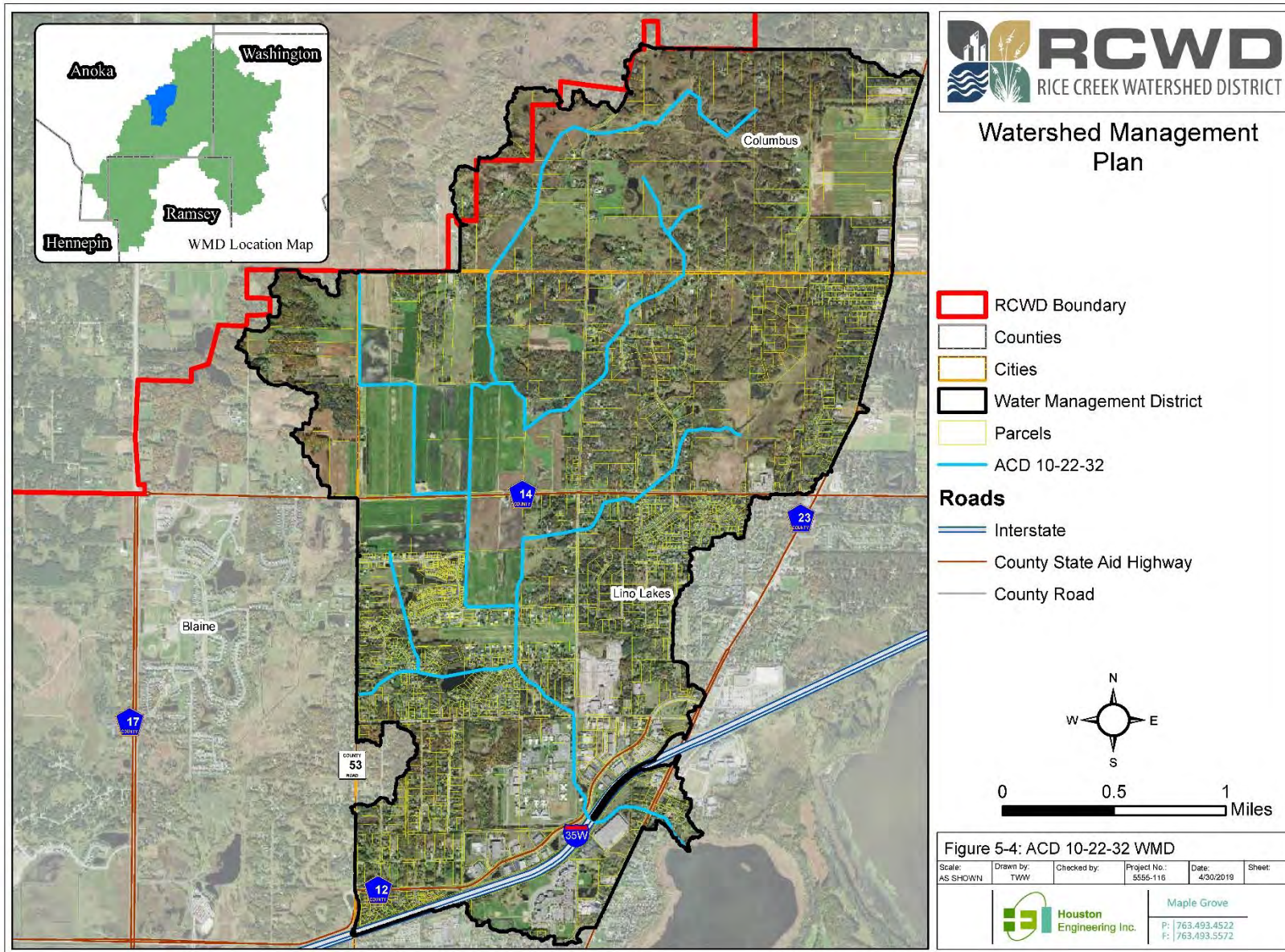
In 2011, the RCWD Board authorized a petition to amend the District’s WMP to include public drainage system repairs for Anoka County Ditches 10-22-32, 31, 46, and 53-62 and to establish water management districts for the repair of these drainage systems. The District received municipal concurrence to exercise alternative authority for repair of the drainage systems as provided in MS 103D.621, subdivision 4. Pursuant to its alternative authority, the District initiated repair of the drainage system under MS 103B.231 and 103D.605, completing these repairs in 2012. The District continues to complete maintenance of ACD 10-22-32 to address sedimentation and erosion in the system related to the initial repair.



Area Included: The hydrologic boundary of the ACD 10-22-32 public drainage system comprises the area for the ACD 10-22-32 WMD as shown in **Figure 5-4**.



Figure 5-4: ACD 10-22-32 WMD





Estimated Costs: The charge collected will be used for the implementation of those features providing benefit to properties located within the boundary of the ACD 10-22-32 WMD. These features yield direct benefit by providing predictable drainage to currently undeveloped and developed land while considering drainage needs as development proceeds. The Engineer’s Opinion of Probable Cost for the project was an estimated \$1,130,000 of which an estimated \$322,000 was to be paid by the charge collected through the ACD 10-22-32 WMD. The remaining portion of the estimated project cost, primarily for all or portions of those features which avoid wetland impacts or restore wetlands and maintain historic irrigation function, were paid for through the District-wide ad valorem levy. A portion of the certified WMD charge (for benefit of future land use) was deferred until such time that the parcel(s) develop, redevelop, or experience a boundary modification. This remaining WMD charge will be used to pay for the continued maintenance of the system.



Methods for Determining Charges: If additional WMD charges are to be collected, a multi-step process will be used to determine the WMD charge. The first step establishes the amount of the total project cost attributed to local versus regional benefit, as defined by the Board of Managers. For each project feature, the Board of Managers will decide whether the project feature results wholly in a local benefit, wholly in a regional benefit or in both local and regional benefits. Those features resulting in a local benefit will be paid for using revenue from the WMD charge. Those features resulting in a regional benefit will be paid for by revenue generated from the ad valorem levy. For those features with both local and regional benefit, the Board of Managers will determine the proportion of the feature resulting in regional benefit and the proportion of the feature resulting in local benefit.

The second step consists of assigning the local benefits to “local benefit categories.” The probable cost of each project feature resulting in local benefits will be apportioned to one or more of three local benefit categories: 1) currently undeveloped lands; 2) currently developed land; and 3) lands zoned for development or redevelopment. The “current land use benefit” will be the sum of the currently undeveloped benefit and the currently developed benefit.

The third step is to apportion the estimated current land use benefit to currently undeveloped and currently developed lands based on the proportion that undeveloped versus developed lands contribute to the current total runoff volume using the following method:

- Determine the curve numbers or runoff coefficients for each current land use within the ACD 10-22-32 WMD through use of soils and land use data;
- Compute the annual runoff volume for each current land use through use of the curve number or runoff coefficients and the annual average precipitation depth;
- Sum the annual runoff volumes for all current land uses within the ACD 10-22-32 WMD to determine the total annual runoff volumes for current conditions;
- Determine the portion (percent) of the annual current total runoff volume contributed by currently undeveloped and currently developed lands;
- Multiply the current land use benefit by the percentage of the runoff from currently undeveloped lands to determine the currently undeveloped benefit; and
- Multiply the current land use benefit by the percentage of the runoff from currently developed lands to determine the currently developed benefit.



The currently undeveloped benefit and the currently developed benefit are then apportioned to each parcel based on current land use and the portion of runoff volume as follows:

- Assign a dominant land use to each parcel;
- Compute the estimated runoff volume based on that land use for each parcel;
- Divide the estimated runoff volume for each parcel by the total runoff for the current land use condition to determine the per parcel portion (percent) of the total current runoff; and
- Multiply the per parcel percentage of the current land use runoff by either the currently undeveloped benefit or the currently developed benefit, depending upon how the parcel is classified.

The final step in the process is to determine the per parcel charge associated with future municipal development. This will be accomplished by determining the portion of the total runoff contributed by a parcel based on future land use zoning and applied to the future land use benefit using the following approach:

- Determine the curve numbers or runoff coefficients for each future land use within the ACD 10-22-32 WMD through use of soils and land use data;
- Compute the annual runoff volume for each future land use through use of the curve number or runoff coefficients and the annual average precipitation depth;
- Sum the annual runoff volumes for all future land uses within the ACD 10-22-32 WMD to determine the total annual runoff volumes for future (no BMPs) conditions;
- Assign a dominant future land use to each parcel;
- Compute the estimated runoff volume based on that land use for each parcel; and
- Multiply the per parcel portion (percent) of the future land use runoff by future land use benefit.

The charge for the current land use and future land use will be combined for the total per-parcel charge.



Duration: The ACD 10-22-32 WMD will be effective until completion of the 10-year life cycle of this WMP.

5.3.5 ACD 31 Water Management District

In 2009, the RCWD Board of Managers directed the Administrator and the District Engineer to evaluate alternatives for the repair of the Anoka County Ditch 31 public drainage system. In 2010, a Repair Report was prepared by the District Engineer. This was followed with an Addendum to the Repair Report in 2015, which recommended system-wide repair to the as constructed and subsequently improved condition.

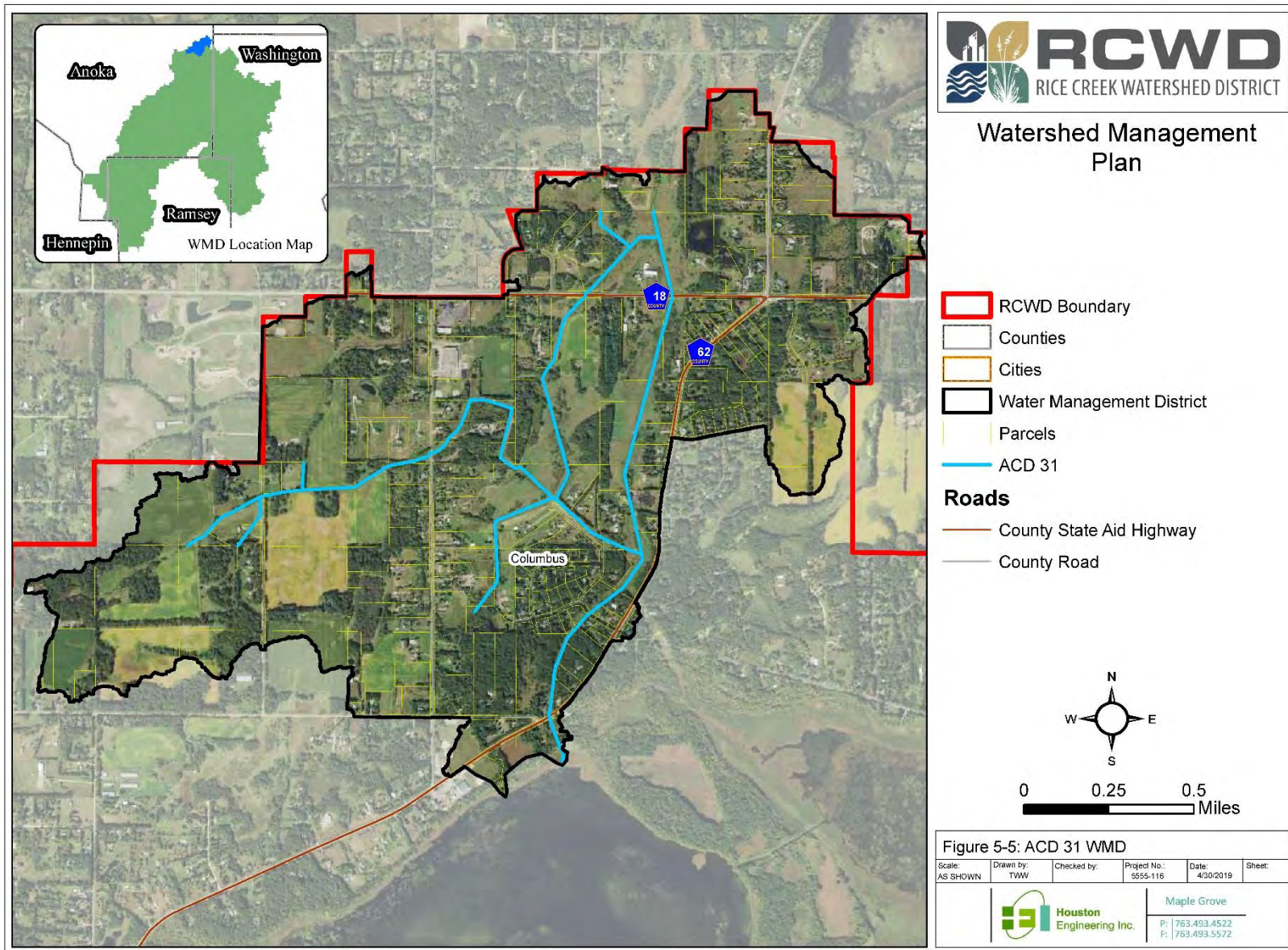
The District received municipal concurrence to exercise alternative authority for repair of the drainage systems as provided in MS 103D.621, subdivision 4. Pursuant to its alternative authority, in 2014 the District initiated repair of the drainage system under MS 103B.231 and 103D.605 and completed repairs in 2016. The District continues to complete maintenance of ACD 31 to address sedimentation and erosion in the system related to the initial repair.



