

2019 - 2028 Watershed Management Plan

Upper Rum River Watershed Management Organization Anoka County, MN Adopted July 2019 -AMENDED May 4, 2021

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Fourth Generation Watershed Management Plan Upper Rum River Watershed Management Organization

TABLE OF CONTENTS

	<u>Page</u>
Executive Summary	i
CHAPTER 1 – Introduction	10
1.1 The Role of Watershed Management Organizations	10
1.2 URRWMO Purpose and Authority	10
1.2.1 Governance	11
1.2.2 Responsibilities.....	11
1.3 Operations.....	11
1.3.1 Education and Outreach.....	11
1.3.2 Monitoring Program	12
1.3.3 Rules and Standards	15
1.3.4 Administration.....	15
1.4 First, Second, and Third Generation Plans	15
1.4.1 Assessment of Third Generation Plan Performance	15
1.5 Fourth Generation Plan Organization	17
CHAPTER 2 – Inventory and Condition Assessment	18
2.1 Watershed Physical Environment	18
2.1.1 Location	18
2.1.2 Topography and Drainage	18
2.1.3 Climate/Precipitation	19
2.1.4 Soils.....	20
2.1.5 Geology.....	22
2.2 Watershed Biological Environment.....	23
2.2.1 Biodiversity Significance Ranks	23
2.2.2 Natural Areas and Wildlife Management Areas.....	24
2.2.3 Greenway Corridors	25
2.2.4 Unique Features and Scenic Areas	26
2.3 Watershed Human Environment	31
2.3.1 Current Land Use.....	31
2.3.2 Future Land Use	31
2.3.3 Water Based Recreation.....	32
2.3.4 Water Appropriations.....	33
2.4 Watershed Water Resources.....	33
2.4.1 Riparian Protection and Water Quality Practices.....	33
2.4.2 Lakes.....	34
2.4.3 Rivers and Streams	36

2.4.4	Ditches.....	37
2.4.5	Water Quality Trends	38
2.4.6	Wetlands	48
2.4.7	Public Waters	48
2.4.8	Floodplain.....	49
2.4.9	Groundwater	50
CHAPTER 3 – Assessment of Issues and Opportunities.....		53
3.1	Assessment of Problems and Issues.....	53
3.1.1	Identifying Gaps.....	53
3.1.2	WRAPS Findings and Proposed Actions.....	56
3.2	Identification of Priority Issues and Policies.....	60
CHAPTER 4 – Goals.....		62
4.1	Goal Area A: Water Quantity and Floodplain Management.....	62
4.2	Goal Area B: Water Quality	63
4.3	Goal Area C: Wetlands.....	64
4.4	Goal Area D: Groundwater	64
4.5	Goal Area E: Drainage Systems	64
4.6	Goal Area F: Reduce Erosion	65
4.7	Goal Area G: Protect and Enhance Fish and Wildlife Habitat	65
4.8	Goal Area H: URRWMO Operations and Programming	65
CHAPTER 5 – Implementation Plan		69
5.1	URRWMO Responsibilities	69
5.1.1	Reporting and Evaluation	69
5.1.2	Water Quality Monitoring	71
5.1.3	URRWMO Intercommunity Planning	74
5.1.4	Implementation of the URRWMO Capital Improvement Program.....	76
5.2	Member City Responsibilities.....	79
5.3	Strategies and Implementation Schedule	80
5.3.1	Implementation Program Components	80
5.3.2	Implementation Program Budget	87
5.3.3	Funding.....	90
5.4	Impacts on Local Government	92
5.4.1	URRWMO Operating Fund	92
5.4.2	Local Water Management Plans and Official Controls.....	92
5.5	Plan Approval and Adoption	93
5.5.1	Stakeholder and Public Involvement.....	93
5.5.2	Amendments to Plan.....	95
CHAPTER 6 – Acronyms		97

LIST OF TABLES

Table EX-1: URRWMO Fourth Generation Plan Goals	v
Table EX-2: URRWMO Plan Strategies and Responsible Parties.....	vii
Table 1-1: Water Monitoring and other activities conducted within the URRWMO by ACD (2006-2018)	14
Table 2-1: URRWMO Communities.....	18
Table 2-2: Precipitation Summary for the St. Francis Monitoring Station (217308).....	19
Table 2-3: Frequency Distribution of Precipitation Events.....	20
Table 2-4: Hydrologic Soil Groups.....	21
Table 2-5: Native Plant Communities in the Upper Rum River Watershed.....	28
Table 2-6: Rare Species in the Upper Rum River Watershed.....	29
Table 2-7: Metropolitan Council Population & Household Forecast.....	32
Table 2-8: Characteristics of Lakes in the Upper Rum River Watershed	35
Table 2-9: Shoreland Management Ordinances	36
Table 2-10: MPCA's 2018 Impaired Waters List (Rivers and Streams)	37
Table 2-11: County Ditches within the URRWMO	38
Table 2-12: Aquatic life and recreation assessments on stream reaches	44
Table 2-13: Minnesota Stream Habitat Assessment (MSHA)	45
Table 2-14: Channel Condition and Stability Assessment (CCSI)	46
Table 2-15: Lake Assessments.....	47
Table 2-16: Peak discharges for detailed study locations within the URRWMO	50
Table 3-1: Identified Concerns, Issues and Gaps within the URRWMO.	54
Table 4-1: URRWMO Plan Goals (2019-2028).....	67
Table 4-1 Continued: URRWMO Plan Goals (2019-2028).....	68
Table 5-1: URRWMO 10-year Monitoring Schedule and Cost Estimates	73
Table 5-2: URRWMO Funding Plan for Water Monitoring	74
Table 5-3: 2019 – 2028 Strategies and Implementation Schedule.....	81
Table 5-4: 2019 – 2028 Implementation Program Budget	88
Table 5-5: Planned Member Community Financial Contributions to the URRWMO	92

LIST OF FIGURES

Figure 2-1: Location Map
Figure 2-2: Subwatersheds
Figure 2-3: Hydrologic Soil Group
Figure 2-4: Biodiversity & Lakes of Biological Significance
Figure 2-5: Central Region Regionally Significant Ecological Areas
Figure 2-6: Metro Conservation Corridors
Figure 2-7: Native Plant Communities
Figure 2-8: Existing Land Use (2010)
Figure 2-9: Planned Land Use
Figure 2-10: Surface and Groundwater Appropriations
Figure 2-11: Surface Waters and Monitoring
Figure 2-12: County Ditches
Figure 2-13: National Wetland Inventory
Figure 2-14: DNR Public Waters/Wetlands
Figure 2-15: FEMA Floodplain
Figure 3-1: Watershed Restoration and Protection Strategy (WRAPS) Rivers/Streams and Waterbodies

GIS DATA SOURCES

APPENDIX A: URRWMO Joint Powers Agreement

APPENDIX B: URRWMO Planning Communication Log

APPENDIX C: Tropic State Index Graphs and Water Quality Trends

APPENDIX D: URRWMO Standards Regulations and Operations

APPENDIX E: Annual Activity Report to the URRWMO

APPENDIX F: URRWMO Guidance Documents Adopted by Reference

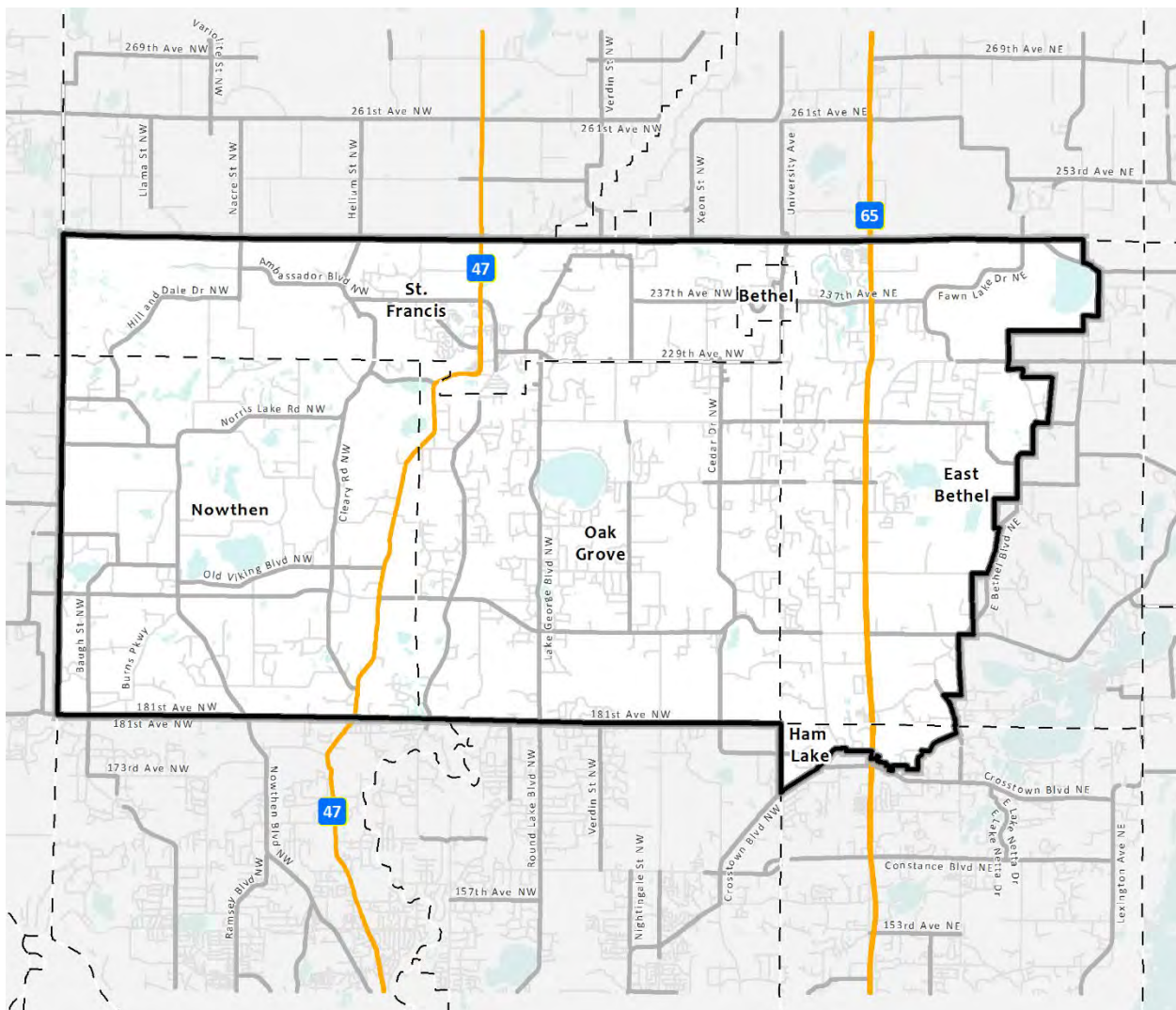
APPENDIX G: URRWMO Project Prioritization

Executive Summary

Introduction

The URRWMO Board initiated work on this 4th Generation Plan in November 2015. The Plan includes information required in Minnesota Administrative Rules Chapter 8410, Local Water Management: an updated land and water resources inventory, goals and policies; an assessment of problems and identification of corrective actions; an implementation program; and a process for amending the Plan. This plan also incorporates available information related to the Rum River Watershed Restoration and Protection Strategy (WRAPS).