Area Included: The hydrologic boundary of the ACD 31 public drainage system within the RCWD comprises the area for the ACD 31 WMD as shown in **Figure 5-5**.



Figure 5-5 ACD 31 WMD





Estimated Costs: The charge collected was and continues to be used for the implementation of those features providing benefit to properties located within the boundary of the ACD 31 WMD.

These features yield direct benefit by providing predictable drainage to currently undeveloped and developed lands while considering drainage needs as development proceeds. The Engineer's Opinion of Probable Cost for the project was an estimated \$705,000 with \$253,901 be paid for by the revenue collected through the ACD 31 WMD. The remaining portion of the estimated project cost, primarily for all or portions of those features which avoid wetland impacts or restore wetlands and maintain historic irrigation function, was paid for through the District-wide ad valorem levy and direct charge to road authorities. The WMD charge balance will be used to pay for the continued maintenance of the system.



Methods for Determining Charges: If additional WMD charges are to be collected, a multi-step process will be used to determine the WMD charge.

The first step establishes the amount of the total project cost attributed to local versus regional benefit, as defined by the Board of Managers. For each project feature, the Board of Managers will decide whether the project feature results wholly in a local benefit, wholly in a regional benefit or in both local and regional benefits. Those features resulting in a local benefit will be paid for using revenue from the WMD charge. Those features resulting in a regional benefit will be paid for by revenue generated from the ad valorem levy. For those features with both local and regional benefit, the Board of Managers will determine the proportion of the feature resulting in a regional benefit and the proportion of the feature resulting in a local benefit.

The second step consists of assigning the local benefits to "local benefit categories." The probable cost of each project feature resulting in local benefits will be apportioned to one or more of three local benefit categories: 1) currently undeveloped lands; 2) currently developed land; and 3) lands zoned for development or redevelopment. The "current land use benefit" will be the sum of the currently undeveloped benefit and the currently developed benefit. The third step is to apportion the estimated current land use benefit to currently undeveloped and currently developed lands based on the proportion that undeveloped versus developed lands contribute to the current total runoff volume using the following method:

- Determine the curve numbers or runoff coefficients for each current land use within the ACD 31 WMD through use of soils and land use data;
- Compute the annual runoff volume for each current land use through use of the curve number or runoff coefficients and the annual average precipitation depth;
- Sum the annual runoff volumes for all current land uses within the ACD 31 WMD to determine the total annual runoff volumes for current conditions;
- Determine the portion (percent) of the annual current total runoff volume contributed by currently undeveloped and currently developed lands;
- Multiply the current land use benefit by percentage of the runoff from currently undeveloped lands to determine the currently undeveloped benefit; and
- Multiply the current land use benefit by the percentage of the runoff from currently developed lands to determine the currently developed benefit.



The currently undeveloped benefit and the currently developed benefit are then apportioned to each parcel based on current land use and the portion of runoff volume as follows:

- Assign a dominant land use to each parcel;
- Compute the estimated runoff volume based on that land use for each parcel;
- Divide the estimated runoff volume for each parcel by the total runoff for the current land use condition to determine the per parcel portion (percent) of the total current runoff; and
- Multiply the per parcel percentage of the current land use runoff by either the currently undeveloped benefit or the currently developed benefit, depending upon how the parcel is classified.

The final step in the process is to determine the per parcel charge associated with future municipal development. This will be accomplished by determining the portion of the total runoff contributed by a parcel based on future land use zoning, applied to the future land use benefit using the following approach:

- Determine the curve numbers or runoff coefficients for each future land use within the ACD 31 WMD through use of soils and land use data;
- Compute the annual runoff volume for each future land use through use of the curve number or runoff coefficients and the annual average precipitation depth;
- Sum the annual runoff volumes for all future land uses within the ACD 31 WMD to determine the total annual runoff volumes for future (no BMPs) conditions;
- Assign a dominant future land use to each parcel;
- Compute the estimated runoff volume based on that land use for each parcel.
- Multiply the per parcel portion (percent) of the future land use runoff by future land use benefit.

The charge for the current land use and future land use will be summed to obtain the total per parcel charge.



Duration: The ACD 31 WMD will be effective until completion of the 10-year update to this WMP.

5.3.6 ACD 46 Water Management District

In 2009, the RCWD Board of Managers directed the Administrator and the District Engineer to evaluate alternatives for the repair of the Anoka County Ditch 46 public drainage system. A Repair Report was prepared by the District Engineer in 2010. This was followed with a 2015 Addendum to the Repair Report, which recommended system-wide repair to the as constructed and subsequently improved condition.

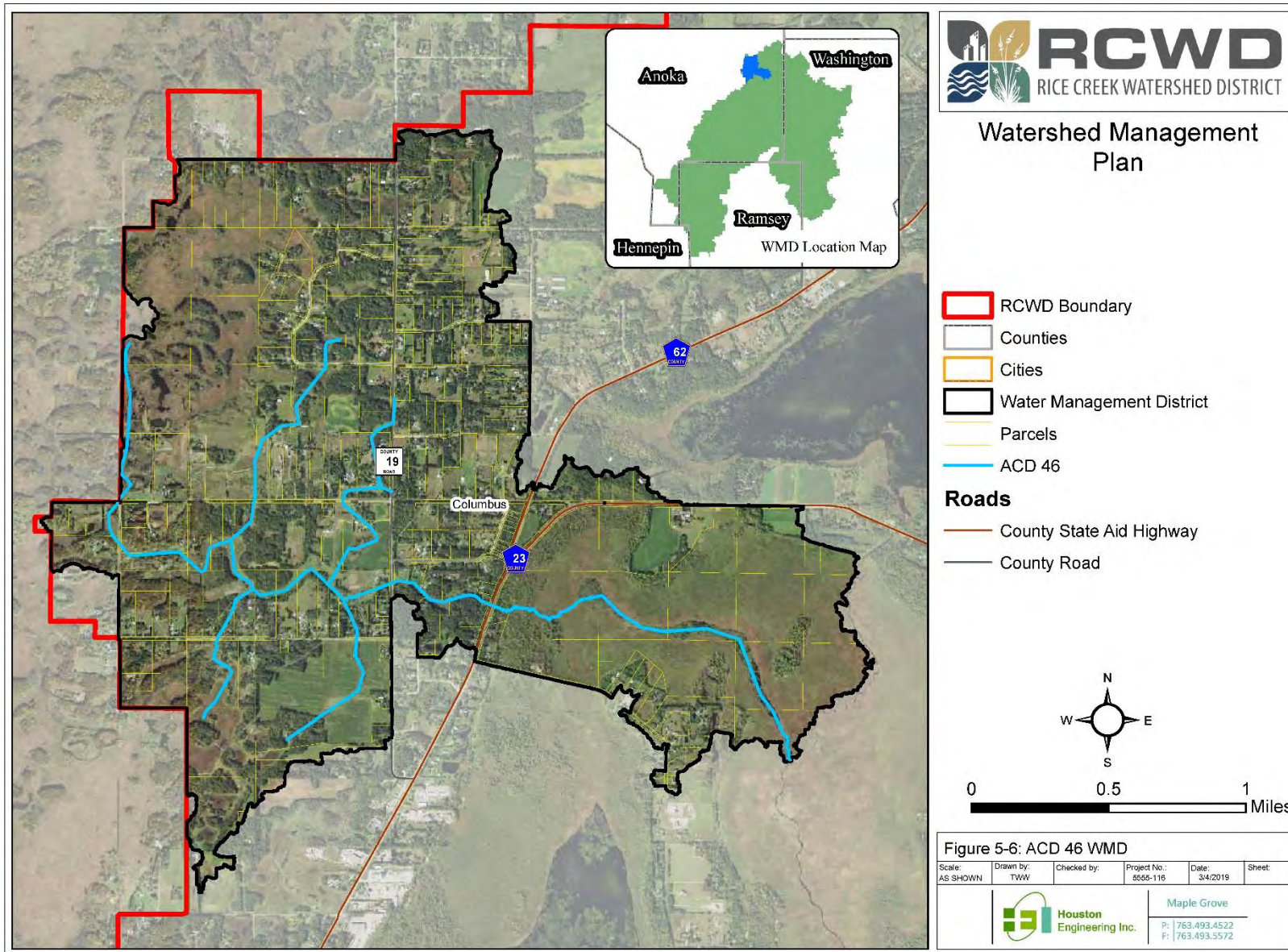
The District received municipal concurrence to exercise alternative authority for repair of the drainage systems as provided in MS 103D.621, subdivision 4. Pursuant to its alternative authority, the District initiated repair of the drainage system under MS 103B.231 and 103D.605 in 2014 and completed repairs in 2016. The District continues to complete maintenance of ACD 46 to address sedimentation and erosion in the system related to the initial repair.



Area Included: The hydrologic boundary of the ACD 46 public drainage system within the RCWD comprises the area for the ACD 46 WMD as shown in **Figure 5-6**.



Figure 5-6: ACD 46 WMD





Estimated Costs: The charge collected was and continues to be used for the implementation of those features providing benefit to properties located within the boundary of the ACD 46 WMD. These features yield a direct benefit by providing predictable drainage to currently undeveloped and developed lands while considering drainage needs as development proceeds. The Engineer’s Opinion of Probable Cost for the project was an estimated \$770,957 with \$337,693 be paid for by the revenue collected through the ACD 46 WMD. The remaining portion of the estimated project cost, primarily for all or portions of those features which avoid wetland impacts or restore wetlands and maintain historic irrigation function, was paid for through the District-wide ad valorem levy and direct charge to road authorities. The WMD charge balance will be used to pay for the continued maintenance of the system.



Methods for Determining Charges: A multi-step process will be used to determine the WMD charge. The first step establishes the amount of the total project cost attributed to local versus regional benefit, as defined by the Board of Managers. For each project feature, the Board of Managers will decide whether the project feature results wholly in a local benefit, wholly in a regional benefit or in both local and regional benefits. Those features resulting in a local benefit will be paid for using revenue from the WMD charge. Those features resulting in a regional benefit will be paid for by revenue generated from the ad valorem levy. For those features with both local and regional benefit, the Board of Managers will determine the proportion of the feature resulting in a regional benefit and the proportion of the feature resulting in a local benefit.