The Upper Rum River Watershed is located in the northwest portion of the Minneapolis-St. Paul seven county Metropolitan Area and is comprised of all or part of the following cities in Anoka County:



Community	Area within Watershed (sq. mi.)
Bethel	1
East Bethel	30.7
Ham Lake	1.7
Nowthen	35.2
Oak Grove	35.2
St. Francis	23.4
Total	127.2

Purpose

This Watershed Management Plan (Plan) describes how the Upper Rum River Watershed Management Organization (URRWMO) Board will manage activities in the watershed in the ten year period: 2019 - 2028. This plan is the 4th generation of the URRWMO's watershed management plan.

The URRWMO is a Watershed Management Organization (WMO) formed on June 18, 1991 using a Joint Powers Agreement developed under authority conferred to the member communities by Minnesota Statutes 471.59 and 103B.201 through 103B.251. The agreement was amended in 1997 and again in 2011. The purpose of this Joint Powers Agreement was to establish the Water Management Organization to assist the member local units of government with surface water, ground water, water quality and water usage issues.

The WMO is governed by a Board of Managers that is comprised of 2 members appointed from each community by their respective City Councils. Their purpose is set forth in Minnesota Statutes 103B.201, Metropolitan Surface Water Planning, which codified the Metropolitan Surface Water Management Act of 1982:

- (1) protect, preserve, and use natural surface and groundwater storage and retention systems;
- (2) minimize public capital expenditures needed to correct flooding and water quality problems;
- (3) identify and plan for means to effectively protect and improve surface and groundwater quality;
- (4) establish more uniform local policies and official controls for surface and groundwater management;
- (5) prevent erosion of soil into surface water systems;
- (6) promote groundwater recharge;
- (7) protect and enhance fish and wildlife habitat and water recreational facilities; and
- (8) secure the other benefits associated with the proper management of surface and ground water.

Priority Concerns

The URRWMO Board and Citizen and Technical Advisory Committees identified the following priorities during the planning process. They are listed in the order of importance as adopted by the URRWMO Board. Other concerns were raised, however, their relative ranking was low enough to not warrant inclusion in this priority list.

- (1) **Funding:** Funding available to the watershed through member communities is very limited. Additional funding is necessary to take on actions at the levels suggested by advisory committees and identified by the Rum River WRAPS.
- (2) **Water Quality:** Sampling programs conducted by the WMO have suggested trends of increasing Total Phosphorus concentrations (although Rogers Lake has shown a decline in Phosphorus concentrations). This trend does not appear to be paralleled by increasing trends in chlorophyll-a concentrations or decreasing trends in secchi depth (except for East Twin Lake).

Findings from the Rum River WRAPS has identified that Lake George and the Rum River as short and long term priorities (respectively) for water quality improvement. Lake George has strong evidence for declining water quality trends. The Rum River has a high value for fishing and recreational activities, is classified as a state wild & scenic recreational river, and was commonly referenced in comments from stakeholders.

- (3) **Water Resources Inventory:** The location, condition, and function of constructed stormwater management practices within the watershed are not documented in any way currently useful for watershed planning.
- (4) **Shoreline Protection:** Erosion and sedimentation occurs on some streams in the watershed; notably the Rum River itself.

The URRWMO Board is concerned that the WMO not duplicate efforts by other organizations as well as ensuring that appropriate water management be undertaken at the level of member municipalities.

Prior URRWMO plans focused on studying the watershed to identify impairments so as to prioritize action items. Within the current plan, efforts are now shifting to supporting the implementation of projects within the watershed to improve water quality.

Goals, Strategies, and Responsibilities

A series of goals were developed based on the priorities identified by the URRWMO and the purpose statements set forth in Minnesota Statutes 103B.201. Goals were grouped based on a common theme into eight (8) different goal areas.

- A: Water Quantity and Floodplain Management
- B: Water Quality
- C: Wetlands
- D: Groundwater

- E: Drainage Systems
- F: Reduce Erosion
- G: Protect and Enhance Fish and Wildlife Habitat
- H: Commission Operations and Programming

The goals were defined to be measurable, when paired with the strategy and implementation table that specifies a timeline and the responsibility parties. The table below summarizes the goals for the Fourth Generation Watershed Management Plan.

Table EX-1: URRWMO Fourth Generation Plan Goals

<p>Goal Area A Water Quantity and Floodplain Management</p>	Goal A.1	Require member communities to update post-construction stormwater management ordinances to be compliant with all applicable Federal, State, and local standards. Protect against development related flooding by requiring local communities to enforce rate control and infiltration requirements. Require the use of either the 24-hr NOAA Atlas-14 data averaged for the URRWMO (Table 2-3 within the URRWMO Plan) or the NRCS published county-wide data for Anoka County, whichever is greater. Measurable by communities maintaining post-development 2-, 10-, and 100-yr or below peak runoff rates and volumes at predevelopment levels.
	Goal A.2	Require member communities to update floodplain management ordinances to be compliant with all applicable Federal, State, and local standards. Maintain existing floodplain storage volumes and provide adequate conveyance for flood flows. Measureable by community annual reports that document the volume of floodplain fill and compensatory storage as well as infrastructure design to serve regulated development.
	Goal A.3	Control increase in runoff volume from landlocked basins by only allowing outlets in conformance with approved local plans. Prohibit new discharges from landlocked basins unless an engineering study is completed to evaluate the effects of the outlet and design to mitigate impacts.
	Goal A.4 (B.5)	Improve BMP performance by requiring member communities to conduct physical inspections to identify any issues or deviations from construction plans and then ensuring any deficiencies are corrected. Measurable by community annual reports that document any required corrective measures and time-frames to complete these items.
<p>Goal Area B Water Quality</p>	Goal B.1	Require member communities to update post-construction stormwater management ordinances to be compliant with all applicable Federal, State, and local standards.
	Goal B.2	Protect water quality by requiring local communities to enforce post development stormwater quality treatment practices in conformance with state and federal standards. Measureable by community annual reports that document that regulated developments achieved minimum levels of water quality treatment.
	Goal B.3	Improve Total Phosphorus concentration in Lake George and the Rum River in accordance with goals and timeline of the Rum River WRAPS.
	Goal B.4	Conduct a Rum River WRAPS progress review in 2022.
	Goal B.5 (A.4)	Improve BMP performance by requiring member communities to conduct physical inspections to identify any issues or deviations from construction plans and then ensuring any deficiencies are corrected. Measurable by community annual reports that document any required corrective measures and time-frames to complete these items.
<p>Goal Area C Wetlands</p>	Goal C.1	Continue current local municipality responsibility as Local Government Unit (LGU) for implementation of the Wetland Conservation Act (WCA). Measurable by community annual reports that document all regulated developments complied with applicable wetland standards and quantification of wetland impacts and mitigation areas. MnDOT will continue to be the WCA LGU within state road right-of-ways.
	Goal C.2	Technical Advisory Committee (TAC) will convene to revise wetland buffer standards.

Table EX-1: URRWMO Fourth Generation Plan Goals (continued)

Goal Area D Groundwater	Goal D.1	Protect the quantity and quality of groundwater resources. Measurable by community annual reports that document that they are complying with their applicable wellhead protection plans. Also measurable by community annual reports that document that developments are complying with infiltration standards (including any prohibitions).
Goal Area E Drainage Systems	Goal E.1	Continue current Anoka County Highway Department jurisdiction over county ditches in the watershed. Discuss annually if reassigning the jurisdiction over County ditches is in the best interest of the watershed.
	Goal E.2	Complete a WMO-wide culvert inventory (sizes, elevations, etc) and provide survey results, observations, and recommendations to member communities and Anoka County.
Goal Area F Reduce Erosion	Goal F.1	Prevent erosion of soil into the Rum River by supporting implementation of projects identified by the 2017 and 2018 ACD Rum River Bank Erosion Assessments.
	Goal F.2	Require member communities to update their construction site erosion control ordinances to be compliant with all applicable Federal, State and local standards.
Goal Area G Protect and Enhance Fish and Wildlife Habitat	Goal G.1	Provide education about the prevention and control of aquatic and invasive species by updating the WMO website to incorporate educational materials.
	Goal G.2	Protect shoreline areas from development by requiring member communities to update their shoreland management ordinances to be compliant with all applicable Federal, State and local standards.
Goal Area H Commission Operations and Programming	Goal H.1	Identify and operate within a sustainable funding level that is affordable to member cities.
	Goal H.2	Foster implementation of watershed management programs by proactively seeking grant funding.
	Goal H.3	Operate a public education and outreach program prioritizing elected and appointed officials to build better understanding between all stakeholders. Measurable by the annual attendance of elected and appointed officials of member communities (individuals not already on the WMO board) as well as the public.
	Goal H.4	Operate a monitoring program sufficient to characterize water quantity, water quality, and biotic integrity in the watersheds and to evaluate progress toward meeting goals. Measurable by creating a water quality monitoring plan (2019-2028) that complies with the recommendations of the Rum River WRAP and the URRWMO's Plan.

The URRWMO goals are coupled with a strategy and implementation schedule and a 10-year budget. This allows for the URRWMO to track its progress towards its goals, and adjust strategies overtime based on lessons-learned. The table below outlines the strategies to be adopted that address each of the goals and the responsible party. A more complete version of this table, that includes a timeline and measurable targets, is provided within the text of the URRWMO plan (Table 5-1).

Table EX-2: URRWMO Plan Strategies and Responsible Parties

Goal Area	Strategy Description	Responsible Party	
		URRWMO	Community
A: Water Quantity and Floodplain Management	Establish a uniform minimum runoff control standard for new development and redevelopment that incorporates current stand federal standards. Maintaining post-development 2-, 10-, and 100-yr peak runoff rates at predevelopment levels.		
	Review of local rate control and infiltration requirements to confirm compliance with URRWMO. If needed, the URRWMO Board will authorize the Watershed Coordinator to complete a review of updated ordinances to confirm they comply with the URRWMO's Standards.		X
	Documentation of development projects that impact floodplains.		X
	Review of local floodplain management ordinances to confirm compliance with federal, state and local standards. If needed, the URRWMO Board will authorize the Watershed Coordinator to complete a review of updated ordinances to confirm they comply with the URRWMO's Standards.		X
	Prohibit new discharges from land locked basins unless an engineering study is completed to evaluate the effects of the outlet and design to mitigate impacts.	X	
	Complete a physical inspection of all BMPs and identify deficiencies and potential retrofits.		X
B: Water Quality	Review of post-development stormwater treatment ordinances to confirm compliance with federal, state and local standards. If needed, the URRWMO Board will authorize the Watershed Coordinator to complete a review of updated ordinances to confirm they comply with the URRWMO's Standards.		X
	Fund ongoing water quality sampling within the watershed through partnership with ACD.	X*	
	Partner and fund a portion of water quality projects identified by ACD to improve water quality. Note that the TAC will prioritize project selection (Lake George, Rum River bank stabilization, projects identified within a SWAS).	X*	
	Partner and fund a portion of bank stabilization projects along the Rum River. ACD completed a stream bank inventory in 2017 & 2018 to identify potential sites and interested private landowners. Potential to complete projects on public property as well. Note that the TAC will prioritize project selection (Lake George, Rum River bank stabilization, projects identified within a SWAS).	X*	