The second step consists of assigning the local benefits to “local benefit categories.” The probable cost of each project feature resulting in local benefits will be apportioned to one or more of three local benefit categories: 1) currently undeveloped lands; 2) currently developed land; and 3) lands zoned for development or redevelopment. The “current land use benefit” will be the sum of the currently undeveloped benefit and the currently developed benefit.

The third step is to apportion the estimated current land use benefit to currently undeveloped and currently developed lands based on the proportion that undeveloped versus developed lands contribute to the current total runoff volume using the following method:

- Determine the curve numbers or runoff coefficients for each current land use within the ACD 46 WMD using soils and land use data;
- Compute the annual runoff volume for each current land use through use of the curve number or runoff coefficients and the annual average precipitation depth;
- Sum the annual runoff volumes for all current land uses within the ACD 46 WMD to determine the total annual runoff volumes for current conditions;
- Determine the portion (percent) of the annual current total runoff volume contributed by currently undeveloped and currently developed lands;
- Multiply the current land use benefit by percentage of the runoff from currently undeveloped lands to determine the currently undeveloped benefit; and
- Multiply the current land use benefit by the percentage of the runoff from currently developed lands to determine the currently developed benefit.



home



Sect. 1



Sect. 2



Sect. 3



Sect. 4



Sect. 5



Sect. 6

The currently undeveloped benefit and the currently developed benefit are then apportioned to each parcel based on current land use and the portion of runoff volume as follows:

- Assign a dominant land use to each parcel;
- Compute the estimated runoff volume based on that land use for each parcel;
- Divide the estimated runoff volume for each parcel by the total runoff for the current land use condition to determine the per parcel portion (percent) of the total current runoff; and
- Multiply the per parcel percentage of the current land use runoff by either the currently undeveloped benefit or the currently developed benefit, depending upon how the parcel is classified.

The final step in the process is to determine the per parcel charge associated with future municipal development. This will be accomplished by determining the portion of the total runoff contributed by a parcel based on future land use zoning, applied to the future land use benefit using the following approach:

- Determine the curve numbers or runoff coefficients for each future land use within the ACD 46 WMD using soils and land use data;
- Compute the annual runoff volume for each future land use through use of the curve number or runoff coefficients and the annual average precipitation depth;
- Sum the annual runoff volumes for all future land uses within the ACD 46 WMD to determine the total annual runoff volumes for future (no BMPs) conditions;
- Assign a dominant future land use to each parcel;
- Compute the estimated runoff volume based on that land use for each parcel; and
- Multiply the per parcel portion (percent) of the future land use runoff by future land use benefit.

The charge for the current land use and future land use will be summed to obtain the total per parcel charge.



Duration: The ACD 46 WMD will be effective until completion of the 10-year life cycle of this WMP.



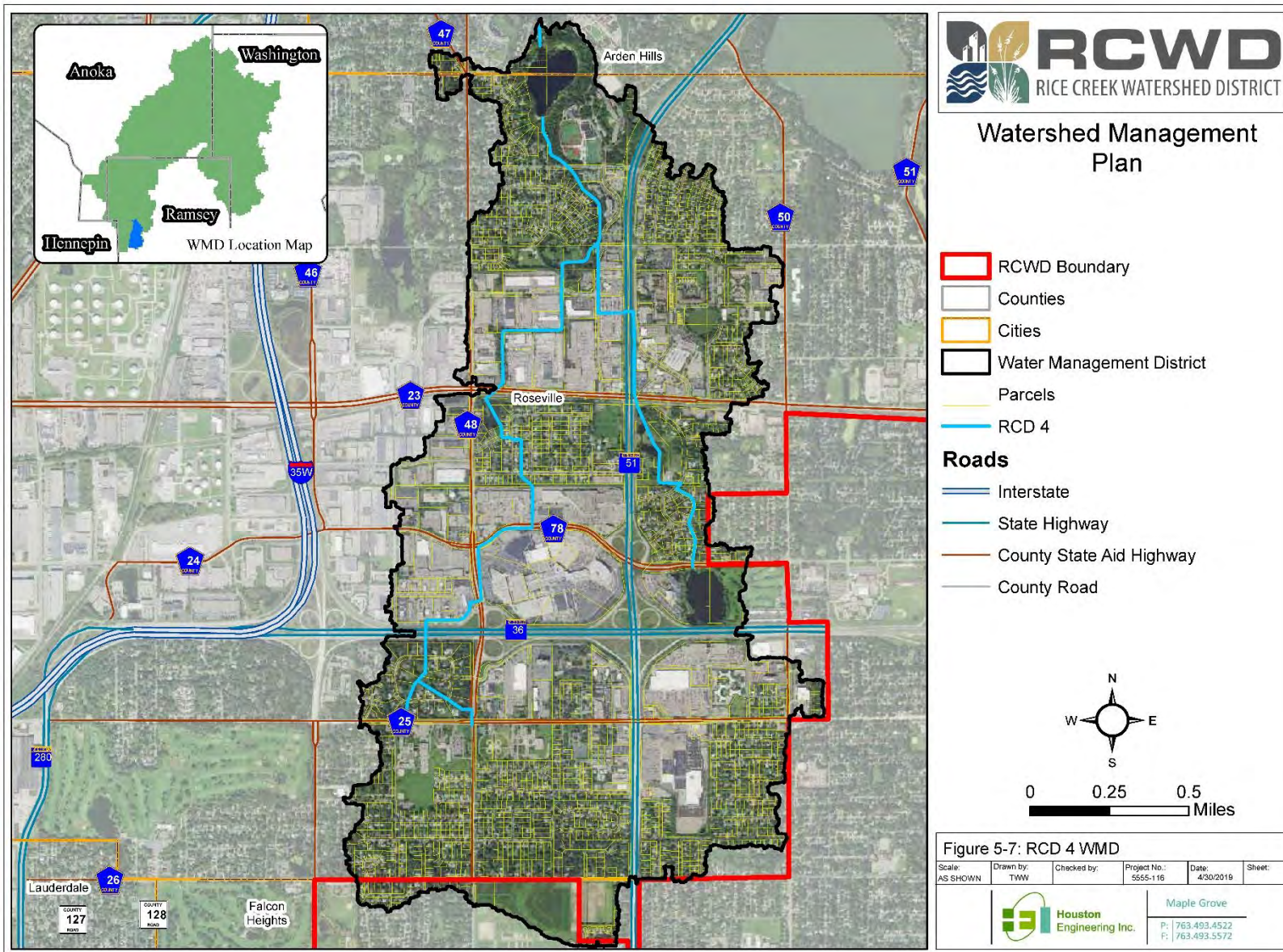
5.3.7 RCD 4 Water Management District

On January 15, 2018 the District Engineer completed a Historical Review Memorandum for Ramsey County Ditch 4 (RCD 4) which identified the alignment, grade, cross-section, and right of way of the public drainage system. This memorandum also identified several known deficiencies in the system that require repair. The District will request municipal concurrence from the Cities of Roseville and Arden Hills to exercise alternative authority for repair of the drainage systems as provided in MS 103D.621, subdivision 4. Pursuant to its alternative authority, the District will initiate repair of the RCD 4 public drainage system under MS 103B.231 and 103D.605.



Area Included: The hydrologic boundary of the RCD 4 public drainage system will comprise the area for the RCD 4 WMD as shown in **Figure 5-7**.

Figure 5-7: RCD 4 WMD





Estimated Costs: The charge collected may be used for the implementation of those features providing benefit to properties located within the boundary of the RCD 4. These features yield a direct benefit by providing a predictable stormwater outlet for those properties. Though a repair report has not yet been completed, repairs are estimated at \$1,100,000 from 2020-2029. The portion of this cost related to maintaining the RCD 4 public drainage system as a stormwater conveyance outlet may be allocated to the RCD 4 WMD. The remaining portion of the estimated project cost, primarily for all or portions of those features which avoid wetland impacts or decrease nutrient delivery downstream, may be paid for through the District-wide ad valorem levy. The initial WMD charge may be used to repay the capital construction cost and then reduced and used to pay for the continued maintenance and repair of the system.



Methods for Determining Charges: A multi-step process will be used to determine the WMD charge. The first step establishes the amount of the total project cost attributed to local versus regional benefit, as defined by the Board of Managers. For each project feature, the Board of Managers will decide whether the project feature results wholly in a local benefit, wholly in a regional benefit or in both local and regional benefits. Those features resulting in a local benefit may be paid for using revenue from the WMD charge. Those features resulting in a regional benefit may be paid for by revenue generated from the ad valorem levy. For those features with both local and regional benefit, the Board of Managers will determine the proportion of the feature resulting in a regional benefit and the proportion of the feature resulting in a local benefit.

The second step is to apportion the estimated benefit to lands that drain to RCD 4 based on the proportion that they contribute to the current total runoff volume using the following method:

- Determine the curve numbers or runoff coefficients for each current land use within the RCD 4 WMD using soils and land use data;
- Compute the annual runoff volume for each current land use through use of the curve number or runoff coefficients and the annual average precipitation depth; and
- Sum the annual runoff volumes for all current land uses within the RCD 4 WMD to determine the total annual runoff volumes for current conditions.

As the final step of the process, the local benefit is then apportioned to each parcel based on current land use and the portion of runoff volume as follows:

- Assign a dominant land use to each parcel;
- Compute the estimated runoff volume based on that land use for each parcel;
- Divide the estimated runoff volume for each parcel by the total runoff for the current land use condition to determine the per parcel portion (percent) of the total current runoff; and
- Multiply the per parcel percentage of the current land use runoff by the local benefit to determine the individual charge.





Duration: The RCD 4 WMD will be effective for a duration consistent with the time necessary to repay the capital cost for the repair and for subsequent maintenance of the public drainage system, which is estimated at 10 years or until completion of the 10-year life cycle of this WMP, whichever occurs sooner.

5.3.8 ARJD 1 Water Management District

In 2013, the District Engineer completed a Historical Review Memorandum which identified the alignment, grade, cross-section, and right of way of the Anoka Ramsey Judicial Ditch 1 (ARJD 1) public drainage system. This memorandum also identified several known deficiencies in the system that require repair. The District will request municipal concurrence from the Cities of Blaine and Mounds View to exercise alternative authority for repair of the drainage systems as provided in MS 103D.621, subdivision 4. Pursuant to its alternative authority, the District will initiate repair of the ARJD 1 public drainage system under MS 103B.231 and 103D.605.



Area Included: The hydrologic boundary of the ARJD 1 public drainage system will comprise the area for the ARJD 1 WMD as shown in **Figure 5-8**.



home



Sect. 1



Sect. 2



Sect. 3



Sect. 4



Sect. 5



Sect. 6



Estimated Costs: The charge collected may be used for the implementation of those features providing benefit to properties located within the boundary of the ARJD 1. These features yield direct benefit by providing a predictable stormwater outlet for those properties. Though a repair report has not yet been completed, repairs are estimated at \$500,000 from 2020-2029. The portion of this cost related to maintaining the ARJD 1 public drainage system as a stormwater conveyance outlet may be allocated to the ARJD 1 WMD. The remaining portion of the estimated project cost, primarily for all or portions of those features which avoid wetland impacts or decrease nutrient delivery downstream, may be paid for through the District-wide ad valorem levy. The initial WMD charge may be used to repay the capital construction cost and then reduced and used to pay for the continued maintenance and repair of the system.