Table EX-2: URRWMO Plan Strategies and Responsible Parties (continued)

Goal Area	Strategy Description	Responsible Party	
		URRWMO	Community
B: Water Quality (continued)	Partner and fund an urban stormwater retrofit project that provides water quality benefits to the Rum River.		
	TAC will recommend the project(s) based on SWAS and amend this plan with specific details to allow for grant funding. If additional SWAS's are completed, the TAC will incorporate new projects into consideration for prioritization.	x	x
	Review goals within WRAPS report, identify successful/under-performing projects, and water quality sampling data. Revise WRAPS strategies based on progress.	x	
	Complete a physical inspection of all BMPs and identify deficiencies and potential retrofits.		x
C: Wetlands	Require member communities to enforce regulatory controls for new development and redevelopment construction projects.	x	
	TAC will meet to discuss and revise wetland buffer standards. Standards will be distributed to member communities.	x	
D: Groundwater	Require member communities to review (and enforce) wellhead protection plans and infiltration standards.	x	x
E: Drainage Systems	Consider reassigning the jurisdiction over the county ditches within the watershed.	x	
	Provide funding for watershed culvert inventory. Coordinate with ACD to ensure consistent data collection methodology.	x*	x
F: Reduce Erosion	Partner and fund a portion of bank stabilization projects along the Rum River. ACD is completed a stream bank inventory in 2017 & 2018 to identify potential sites and interested private landowners. Potential to complete projects on public property as well.	x*	
	Note that the TAC will prioritize project selection (Lake George, Rum River bank stabilization, projects identified within a SWAS).		
	Review of local erosion control ordinances to confirm compliance with federal, state and local standards. If needed, the URRWMO Board will authorize the Watershed Coordinator to complete a review of updated ordinances to confirm they comply with the URRWMO's Standards.		x
G: Protect and Enhance Fish and Wildlife Habitat	Update URRWMO website to include education materials on the prevention and control of aquatic and invasive species. Materials provided by the Anoka County Parks Aquatic Invasive Species Prevention Program.	x	
	Review of local shoreland management ordinances to confirm compliance with federal, state and local standards.		x

Table EX-2: URRWMO Plan Strategies and Responsible Parties (continued)

Goal Area	Strategy Description	Responsible Party	
		URRWMO	Community
H: Commission Operations and Programming	Hire a Watershed Management Coordinator handle daily operations of the URRWMO and to represent the Board to municipalities, agencies and other water resource management entities.	x	
	Review of annual budget and funding from member communities.	x	x
	Proactively research grant funding opportunities to support URRWMO projects.	x	
	Promote investment within the watershed by encouraging members of the public and appointed officials from communities to attend URRWMO meetings.	x	x
	Update (overhaul) the URRWMO website to keep up with current technology and security measures.	x	
	Fund ongoing water quality sampling within the watershed through partnership with ACD.	x*	
	Each member city is required to prepare a local water management plan that conforms with the URRWMO Plan. The URRWMO will then review and, if appropriate, approve each local water management plan.	x	x
	Coordinate regular TAC meetings to review status of watershed planning efforts, specifically as it relates to ordinance updates & compliance, proposed project selection, and assessment towards water quality goals.	x	

†Some strategies appear twice within the table, and the ID is duplicated. These strategies were deemed to be of high importance to several goal areas, and therefore were repeated for emphasis.

*Some services might be contracted to ACD or other qualified consultant by the URRWMO to fulfill this responsibility.

This Plan provides direction for URRWMO activities through the year 2028. The URRWMO Board may initiate amendments to this plan at any time.

Plan Amendments

This plan will be in effect for ten (10) years from the date of BWSR approval, unless significant changes to the plan are deemed necessary prior to that date. All amendments to this Plan must follow the procedures set forth in this section, or as required by State laws and rules, as revised. Plan amendments may be proposed by any person, agency, city, or the County to the URRWMO Board, but only the URRWMO may initiate the amendment process. The URRWMO may amend its Plan in the interim if either changes are required or if problems arise that are not addressed in the Plan. The URRWMO will follow the plan amendment process described in Minnesota Statutes 103B.231, Subd. 11 unless the proposed amendment is considered a minor amendment according to the criteria described in Minnesota Rules 8410.

This plan requires amendments to the local water management plans of member communities in the form of comprehensive revisions to all ordinances related to water resources management, as well as the inspection and assessment of the function of existing structural drainage infrastructure and stormwater management practices. As before, communities will retain the responsibility to review and approve development projects to ensure that the requirements of ordinances are followed.

CHAPTER 1 – Introduction

The Upper Rum River Watershed Management Organization (URRWMO) Watershed Management Plan provides the vision and guidance for managing the water resources within the boundaries of the WMO. This chapter outlines the role, organizational structure, responsibilities, operations, and previous watershed planning efforts of the URRWMO.

1.1 The Role of Watershed Management Organizations

Watershed Management Organizations (WMOs) are public organizations consisting of member communities based on a watershed boundary. Since watershed boundaries follow natural drainage divides (not political boundaries), WMOs are comprised of the several communities, all within the defined watershed. WMOs are tasked with preparing and implementing water management plans with the aim of solving and preventing water-related problems within the local region.

The State of Minnesota established the Watershed Act in 1955, authorizing the creation of Watershed Districts (WDs) based on the idea that water management policies should be developed on a watershed basis, since water does not follow traditional political boundaries. In 1982, the Minnesota Legislature approved the Metropolitan Area Surface Water Management Act (Minnesota Statutes 103B.201 to 255) that required all local government entities within the seven-county Metro Area to implement surface water management plans through membership in a WMO.

1.2 URRWMO Purpose and Authority

The Upper Rum River Watershed Management Organization (URRWMO) was formed on June 18, 1991 using a Joint Powers Agreement developed under authority conferred to the member communities by Minnesota Statutes 471.59 and 103B.201 through 103B.251. The agreement was amended in 1997 and again in 2011. The purpose of this Joint Powers Agreement was to establish the Water Management Organization to assist the member local units of government with surface water, ground water, water quality and water usage issues. The Upper Rum River Watershed is located in the northwest portion of the Minneapolis-St. Paul seven county Metropolitan Area and is comprised of all or part of the following cities in Anoka County: Bethel, East Bethel, Ham Lake, Nowthen, Oak Grove, and St. Francis.

The WMO is governed by a Board of Managers that is comprised of 2 members appointed from each community by their respective City Councils. Their purpose is set forth in Minnesota Statutes 103B.201, Metropolitan Surface Water Planning, which codified the Metropolitan Surface Water Management Act of 1982:

- (1) protect, preserve, and use natural surface and groundwater storage and retention systems;
- (2) minimize public capital expenditures needed to correct flooding and water quality problems;
- (3) identify and plan for means to effectively protect and improve surface and groundwater quality;
- (4) establish more uniform local policies and official controls for surface and groundwater management;
- (5) prevent erosion of soil into surface water systems;
- (6) promote groundwater recharge;
- (7) protect and enhance fish and wildlife habitat and water recreational facilities; and

- (8) secure the other benefits associated with the proper management of surface and ground water.

The URRWMO Board has adopted these purpose statements as their watershed plan goals.

1.2.1 Governance

A Board of Managers has been established as the governing body of the Upper Rum River Watershed Management Organization. The 12 member Board of Managers is comprised of appointed members from each of the member communities. Many of the appointed members are council members of the member communities. Two members represent the City of Bethel, two members represent the City of East Bethel, two members represent the City of Ham Lake, two members represent the City of Oak Grove, two members represent the City of Nowthen, and two members represent the City of St. Francis.

1.2.2 Responsibilities

The duties of the WMO, as enacted by the Board, are as follows:

- Prepare and adopt a watershed management plan to meet the requirements of Minnesota Rules Chapter 8410.
- Review and approve local water management plans as defined in Minnesota Rules Chapter 8410.
- Exercise the authority of a Watershed District or Watershed Management Organization under Minnesota Statutes Chapter 103B to regulate the development of land when:
 - a) A local water management plan has not been approved and adopted.
 - b) A local permit requires an amendment to or variance from the local water management plan.
 - c) The Board has been authorized by the local government to require permits for land use.

As identified in the Joint Powers Agreement, the Board has the authority to employ persons as necessary, conduct studies, fund improvements, and operate and maintain improvements constructed by the Board. Procedures have been established to finance capital improvement projects in such a manner that costs can be equitably distributed to benefited members for projects of benefit to more than one member. Where only one member community is benefited, that community will be responsible for the entire cost.

1.3 Operations

This section describes the current programs operated by the Board.

1.3.1 Education and Outreach

The Board outlined a series of policies focused on education as part of its Third Generation URRWMO Plan. These strategies were designed to foster responsible water quality management practices by educating residents, business owners, member communities, and developers. The URRWMO coordinates with Anoka Conservation District and member communities for education and outreach activities. Details regarding these activities can be found in the Commissions' Annual Report. Some highlights are below:

Maintain the URRWMO website

The URRWMO website serves as the primary, continuous public outreach tool with general information about the organization, the watershed management plan, meeting agendas and minutes, water monitoring results, profiles of WMO projects, and access to mapping and data tools. Links to the URRWMO website are also provided within member city newsletters and on other websites including the Anoka Conservation District, and member municipality websites.

Know the Flow (KTF) website

In 2013, a county-wide water-theme website (www.KnowTheFlow.us) was established as a public education and outreach tool. Development of the website was through collaboration among the Anoka County Water Task Force of county, city and watershed representatives. The Anoka County Municipal Wellhead Protection Group provided financial support for the development of the Know The Flow (KTF) website. The website announces relevant information and water-related events taking place in the County. The KTF Contacts page lists and links watershed management organizations, including the URRWMO. The URRWMO meetings and announcements, including public hearings are included in the KTF calendar.

Produced the Annual Newsletter

The URRWMO produces a newsletter article including information about the URRWMO, its programs, related educational information, and the URRWMO website address. This article is provided to each member city, to be included in their city newsletters.

Member Community Efforts

The City of Bethel reached out to 176 households on topics of hazardous water disposal, yard waste management and other activities of the URRWMO.