Methods for Determining Charges: A multi-step process will be used to determine the WMD charge. The first step establishes the amount of the total project cost attributed to local versus regional benefit, as defined by the Board of Managers. For each project feature, the Board of Managers may decide whether the project feature results wholly in a local benefit, wholly in a regional benefit or in both local and regional benefits. Those features resulting in a local benefit may be paid for using revenue from the WMD charge. Those features resulting in a regional benefit may be paid for by revenue generated from the ad valorem levy. For those features with both local and regional benefit, the Board of Managers will determine the proportion of the feature resulting in regional benefit and the proportion of the feature resulting in local benefit.

The second step is to apportion the estimated benefit to lands that drain to ARJD 1 based on the proportion that they contribute to the current total runoff volume using the following method:

- Determine the curve numbers or runoff coefficients for each current land use within the ARJD 1 WMD using soils and land use data;
- Compute the annual runoff volume for each current land use using the curve number or runoff coefficients for each current land use and the annual average precipitation depth;
- Sum the annual runoff volumes for all current land uses within the ARJD 1 WMD to determine the total annual runoff volumes for current conditions.

As the final step of the process, the local benefit is then apportioned to each parcel based on current land use and the portion of runoff volume as follows:

- Assign a dominant land use to each parcel;
- Compute the estimated runoff volume based on that land use for each parcel;
- Divide the estimated runoff volume for each parcel by the total runoff for the current land use condition to determine the per parcel portion (percent) of the total current runoff; and
- Multiply the per parcel percentage of the current land use runoff by the local benefit to determine the individual charge.



Duration: The ARJD 1 WMD will be effective for a duration consistent with the time necessary to repay the capital cost for the repair and for subsequent maintenance of the public drainage system, which is estimated at 10 years or until completion of the 10-year life cycle of this WMP, whichever occurs sooner.



5.3.9 RCD 2, 3, 5 Water Management District

Ramsey County Ditches 2, 3, & 5 (RCD 2, 3, & 5) are connected public drainage systems managed by the District that function as the stormwater outlet for portions of New Brighton, Roseville, and St. Anthony Village. In 2013, the Cities of New Brighton and St. Anthony Village petitioned the District to establish a phased Basic Water Management Project per MS 103D.705. The petition described four project phases:

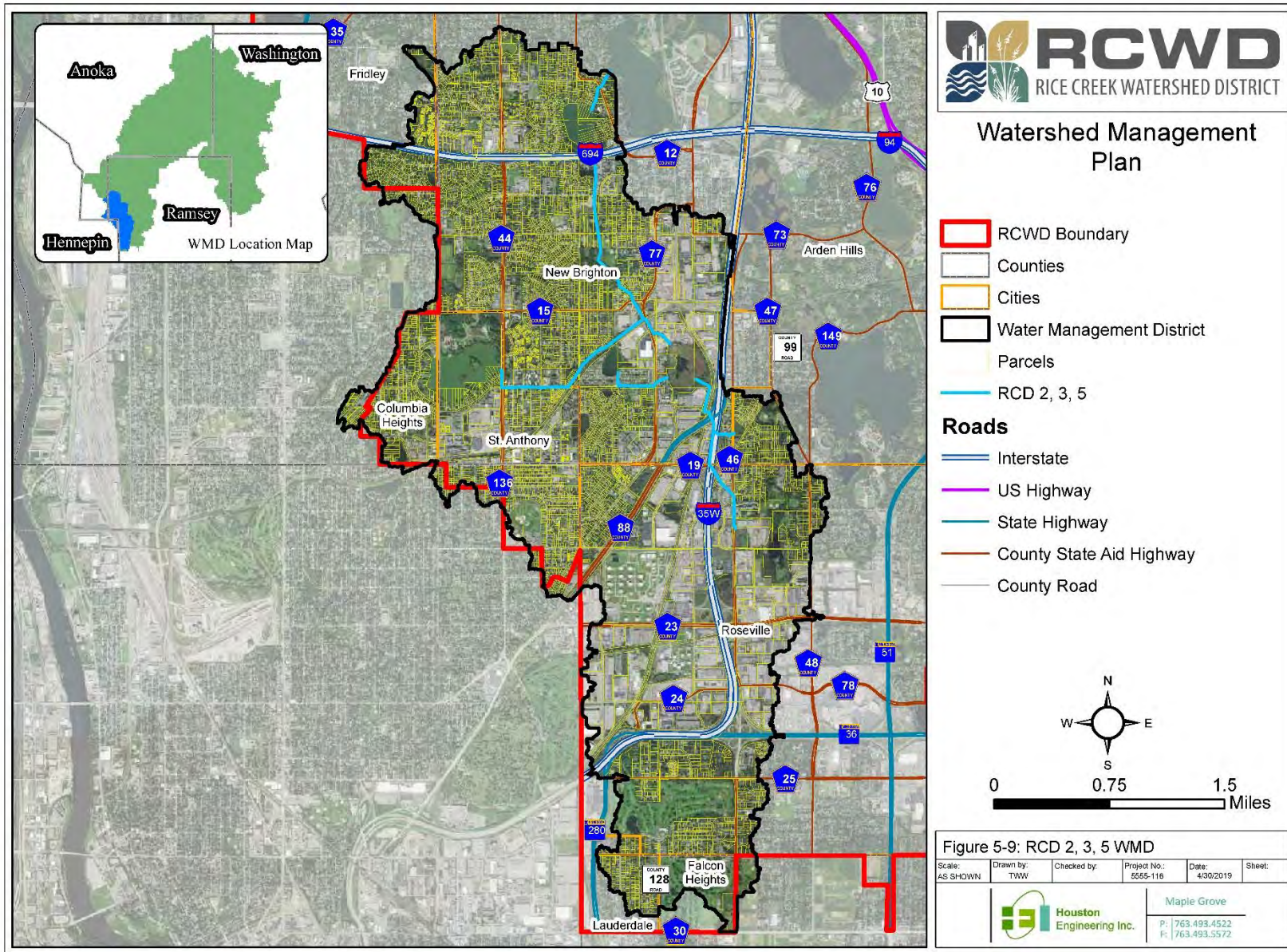
- 1 Identifying existing conditions and opportunities for stormwater management;
- 2 Regional comprehensive stormwater management planning;
- 3 Development of implementation timelines and cost allocation; and
- 4 Project implementation.

The City of Roseville passed a resolution to formally join the petitioned project in June 2014. The goals of Phase 1 were addressed through a June 10, 2014 report entitled, *New Brighton/St. Anthony Basic Water Management Project – Phase 1*. Funds collected through a WMD will be used to construct specific project features identified in Phases 2 and 3.



Area Included: The hydrologic boundary of the RCD 2, 3, & 5 public drainage systems will comprise the area for the RCD 235 WMD as shown in **Figure 5-9**.

Figure 5-9: RCD 2, 3, 5 WMD





Estimated Costs: Though a Phase 2 report has not yet been completed, project components are currently estimated at \$20,000,000. The charge collected may be used for the implementation of those features providing benefit to properties located within the boundary of the RCD 235 WMD (i.e. local benefit). These features yield a direct benefit by reducing flood magnitude and duration and/or providing a predictable stormwater outlet for those properties within the WMD. The portion of the project cost related to these features may be allocated to the RCD 235 WMD and State/Federal funding. The remaining project cost, primarily for all or portions of those features which provide regional flood reduction or water quality improvement, may be paid for through the District-wide ad valorem levy and State/Federal funding. The WMD charge may be used to repay the capital construction cost and then used to pay for the continued maintenance and repair of the system.



Methods for Determining Charges: A multi-step process will be used to determine the WMD charge. The first step establishes the amount of the total project cost attributed to local versus regional benefit, as defined by the Board of Managers. For each project feature, the Board of Managers may decide whether the project feature results wholly in a local benefit, wholly in a regional benefit or in both local and regional benefits. Those features resulting in a local benefit may be paid for using revenue from the WMD charge. Those features resulting in a regional benefit may be paid for by revenue generated from the ad valorem levy. For those features with both local and regional benefit, the Board of Managers will determine the proportion of the feature resulting in a regional benefit and the proportion of the feature resulting in a local benefit.

The second step is to apportion the estimated benefit to lands that drain to RCD 2, 3, & 5 based on the proportion that they contribute to the current total runoff volume using the following method:

- Determine the curve numbers or runoff coefficients for each current land use within the RCD 235 WMD using soils and land use data;
- Compute the annual runoff volume for each current land use through use of the curve number or runoff coefficients and the annual average precipitation depth; and
- Sum the annual runoff volumes for all current land uses within the RCD 235 WMD to determine the total annual runoff volumes for current conditions.

As the final step of the process, the local benefit is then apportioned to each parcel based on current land use and the portion of runoff volume as follows:

- Assign a dominant land use to each parcel;
- Compute the estimated runoff volume based on that land use for each parcel;
- Divide the estimated runoff volume for each parcel by the total runoff for the current land use condition to determine the per parcel portion (percent) of the total current runoff; and
- Multiply the per parcel percentage of the current land use runoff by the local benefit to determine the individual charge.



Duration: The RCD 235 WMD will be effective for a duration consistent with the time necessary to repay the capital cost for the construction of project features, which is estimated at 10 years or until completion of the 10-year life cycle of this WMP, whichever occurs sooner.



5.3.10 Lower Rice Creek Water Management District

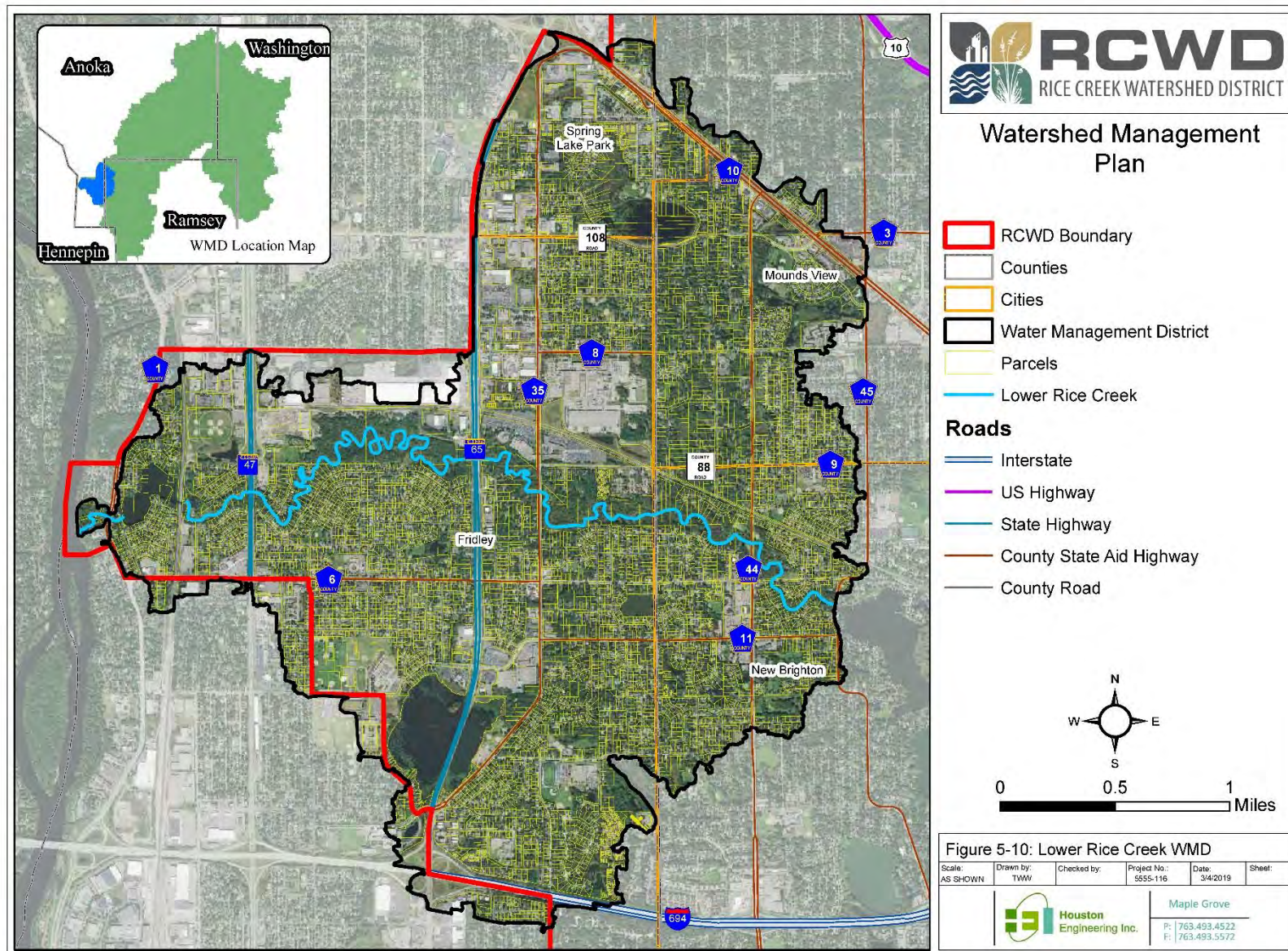
The segment of Rice Creek from Long Lake to Locke Lake (typically referred to as “Lower Rice Creek”) exhibits a gradient steeper than nearly all watercourses within the District. Because of its steep gradient, the stability of this reach is particularly sensitive to flow rate increases. The portion of the contributing drainage area to Lower Rice Creek that is downstream of Long Lake has become urbanized with very little stormwater detention infrastructure, resulting in flashy discharge to the stream that is a primary cause of streambank erosion in the reach.

The 2018 report *Lower Rice Creek (Locke Lake) Sediment Source Management* identifies numerous streambank stabilization projects designed to reduce erosion and sediment transport along Lower Rice Creek. Implementation of an initial suite of these projects is being funded in part through a Clean Water Fund grant from the Board of Water and Soil Resources. The long-term success of this suite of projects is dependent upon completion of subsequent phases of the stream restoration, and development of stormwater retention Best Management Practices to decrease peak flows in Lower Rice Creek.



Area Included: The hydrologic boundary of that portion of Lower Rice Creek which is downstream of Long Lake will comprise the area for the Lower Rice Creek Water Management District (LRC WMD) as shown in **Figure 5-10**.

Figure 5-10: Lower Rice Creek WMD





Estimated Costs: Project components are currently estimated at \$2,000,000. The charge collected may be used for the implementation of project features that mitigate the effects urbanization in the direct contributing drainage area to Lower Rice Creek. These features reduce peak flows to Lower Rice Creek and/or reduce scouring of the stream banks. The portion of the project cost related to these features may be allocated to the LRC WMD. The remaining project cost, primarily for all or portions of those features which address in-channel erosion and sediment delivery, may be paid for through the District-wide ad valorem levy. The WMD charge may be used to repay the capital construction cost and associated maintenance of the project locations.



Methods for Determining Charges: A multi-step process will be used to determine the WMD charge. The first step establishes the amount of the total project cost attributed to local responsibility (WMD) versus district-wide responsibility (ad valorem), as defined by the Board of Managers. For each project feature, the Board of Managers may decide whether the need for project feature is due to local flows or District-wide flows. Those features required as a result of local flow may be paid for using revenue from the WMD charge. Those features required as resulting from District-wide flow may be paid for by revenue generated from the ad valorem levy. The Board of Managers will determine the proportion of each feature’s cost to allocate to WMD or ad valorem.

The second step is to apportion the project cost to lands within the LRC WMD based on the proportion that they contribute to the current total runoff volume using the following method:

- Determine the curve numbers or runoff coefficients for each current land use within the LRC WMD using soils and land use data;
- Compute the annual runoff volume for each current land use through use of the curve number or runoff coefficients and the annual average precipitation depth; and
- Sum the annual runoff volumes for all current land uses within the LRC WMD to determine the total annual runoff volumes for current conditions.

As the final step of the process, the local benefit is then apportioned to each parcel based on current land use and the portion of runoff volume as follows:

- Assign a dominant land use to each parcel;
- Compute the estimated runoff volume based on that land use for each parcel;
- Divide the estimated runoff volume for each parcel by the total runoff for the current land use condition to determine the per parcel portion (percent) of the total current runoff; and
- Multiply the per parcel percentage of the current land use runoff by the local benefit to determine the individual charge.



Duration: The LRC WMD will be effective for a duration consistent with the time necessary to repay the capital cost for the construction of project features, which is estimated at 10 years or until completion of the 10-year life cycle of this WMP, whichever occurs sooner.



5.3.11 Forest Lake Planning Water Management District

Judicial Ditch 4 (JD 4) serves as the outlet for one of the more rapidly developing portions of the City of Forest Lake. Most of the area is currently drained by JD 4's tile segments along the Main Trunk and Branches 3 and 4, at a rate of 1/4-inch of runoff per day (or less). The capacity and alignment of the public drainage system tiles are likely not conducive to development of these properties at currently zoned densities. Proactive planning of stormwater management facilities (including storm sewer and ponding) is necessary to facilitate anticipated land use changes and protect downstream water resources.

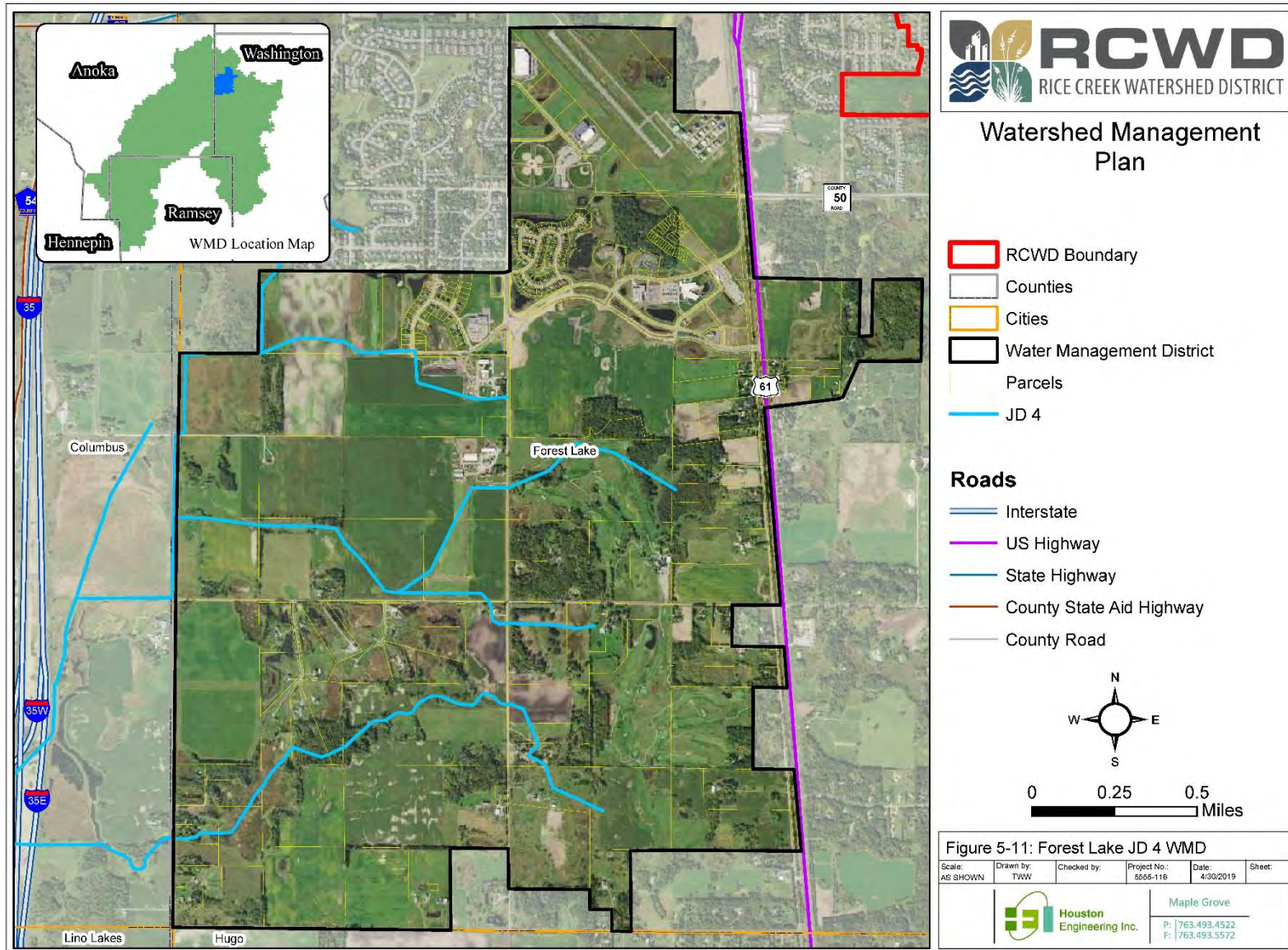
The Forest Lake Planning Water Management District (FLP WMD) is intended to develop funding for the development of stormwater master plans for the area currently draining to JD 4's tile system, and implementation of these plans. Implementation of the Forest Lake Planning WMD will require concurrence from the City of Forest Lake.



Area Included: Currently undeveloped land parcels within the City of Forest Lake that in part drain to JD 4 will comprise the area for the FLP WMD as shown in **Figure 5-11**.



Figure 5-11: Forest Lake Planning WMD





Estimated Costs: Project components are currently estimated at \$2,000,000. The charge collected may be used for the planning and implementation of stormwater management facilities within the drainage area to JD 4. The WMD charge may be used to repay the capital construction cost and associated maintenance of the project locations.



Methods for Determining Charges: A multi-step process will be used to determine the WMD charge.

The first step is to apportion the project cost to lands within the FLP WMD based on the proportion that they contribute to the total runoff volume (assuming zoned land use) using the following method:

- Determine the curve numbers or runoff coefficients for each future (zoned) land use within the FLP WMD using soils and land use data;
- Compute the annual runoff volume for each future land use through use of the curve number or runoff coefficients and the annual average precipitation depth; and
- Sum the annual runoff volumes for all future land uses within the FLP WMD to determine the total annual runoff volumes for future conditions.

As the final step of the process, the cost is then apportioned to each parcel based on future land use and the portion of runoff volume as follows:

- Assign a dominant land use to each parcel;
- Compute the estimated runoff volume based on that land use for each parcel;
- Divide the estimated runoff volume for each parcel by the total runoff for the future land use condition to determine the per parcel portion (percent) of the total future runoff; and
- Multiply the per parcel percentage of the future land use runoff by the total cost to determine the individual charge.



Duration: The FLP WMD will be effective for a duration consistent with the time necessary to repay the capital cost for the implementation of stormwater management features, which is estimated at 10 years or until completion of the 10-year life cycle of this WMP, whichever occurs sooner.



5.3.12 Columbus Planning Water Management District

Within the City of Columbus, the corridor of land east of Interstate 35, is currently undeveloped but zoned for commercial development. The outlets for this area, which include Anoka County Ditch 15 (ACD 15) and culverts under I-35, have a limited capacity. Proactive planning of stormwater management facilities (including storm sewer and ponding) is necessary in this corridor to facilitate anticipated land use changes and protect downstream water resources.