The City of Ham Lake's newsletter featured education articles on groundwater protection, water conservation, hazardous waste disposal, yard waste management, agricultural best-management-practices, pet waste disposal, and other activities of the URRWMO.

The City of St. Francis provided educational materials to approximately 7,500 residents on topics of groundwater protection, water conservation, yard waste management, pet waste disposal, and hazardous waste disposal.

The City of Nowthen provided educational materials to approximately 1,500 residents on topics of groundwater protection.

The City of Oak Grove provided educational materials to approximately 4,000 residents on topics of groundwater protection, controlling invasive species, hazardous waste disposal, yard waste management, and pest waste disposal.

1.3.2 Monitoring Program

The URRWMO has a cooperative agreement with the Anoka Conservation District (ACD) to conduct water resources monitoring program that track trends in water quality over time within the watershed. Monitoring is focused on water quality in both lakes and streams in order to detect any changes or problems that might require corrective measures. The URRWMO coordinates with ACD to update the monitoring plan annually as necessary.

The ACD's 2017 monitoring efforts within the URRWMO included the following:

Lake Level Monitoring: Weekly water level monitoring was conducted in the following lakes: East Twin Lake, Lake George, Minard Lake, and Coopers Lake.

Lake Water Quality: Water quality sampling was conducted from May through September, at least once-monthly, for the following parameters: total phosphorus, chlorophyll-a, Secchi transparency, dissolved oxygen, turbidity, temperature, conductivity, pH, and salinity. Monitoring was conducted at Lake George in 2017 (not 2018).

Aquatic Invasive Vegetation Mapping: While not an official URRWMO action, the Anoka Conservation District (ACD) was contracted through the Lake George Lake Improvement District (LGID) to conduct an aquatic invasive vegetation delineation at Lake George.

Stream Water Quality – Chemical Monitoring: Chemical monitoring was conducted from May through September for of the following parameters: total suspended solids, E. coli, total phosphorus, Secchi tube transparency, dissolved oxygen, turbidity, temperature, conductivity, pH, and salinity. Sampling was completed at the following locations: Seeyle Brook at CR 7, Cedar Creek at CR 9, Ford Brook at CR 63, Rumer River at CR 24 and Rum River at CR 7.

Stream Water Quality – Biological Monitoring: Under supervision of the ACD staff, high school science classes collected aquatic macroinvertebrates from streams the following locations: Rum River at Hwy 24. The captured specimen were identified to the family level, and the resulting numbers were used by the ACD to gauge water and habitat quality.

Wetland Hydrology: Continuous groundwater level monitoring was conducted at the following wetlands, to a depth of 40 inches, at a wetland boundary:
Alliant Tech Reference Wetland, Alliant Tech Systems property, St. Francis
Cedar Creek, Cedar Creek Natural History Area, East Bethel
East Twin Reference Wetland, Twin Lakes City Park, Nowthen
Lake George Reference Wetland, Lake George County Park, Oak Grove
Viking Meadows Reference Wetland, Viking Meadows Golf Course, East Bethel

Table 1-1 showing the monitoring activities and other projects over the past ten (10) years completed by the ACD within the URRWMO. Reports describing the last several years of monitoring data are available on the URRWMO website:

www.urrwmo.org/monitoring

Table 1-1: Water Monitoring and other activities conducted within the URRWMO by ACD (2006-2018)

Type	Site	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Lake Levels	Coopers Lake						X	X	X	X	X	X	X	X
	East Twin Lake	X	X	X	X	X	X	X	X	X	X	X	X	X
	Lake George	X	X	X	X	X	X	X	X	X	X	X	X	X
	Minard Lake						X	X	X	X	X	X	X	X
	Rogers Lake						X	X	X	X	X	X	X	X
Lake Water Quality	Coopers Lake													
	East Twin Lake			X			X		X					
	Lake George			X			X		X	X*	X*		X	
	Minard Lake								X	X				
	Pickerel Lake								X	X				
	Rogers Lake				X									
Stream Hydrology	Cedar Creek at Hwy 9	X												
	Ford Brook at Hwy 63	X	X											
	Seeyle Brook at Hwy 7	X	X											
Stream Water Quality, Chemical	Cedar Creek at Co Rd 9	X					X		X	X	X	X	X	X
	Cedar Creek at Fawn Lake Dr	X												
	Cedar Creek at Sims Rd	X												
	Crooked Brook (Ditch 67), multiple locations	X												
	Ford Brook at Hwy 63						X			X	X	X	X	X
	Rum River at Co Rd 24					X	X			X	X	X	X	X
	Rum River at Co Rd 7					X	X			X	X	X	X	X
	Seeyle Brook at Co Rd 7						X		X	X	X	X	X	X
Stream Water Quality, Biological	Ford Brook at Hwy 63	X												
	Rum River at Hwy 24	X	X	X	X	X	X	X	X	X	X	X	X	X
Wetland Hydrology	Alliant Tech Reference Wetland	X	X	X	X	X	X	X	X	X	X	X	X	X
	Cedar Creek (Natural History Area)	X	X	X	X	X	X	X	X	X	X	X	X	X
	East Twin Reference Wetland	X	X	X	X	X	X	X	X	X	X	X	X	X
	Lake George Reference Wetland	X	X	X	X	X	X	X	X	X	X	X	X	X
	Viking Meadows Reference Wetland	X	X	X	X	X	X	X	X	X	X	X	X	X
Education /Other	Anoka County Geologic Atlas				X	X								
	East Twin Lake, Lake George: Lakeshore Mapping		X											
	Homeowner Guide: Outdoors in Anoka County			X										
	Rum River Erosion Field Survey					X								
	Web video of student biomonitoring							X						
Water Quality Improvement Projects	Crooked Brook (Ditch 67): Petro Property Stream bank stabilization					X	X							
	Lake George: Daml Property Lakeshore Restoration								X					
	Lake George: Erickson Property Lakeshore Restoration						X	X						
	Lake George: Lakeshore restoration	X												
	Lake George: Stitt Property Lakeshore Restoration								X	X				