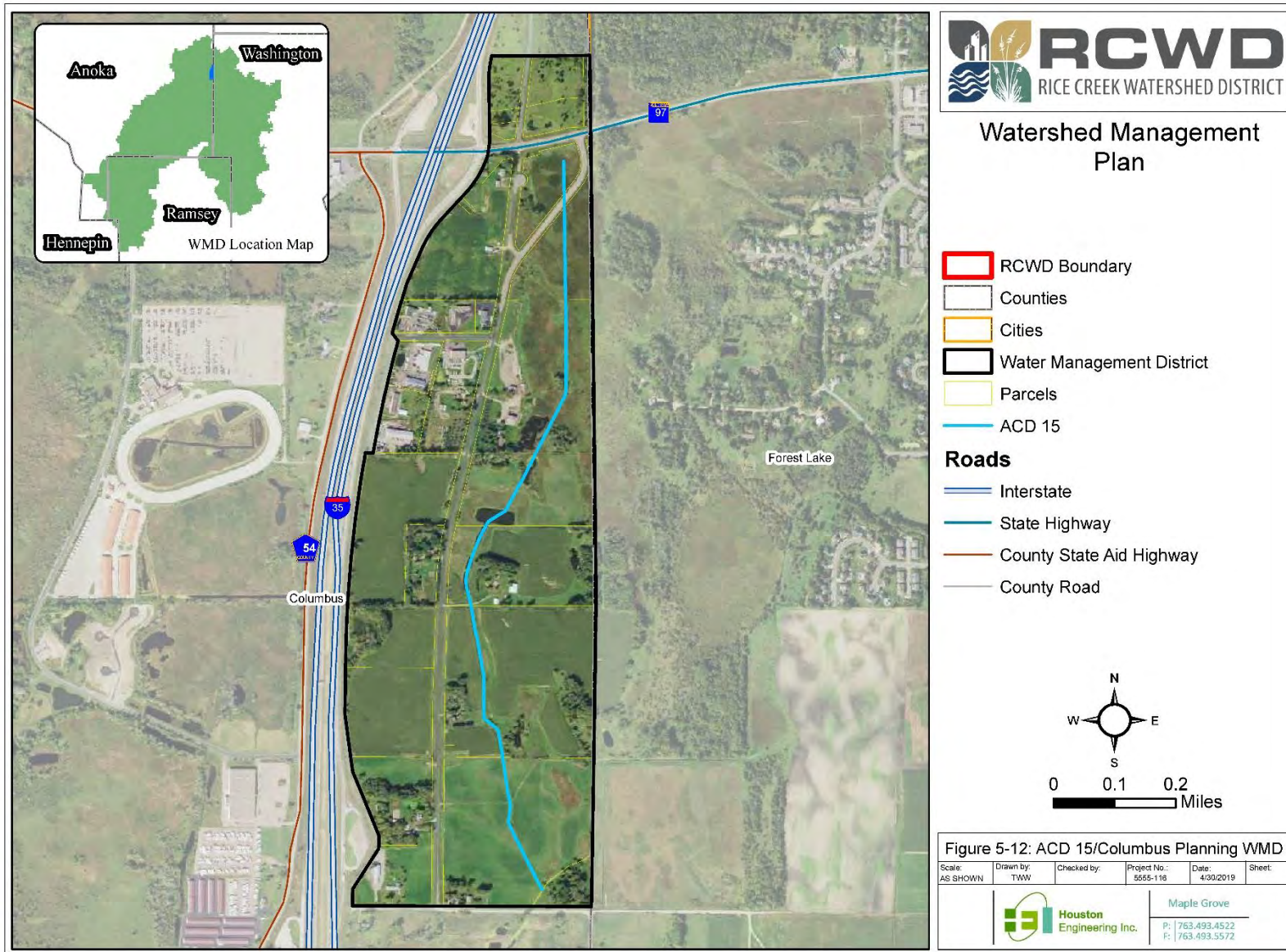
The Columbus Planning Water Management District (CP WMD) is intended to develop funding for the development of a stormwater master plan for this area in Columbus and for the implementation of this plan. Implementation of the Columbus Planning WMD will require concurrence from the City of Columbus.



Area Included: Privately owned land parcels within the City of Columbus that are east of I-35 and north of 141st Ave. NE, will comprise the area for the CP WMD as shown in **Figure 5-12**.



Figure 5-12: Columbus Planning WMD





Estimated Costs: Project components are currently estimated at \$1,000,000. The charge collected may be used for the planning and implementation of stormwater management facilities within the land parcels in the City of Columbus that are east of I-35 and north of 141st Ave. NE. The WMD charge may be used to repay the capital construction cost and associated maintenance of the project locations.



Methods for Determining Charges: A multi-step process will be used to determine the WMD charge.

The first step is to apportion the project cost to lands within the CP WMD based on the proportion that they contribute to the total runoff volume (assuming zoned land use) using the following method:

- Determine the curve numbers or runoff coefficients for each future (zoned) land use within the CP WMD using soils and land use data;
- Compute the annual runoff volume for each future land use through use of the curve number or runoff coefficients and the annual average precipitation depth; and
- Sum the annual runoff volumes for all future land uses within the CP WMD to determine the total annual runoff volumes for future conditions.

As the final step of the process, the cost is then apportioned to each parcel based on future land use and the portion of runoff volume as follows:

- Assign a dominant land use to each parcel;
- Compute the estimated runoff volume based on that land use for each parcel;
- Divide the estimated runoff volume for each parcel by the total runoff for the future land use condition to determine the per parcel portion (percent) of the total future runoff; and
- Multiply the per parcel percentage of the future land use runoff by the total cost to determine the individual charge.



Duration: The CP WMD will be effective for a duration consistent with the time necessary to repay the capital cost for the implementation of stormwater management features, which is estimated at 10 years or until completion of the 10-year life cycle of this WMP, whichever occurs sooner.



5.4 Funding Considerations

The Board of Managers receives a considerable number of requests for financial assistance. These requests are most often related to paying for all or portions of flood damage reduction projects, water quality improvement projects, stormwater reuse projects, or repairing and maintaining existing water resources structures and facilities.

The District has developed general guidelines for the purposes of prioritizing requests for financial assistance for projects. The capital improvement projects list in **Section 4.3** of this plan was the result of a planning process that implicitly applied these general considerations to identify potentially feasible and cost-effective projects. These guidelines cannot capture all considerations relevant to a project. In identifying additional projects for incorporation into the District’s capital improvement program and otherwise evaluating expenditures for water resource purposes, the Board intends to follow these guidelines.



Nevertheless, the Board retains its discretion to make judgments based on project-specific considerations within the purview of the District’s purpose and responsibilities. The Board of Managers strives to prioritize requests for financial assistance to preferentially place District-led and cooperative regional projects within those geographic locations which provide the most flood control and water quality benefits to the region. The intent of prioritizing

is to facilitate decisions regarding which projects provide the greatest benefit within the District compared to the fiscal investment. At times when the prioritization of proposed projects based on the factors below are comparable, the Board will strive to ensure that geographic funding equity is maintained across the District while considering the common regional benefits of the project consistent with the priority issues and associated goals of this plan.

Some of the factors which the Board of Managers may use to establish project priorities include:

- Location with respect to a District water resource;
- Expected and multiple benefits;
- Sustainability;
- Consistency with District implementation programs; and
- Capital and maintenance costs.

The Board of Managers may establish and use additional factors depending on the specific circumstances. A description of each of these factors follows:

- a. Location with respect to a District water resource: Regarding water quality projects, the priority can be based on two criteria: 1) the location with respect to a lake or watercourse; and 2) the annual mass of pollutants (e.g. total suspended solids and total phosphorus) per unit area (“yield”) leaving the landscape via surface water runoff which reaches the resource. Priority locations from a flood damage reduction perspective can be based upon a tributary’s or public



drainage system's contribution to the peak flood elevations at 1) locations susceptible to flooding of structures from the 100-year, 24-hour rainfall; 2) locations where municipal, county, state, or District infrastructure is at risk for the 10-year, 24-hour rainfall; and 3) locations susceptible to other types of flood damage for the 2-year, 24-hour rainfall.

- b. Expected and multiple benefits: The District strives to implement projects which can achieve multiple benefits. Stormwater reuse irrigation projects exemplify the type of project capable of achieving multiple benefits: e.g., a reduction in runoff volume, a reduction in sediment and nutrient loads downstream, and a reduction in groundwater use. Multiple benefit projects tend to receive greater funding priority than single benefit projects.
- c. Sustainability: Sustainability is an important factor to the Board. A project which reduces the runoff volume after precipitation falls on the landscape is an example of treating a problem at the source rather than the consequence. Projects intended to treat the source of the problem are considered more "sustainable" provided they are similar in cost and effectiveness to projects which address the consequences. With regard to sustainability, the Board of Managers may consider the following to establish priority, with preference shown in descending order (1 = higher priority, 3= lower priority):
1. Project treats the source/root cause of the problem;
 2. Project treats the source/root cause downstream of where the problem is manifested; and
 3. Project treats the source/root cause where the problem is manifested.
- Sustainability considerations may include demonstrating the best value alternative after considering the range of possible alternatives.
- d. Consistency with District implementation programs: A project should be consistent with the District's policies and the goals and objectives of existing implementation programs identified within the WMP. Applicable programs include, but are not limited to (see **Section 4**):
1. Public Drainage System Inspection, Maintenance and Repair Program;
 2. Natural Waterway Management Program;
 3. Water Quality Grant Program;
 4. Carp and Curly-leaf Pondweed Management Program;
 5. District Facilities Inspection, Operations and Management Program; and
 6. Capital improvement projects identified by the RCWD.
- e. Capital and maintenance costs: Cost can be used as a tool for prioritizing projects. However, cost should not be used as the sole criteria for prioritizing projects. The project cost should fall within some reasonable range based upon regional norms and used to more closely examine a project falling outside of a reasonable range. Costs should be expressed, for example, on a \$ per acre-foot of storage for flood volume reduction and \$/pound annually removed for the reduction in total phosphorus and sediment mass. Costs are to be inclusive of the capital and life cycle cost for maintenance.





6. Watershed Plan Administration

6.1 Amendments to the Plan

This Plan will extend through the calendar year 2029, and further until such time as the RCWD Board adopts a new Plan to supersede it. The RCWD may need to revise the WMP through amendments prior to the next Plan update if changes are appropriate, or if problems arise that are not addressed in the Plan.

Plan amendments may be proposed by any agency, person, city, township, or county to the RCWD Board, but only the RCWD Board may initiate the amendment process. All recommended plan amendments must be submitted to the Board in writing, along with a statement of the problem and need, the rationale for the amendment, and an estimated cost. All plan amendments and minor changes will follow the procedures set forth in this section, or as required by MS 103B.231 and Rule 8410.0140 Subp. 5.

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

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



Changes that do require an amendment can be categorized as either a general or minor amendment.

6.1.1 General Amendment Procedure

Examples of situations where a general plan amendment may be required include:

- Addition of a capital improvement project that is not described by the WMP;
- Establishment of a water management district(s) to collect revenues and pay for projects initiated through MS 103B.231, MS 103D.601, 605, 611 or 730. To use this funding method, MS 103D.729 requires that the District prepare an amendment to its watershed management plan;
- Addition of new RCWD programs or other initiatives that have the potential to create significant financial impacts or controversy, or when inconsistent with the issues, goals and policies established in the WMP.



If the RCWD or BWSR decides that a general plan amendment is needed, the District will follow the general plan amendment process described in Minnesota rules and laws (Rule 8410.0140, Subp. 2 and MS 103B.231, Subd. 11). The general plan amendment process is as follows:

1. The RCWD must submit the amendment to all cities, townships, and counties within the boundaries of the District, Anoka and Washington Conservation Districts, the Ramsey County Parks and Recreation Soil and Water Conservation Division, the state review agencies (DNR, MPCA, MDA, and MDH), the Metropolitan Council, and BWSR for a 60-day review;
2. The RCWD must respond in writing to any concerns raised by the reviewers;
3. The RCWD must hold a public hearing on the proposed amendment;
4. The RCWD must submit the revised amendment and response to comments to the Metropolitan Council, the state review agencies, and BWSR. BWSR shall complete its review of the final amendment within 90 days.

The RCWD will prepare the necessary plan amendments in a format consistent with Rule 8410.0140. Draft amendments will show deleted text as stricken and new text as underlined. Unless the entire document is redone, all final amendments adopted by the RCWD will be in the form of replacement pages for the plan with each page renumbered as appropriate, including the effective date of the amendment.

The RCWD will maintain a distribution list for copies of the Plan and within 30 days of adopting an amendment distribute copies of the amendment to the distribution list. Generally, the District will provide electronic copies of the amendment or make the documents available for public access on the website (<http://www.ricecreek.org>). Printed copies will be made available upon written request and printed at the cost of the requester.

6.1.2 Minor Plan Amendments

The minor plan amendment process is more streamlined than the general plan amendment process, as it only requires a 30-day review. The RCWD will consider changes to be a “minor” plan amendment if the following criteria from Rule 8410.0140 Subp. 2 are satisfied:

- BWSR has either agreed that the amendments are minor or failed to act within five working days of the end of the 30-day comment period described below unless an extension is mutually agreed to with RCWD;
- No county board has filed an objection to the amendments with RCWD and BWSR within the 30-day comment period unless an extension is mutually agreed upon by the county and RCWD;
- The amendments are not necessary to make the plan consistent with an approved and adopted county groundwater plan.

If a minor amendment is pursued, the RCWD will use the following review process, consistent with Minnesota Rules 8410.0140 Subp. 2 and Minnesota Statutes 103B.231 Subd. 11:

- The RCWD will send copies of the proposed plan amendment, indicating that the minor amendment process is being followed, to the affected cities and townships within the boundaries of the District, Anoka, Hennepin, Ramsey and Washington Counties, Anoka and Washington Conservation Districts, the Ramsey County Parks and Recreation Soil and Water Conservation



Division, the state review agencies (BWSR, DNR, MPCA, MDA, and MDH), the Metropolitan Council, and MNDOT) for review and comment, directing comments to both the RCWD and BWSR, and allowing at least 30 days for receipt of comments;

- The RCWD will hold a public meeting to explain the amendments and publish a legal notice of the meeting twice, at least 7 days and 14 days, respectively, before the date of the meeting. The RCWD will also post the notice of the public meeting on the District website (<http://www.ricecreek.org>) and mail the notices to each affected city, township, and county not less than 14 days before the public meeting.

6.2 Local Government Units

6.2.1 Content Requirements for a Local Water Management Plan

When required under Minnesota Rule 8410.0160, municipalities which have land use planning and regulatory responsibilities shall amend an existing Local Water Management Plan (Local Plan) to conform to the requirements of the WMP or prepare a new Local Plan which is in conformance with the WMP. The Local Plan must include all the requirements within this WMP and the legal requirements of Minnesota Rule (MR) 8410 and Minnesota Statute (MS) 103B.235. Local Plans should also address the expanded list of requirements of the “Thrive MSP 2040 Water Resources Policy Plan” by the Metropolitan Council.

Table 6-1 below lists the status and schedule of member community Local Plans at the time of plan writing. Consistent with Minnesota statute and rule, all Local Plans must be adopted not more than two years before the local comprehensive plan is due (MR 8410.0160 subp. 6). The Local Plan must be submitted to RCWD for approval, with consideration of deadlines for Comprehensive Plan approval as identified in Minnesota statute and rule. Member communities are encouraged to engage in early dialogue and coordination with the District during the development of their Local Plan, and to submit a draft plan to the RCWD at least six months prior to the date formal adoption is required.

Table 6-1: Status of Existing Member Community Local Plans

Municipality	Plan Status	Year
City of Arden Hills	RCWD Board Approved	2018
City of Birchwood Village	Draft Plan	N/A
City of Blaine	RCWD Board Approved	2018
City of Centerville	RCWD Board Approved	2018
City of Circle Pines	RCWD Board Approved	2018
City of Columbia Heights	RCWD Board Approved	2018
City of Columbus	RCWD Board Approved	2019
City of Dellwood	RCWD Board Approved	2019
City of Falcon Heights	RCWD Board Approved	2018
City of Forest Lake	RCWD Board Approved	2019
City of Fridley	RCWD Board Approved	2019
City of Grant	RCWD Board Approved	2020
City of Hugo	RCWD Board Approved	2018



Municipality	Plan Status	Year
City of Lauderdale	RCWD Board Approved	2018
City of Lexington	Draft Plan	N/A
City of Lino Lakes	RCWD Board Approved	2018
City of Mahtomedi	RCWD Board Approved	2018
May Township	RCWD Board Approved	2020
City of Mounds View	Draft Plan	N/A
City of New Brighton	RCWD Board Approved	2018
City of Roseville	RCWD Board Approved	2018
City of Saint Anthony	RCWD Board Approved	2019
City of Scandia	RCWD Board Approved	2019
City of Shoreview	RCWD Board Approved	2018
City of Spring Lake Park	RCWD Board Approved	2019
City of White Bear Lake	RCWD Board Approved	2021
White Bear Township	RCWD Board Approved	2019
City of Willernie	RCWD Board Approved	2019

The District recognizes that MS 103B and MR 8410 were written with the intent that each community would prepare and adopt a Local Plan that includes the regulatory requirements set out within the Watershed Management Organization (WMO) plans. Of the 28 RCWD member cities, only Hugo and Circle Pines have assumed permitting and enforcement of local official controls for stormwater (Rule C), erosion and sediment control (Rule D), floodplains (Rule E), and wetlands (Rule F). The following RCWD requirements for Local Plan content are intended to supplement Minnesota statute and rules. The District has two levels of requirements for the content of Local Plans.

- **Level 1** – Level of detail is designed for those communities that do not wish to assume permitting authority from the RCWD.
- **Level 2** – Level of detail is designed for communities that wish to assume all or some of the permitting authority from the RCWD. Requires additional information and detail for some of the Local Plan requirements.



The District has considerable technical resources available to address water and resource issues. The RCWD encourages communities to use or incorporate by reference these resources, including monitoring data, management studies, GIS and similar information, to meet these requirements. The RCWD also encourages communities to use District model results, however these models should not be adopted by reference. Although RCWD has completed hydrologic, hydraulic, and water quality modeling throughout the

District, communities may need to perform additional modeling in areas where they intend to assume local regulatory authority to show compliance with WMP content.

The general standards for the Local Plan which meet requirements of MR 8410.0160 Subp. 3 and MS 103B.235 Subd. 2 are as follows. Unless specifically noted, requirements apply to both Level 1 and Level 2 communities:

1. *Describe the existing and proposed physical environment and land use.* At a minimum this must include or incorporate by reference land use/zoning maps for both present and future conditions, and a land cover/classification map such as the Minnesota Land Cover Classification System (MLCCS).
2. *Define drainage areas and the volumes, rates, and paths of stormwater runoff.* All municipalities should include a map of its stormwater system that shows stormwater ponds, streams, lakes and wetlands; structural pollution control devices (e.g., grit chambers, separators); pipes and pipe sizes, ditches and any other conveyances; and outfalls and all other points of discharge from the system. An inspection and maintenance system schedule should be included. The appropriate portion of the MS4 SWPPP prepared in accordance with Permit No. MNR040000 can be incorporated by reference to satisfy this requirement.
 - a. Level 1 – the Local Plan does not need to include information relating to stormwater rate and volume. Evidence of a storm water master plan or similar document is sufficient.
 - b. Level 2 – the Local Plan must include information on existing and proposed stormwater rates and volumes based on full build out considering implementation of the local regulatory controls. The information should be related to those volume and rate control locations within the District.
3. *Identify areas and elevations for stormwater storage adequate to meet performance standards.* For the RCWD, this means Rule C.7, Peak Stormwater Runoff Control of the RCWD rules. This applies only to Level 2 communities.
4. *Define water quality treatment and protection methods adequate to meet performance standards* for the RCWD through identification of methods and means to achieve Rule C, Parts 6, “Water Quality Treatment” of the RCWD Rules. This applies only to Level 2 communities.
5. *Identify [or map] regulated areas.* These include Comprehensive Wetland Protection and Management Plan boundaries, Wetland Protection Zones, Wetland Management Corridors, and High-Quality Wetlands, areas identified as high quality by the Minnesota Biological Survey.
6. *Complete an assessment of existing or potential water resource-related problems.* This must include a summary of stormwater issues likely to result from land use changes per current zoning and municipal comprehensive plans.

Set forth an implementation program, including a description of official controls and, as appropriate, a capital improvement program. The program shall:

- a. include areas and elevations for storm water storage adequate to meet performance standards or official controls established in the Local Plan;
- b. define water quality protection methods adequate to meet performance standards or official controls in the Local Plan and identify regulated areas;
- c. clearly define the responsibilities of the municipality and other project partners;



- d. describe official controls and any changes to official controls relative to requirements of the Local Plan;
- e. include a table that briefly describes each component of the implementation program and clearly details the schedule, estimated cost, and funding sources for each component including annual budget totals; and
- f. include a table for a capital improvement program that sets forth, by year, details of each contemplated capital improvement that includes the schedule, estimated cost, and funding source.

In addition to the statutory requirements, these items should be addressed and conform to the requirements established in this Plan:

1. Discuss or identify approaches, methods, means, procedures, ordinances or plans being used to achieve compliance with RCWD rules or identify reliance on the RCWD for municipal review and compliance with stormwater management requirements.
 - o **Level 1** – communities must provide a specific statement that they request RCWD to continue to implement its rules and regulations and issue permits within the City/Town.
 - o **Level 2** – communities must include the specific local ordinances and demonstrate that they are in compliance with RCWD rules or include, at a minimum, a statement that the city adopts RCWD rules by reference (see Section 6.3.2).
2. Identify inter-community flow rates in and out of the municipalities as established in the RCWD District Wide Modeling. Municipalities must acknowledge and identify those locations where flows leave the City and are transferred downstream, with some assessment of increases in rate (if any) assuming full build out conditions and describe measures being implemented to reduce flows if necessary.
3. Describe the methods that will be used to control and manage post-construction stormwater associated with development and redevelopment. The appropriate portion of the MS4 SWPPP prepared in accordance with Permit No. MNRO40000 may be incorporated by reference to satisfy this requirement.
4. Identify land-locked sub-watershed units and basins and strategies to manage water volumes in those land-locked areas to minimize flooding.
5. Identify impaired waters and establish policies and actions to address TMDL goals.
6. As available, include discussion of groundwater sensitivity, discharge, and recharge areas including the identification of potential land uses affecting groundwater.
7. Identify ideas and opportunities for projects and programs intended to improve resource management, which may be jointly implemented with the RCWD.
8. Describe the conformance of the municipality with NPDES requirements for MS4 permits, including TMDL and non-degradation (if applicable) requirements. The local plan must include the Stormwater Pollution Prevent Plan (SWPPP) or a summary of its contents and incorporate the plan by reference.
9. Reference erosion and sediment control ordinances.
10. Describe housekeeping practices and requirements such as street sweeping, snow plowing, salt and snow storage, and public land maintenance. The appropriate portion of the MS4 SWPPP



prepared in accordance with Permit No. MNR040000 can be incorporated by reference to satisfy this requirement.

11. A description of the Best Management Practices employed by the municipality that control or reduce pollutants. The appropriate portion of the MS4 SWPPP prepared in accordance with Permit No. MNR040000 can be incorporated by reference to satisfy this requirement.
12. Demonstration of a public information and education plan related to managing sediment and erosion control, runoff and water quality. The appropriate portion of the MS4 SWPPP prepared in accordance with Permit No. MNR040000 can be incorporated by reference to satisfy this requirement.
13. Cities within Washington County should include a groundwater protection component consistent with the county Groundwater Management Plan or method to adopt measures.
14. Discuss conflicts between infiltration requirements and well head protection.
15. Adopt and reference DNR-approved Floodplain and Shoreland ordinances where mandated by state law.
16. Identify and acknowledge future changes in peak elevation at critical road crossings for critical structure maximum water elevations (see **Appendix I**), describe management needs and strategies and identify necessary Rice Creek Watershed District management assistance.
17. Identify and acknowledge the impacts of future land use changes on peak water elevation changes at storage areas located near current flooding problem areas (see **Appendix I**), describe management needs and strategies and identify necessary RCWD management assistance.
18. Identify and acknowledge changes in floodplain elevation and regulatory floodplain boundaries (see **Appendix I**), describe management needs and strategies and identify necessary RCWD management assistance.
19. Identify the amount, if any, of remaining volume control debit previously incurred through the regulatory program and describe previous and future activities to ensure reasonable progress toward eliminating the volume control debit within the next plan cycle. The volume control debit is an amount of water quality treatment volume from past permit obligations that remains unfulfilled.

6.2.2 Regulatory Controls and Enforcement

The current RCWD Rules and permitting program can be found on the District website (<http://www.ricecreek.org>). The RCWD Board prefers to retain permitting function as the District has the technical capability to assess wide ranging and intercommunity water management issues. If communities wish to incur the additional costs of local regulatory control, the District will relinquish permit authority only following completion of an approved Local Plan with Level 2 requirements; adoption of RCWD rules and regulation by reference or demonstration that local ordinances are in compliance with RCWD rules; and implementation of inspection and administrative procedures necessary to ensure that the full regulatory standards of the District are met. At a minimum, the District will retain regulatory control for projects adjacent to and associated with the public drainage systems and the trunk conveyance systems. The District will also require that projects associated with lake outlets, or other features which can substantially alter flow patterns within the District be submitted for review and comment.

Execution of a Memorandum of Understanding (MOU) with the RCWD is the final step in the process for a community that wishes to assume permitting authority. The MOU will define regulatory responsibilities





and will stipulate that the city issue and enforce permits consistent with their approved Local Plan. Under the MOU, the RCWD and the City will adjust their permitting responsibilities to best suit the needs and abilities of each party. After execution of the MOU, the RCWD will not issue permits within a local unit of government for the rules or ordinances specified in the MOU. The RCWD will retain the right to monitor the local unit of government’s permitting activity including the use of a formal audit of the

permitting program with regard to enforcement and consistency with approved Local Plans.

Local government units assuming regulatory controls will be required to submit all projects which require a variance from RCWD standards to the District for approval. Additionally, the District may periodically field-inspect development projects and will conduct operational audits of local government unit procedures and controls to insure implementation in accordance with the plan.

The District will exercise its right under MS 103B to resume regulatory authority and administration of programs if non-compliance with the approved local water management plan is demonstrated.

A review of the implementation by the municipality of RCWD rules will be carried out annually by District staff. To facilitate these reviews, the City shall provide documentation including, but not limited to, the following materials related to one or more City-permitted projects (project(s) shall be selected by District staff):

1. A copy of the project’s permit application;
2. A full set of project plans;
3. Soil borings at the BMP locations, reflecting compliance with approved design if relevant;
4. Drainage maps showing disturbed existing impervious surface and proposed impervious surfaces, and a summary tabulation;
5. Worksheets or calculations used to determine the required runoff rates/volumes and required water quality volumes;
6. Documentation of any District-approved Comprehensive Stormwater Management Plan and associated compliance and use for water quality treatment obligations;
7. Identification of the specific location of all BMP(s), and associated formal maintenance agreements and/or recorded maintenance declarations;
8. Any increase in impervious area requires either a hydrologic model, or additional calculations to show compliance with Peak Stormwater Runoff Control;
9. Documentation that as-builts were obtained and show compliance with approved design and water quality treatment volumes; and
10. Documentation of inspections including BMP functionality.

Staff will make recommendations to the RCWD Board of Managers on the adequacy of the present regulatory controls and implementation thereof. If the Board concurs that programmatic changes are necessary, the Board can amend the WMP to reflect the needed changes and/or adopt new rules that require the cities to

amend their ordinances to effect the needed changes. If implementation of standards consistent with the WMP is a problem, the RCWD will take administrative or legal action to ensure that the standards are being implemented.

Rule 8410.0105 requires the WMP to establish regulatory controls related to wetlands, managing storm water runoff, and standards and controls to address flood impacts. These provisions are met by the RCWD through the responsibilities of administering the Wetland Conservation Act as the LGU, the implementation of the CWPMPs, and through the regulatory program of the District. The rules forming the basis for the regulatory program include, but are not limited to criteria for rate control, volume control, sediment/nutrient loading, erosion control, floodplain management, and drainage system modification.

In addition to the regulatory program of the RCWD, **Table 6-2** lists the current status of the municipal local controls, whether through ordinance or regulation, policy, delegation to the RCWD or another entity, or not required. Not Applicable (N/A) means the information was unavailable for the community. “Plan” indicates the City has a Wellhead Protection Plan.

Table 6-2: Status of Existing Local Controls in the Rice Creek Watershed District

City/ Township	Shoreland Ordinance	Wellhead Protection	Stormwater Management	Wetland Management	Floodplain Management	Erosion and Sediment Control
Arden Hills*	Ordinance	N/A	Policy/Delegate	Policy/Delegate	Policy/Ordinance	Policy/Ordinance
Birchwood Village*	Policy/ Delegate	N/A	Policy/Ordinance	Policy/ Ordinance/ Delegate	Ordinance	Ordinance
Blaine	Delegate	Policy/ Ordinance	Policy/ Ordinance	Policy/ Ordinance/ Delegate	Policy/Ordinance	Policy/Ordinance
Centerville*	Policy/ Ordinance	Plan	Policy/ Ordinance	Policy/Delegate	Policy/Ordinance	Policy/Ordinance
Circle Pines*	Policy/ Ordinance	Plan	Policy/ Ordinance	City is LGU	Policy/Ordinance	Policy/Ordinance
Columbia Heights	Ordinance	Not Required	Policy/ Ordinance	Policy/ Ordinance/ Delegate	Policy/Ordinance	Policy/Ordinance
Columbus	Ordinance	N/A	Ordinance	Ordinance/ Delegate	Ordinance	Ordinance
Dellwood*	Ordinance/ Delegate	N/A	Ordinance/ Delegate	Ordinance/ Delegate	Ordinance	Policy/Ordinance
Falcon Heights	Not Required	N/A	Policy/Ordinance	Ordinance/ Delegate	Policy/Ordinance	Policy/Ordinance



(cont.) Table 6-2: Status of Existing Local Controls in the Rice Creek Watershed District

City/ Township	Shoreland Ordinance	Wellhead Protection	Stormwater Management	Wetland Management	Floodplain Management	Erosion and Sediment Control
Forest Lake	Policy/ Ordinance	Plan	Policy/Ordinance	Ordinance/ Delegate	Policy/Ordinance	Policy/Ordinance
Fridley	Ordinance	Plan	Ordinance	Ordinance/ Delegate	Ordinance	Ordinance
Grant	Ordinance**	N/A	Policy/Delegate	Policy/Delegate	Policy/Ordinance/ Delegate	Policy/Ordinance
Hugo	Policy/ Ordinance	Plan	Policy/ Ordinance	City is LGU	Policy/Ordinance	Policy/Ordinance
Lauderdale	Ordinance	Not Required	Policy/ Ordinance	Policy/ Ordinance/ Delegate	Not Required	Policy/Ordinance
Lexington*	Not Required	Plan	Ordinance	Ordinance/ Delegate	Not Required	Ordinance
Lino Lakes	Ordinance	Plan	Policy/ Ordinance/ Delegate	Policy/Delegate	Policy/Ordinance	Policy/Ordinance
Mahtomedi	Ordinance	Plan	Policy/ Ordinance/ Delegate	Policy/ Ordinance/ Delegate	Ordinance	Policy/Ordinance
May Township	Ordinance/ Delegate	N/A	Ordinance/ Delegate	Policy/Delegate	Ordinance	Policy/Ordinance
Mounds View*	In Progress	Plan	Policy/ Ordinance/ Delegate	Ordinance/ Delegate	Policy/Ordinance	Ordinance
New Brighton*	Ordinance	Plan	Policy /Ordinance/ Delegate	Policy/Delegate	Policy/Ordinance	Policy /Ordinance/ Delegate
Roseville	Ordinance	N/A	Policy/ Ordinance	Policy/ Ordinance/ Delegate	Policy/Ordinance	Policy/Ordinance
Saint Anthony	NA	Plan	Policy /Ordinance	Policy/Delegate	Policy/Ordinance	Policy /Ordinance
Scandia	Ordinance	Policy	Policy /Ordinance	Policy/Delegate	Ordinance	Ordinance
Shoreview	Ordinance	Plan	Policy/ Ordinance	Policy/ Ordinance/ Delegate	Ordinance	Ordinance



(cont.) Table 6-2: Status of Existing Local Controls in the Rice Creek Watershed District

City/ Township	Shoreland Ordinance	Wellhead Protection	Stormwater Management	Wetland Management	Floodplain Management	Erosion and Sediment Control
Spring Lake Park	Delegate	Plan	Policy/ Ordinance/ Delegate	Policy/Delegate	Policy/Delegate	Policy/Ordinance
White Bear Twp.	Ordinance	Plan	Ordinance/ Policy	Policy/ Ordinance/ Delegate	Ordinance/ Policy	Ordinance/ Policy
White Bear Lake	Ordinance	Plan	Ordinance	Ordinance	Ordinance	Ordinance
Willernie	N/A	N/A	Delegate	Delegate	Delegate	Delegate

* City is entirely within RCWD boundary. District permitting rules apply to entire city.

** Not approved by DNR

6.2.3 Financial Impact

This Plan should impose minimal increases in the financial burden to the member communities as the programs described herein generally follow the long-term goals and policies of the District. While certain costs are expected to be incurred to comply with the requirements for local water planning, the District is directly taking on additional roles in managing the trunk conveyance system and providing cost share assistance for projects that improve water quality.

The largest identifiable cost to the municipality is likely to be the result of local water planning efforts mandated by Minnesota and the District. Cost to prepare a suitable local plan may range between \$30,000 and \$100,000, depending upon the level of activity anticipated by the community. The District has taken measures to minimize the cost to communities by conducting District wide stormwater flood studies, water quality monitoring programs, and allowing for phased planning efforts. Any portion of the Plan can be adopted by reference DNR by the municipalities to further lessen their financial burden.

Table 6-2 indicates which communities have additional need for modifications to ordinances addressing key issues prioritized in this Plan. Some administrative and legal cost will be incurred by the municipalities for each ordinance which must be updated. The number of ordinances will vary by community.

6.2.4 Coordination with Local Government

The District intends to maintain liaisons with other governmental units in order to ensure that the goals, policies, and programs of the RCWD are well understood, and to propose improvements and other necessary changes in associated water resource management programs at state and regional levels. Coordination efforts will be pursued through continued use of public information and education, project reviews, general regulatory program assistance, and City/County partner meetings. The District further intends to coordinate with City and County partners annually to identify local capital improvement projects that may be appropriate for consideration within the District's budget.



Want to Get Involved?

Contact your local city

You can affect change at the local level by serving on a local water management plan committee. Participate in the process and see the progress! Learn more by contacting your city.



home



Sect. 1



Sect. 2



Sect. 3



Sect. 4



Sect. 5



Sect. 6



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