* Included Aquatic Invasive Species Mapping, ACD contracted through the Lake George Lake Improvement District

1.3.3 Rules and Standards

Various government entities are involved in regulating water resources and have overlapping jurisdictions within the URRWMO. Several of these agencies have regulatory standards that are applicable to the URRWMO. The Third Generation Plan outlined many of these regulations, to be implemented through a program at the local level. They address issues related to stormwater discharge rates, water quality treatment, stormwater pond design, wetland management, spill prevention and control, sewage treatment design, erosion and sediment control, floodplains, and shoreland management.

The Minnesota Pollution Control Agency (MPCA) developed the Minimal Impact Design Standards (MIDS) upon direction from the Minnesota Legislature. The intention of MIDS is to “keep the raindrop where it falls in order to minimize stormwater runoff and pollution and preserve natural resources” (MPCA Minnesota Stormwater Manual, Overview of Minimal Impact Design Standards). While the URRWMO has not formally adopted MIDS within its own standards, member communities are encouraged to review MIDS and consider adopting them at a local level to encourage low impact development as communities grow. More information about MIDS can be found on the MPCA’s website.

A copy of the Standards, Regulations and Operations are included in Appendix D as a reference for URRWMO Board members, member communities and developers. All member communities should carefully review Appendix D to ensure that local water management plans are in compliance with the URRWMO. A complete listing of the ‘Water Quality Standards’, ‘Wetland Standards’, and ‘Stormwater Infiltration Standards’ (adopted February 3rd, 2009) can be found on the URRWMO website.

1.3.4 Administration

Administration includes preparing and attending regular meetings, taking meeting minutes for public distribution, grant writing, correspondence with other government entities and partners, website maintenance, and annual reporting. Each year, the URRWMO produces an annual report pursuant to Minnesota Rules 8410.0150 that includes activities, progress towards goals and finances. Administrative activities are undertaken by individuals from the member communities and the Anoka Conservation District. A blank template of the annual report is included in Appendix E.

1.4 First, Second, and Third Generation Plans

The URRWMO began development of its first watershed management plan in 1991. Over the next 16 years it was periodically updated. The last update occurred in 2007. The Third Generation of the plan was approved by the state Board of Water and Soil Resources (BWSR) on April 27, 2007, with four subsequent amendments approved by BWSR (January 28, 2009) and subsequently adopted by the URRWMO Board (February 3, 2009). Minnesota Statutes 103.B231 requires that a new watershed management plan is adopted by the Board every 5-10 years.

1.4.1 Assessment of Third Generation Plan Performance

While preparing the Fourth Generation of the Watershed Management Plan, the Board conducted a self-assessment to better identify achievements within the URRWMO and those portions of the plan that were

less successful. This self-assessment was unstructured, based on a group discussion by the Board members.

The most successful achievement of the plans were:

- Development of wetland management standards beyond the minimums required by the Minnesota Wetland Conservation Act. Standards are based on a wetland classification developed by the URRWMO, and include requirements for buffers, setbacks, excavations, and prohibition of any impact to high priority wetlands. The effective date of the wetland standards is February 3, 2009. The Wetland Standards are posted on the URRWMO website.
- Development of post-construction infiltration standards for site development. The standards include site assessment requirements, design and performance standards, and maintenance guidelines for infiltration facilities. The effective date of the infiltration standards is February 3, 2009.
- Establishment of water quality standards for East Twin Lake, Lake George, and the Rum River which establish policies designed to achieve a goal of non-degradation of water quality in each waterbody. The effective date of the water quality standards is February 3, 2009. A complete listing of the 'Water Quality Standards', 'Wetland Standards', and 'Stormwater Infiltration Standards' can be found on the URRWMO website.
- Development of a water quality monitoring plan. This plan is a revision to the water monitoring plan established as part of the URRWMO second generation watershed management plan which was effective up until 2012. The revised plan extends through 2018 and includes lake water quality and level monitoring, stream water quality and flow monitoring, biomonitoring in the Rum River, and reference wetland hydrology monitoring. The effective date of the water quality monitoring plan standards is January 13, 2013.

Those areas that fell short of expectations included:

- Understanding and blending the outcomes of the Local Surface Water Management Plans. The member communities of the URRWMO prepared localized management plans, but unfortunately the outcomes of these plans were not well communicated back to the URRWMO. Individual plan components (e.g. watershed boundaries, discharge rates, etc.) were inconsistent between each plan, making it challenging to use the modelled outputs to identify potential problems/issues within the larger watershed.
- Development of a formal evaluation procedure. Historically, the URRWMO has not had a clear method of self-evaluation towards goals and implementation strategies. Part of this hinges on the lack of an administrative staff member, dedicated to structuring normal URRWMO operations and fostering communication between government agencies.
- The self-assessment also highlighted differences in opinion of the identification of priority issues, specifically between WMO Board members and other governmental agencies. These differences

might be significant to overcome and will require concentrated teamwork and communication when implementing a new Watershed Management Plan. BWSR completed a [Performance Review and Assistance Program \(PRAP\) review](#) of the URRWMO in 2014 which highlights some of these differences in opinion.

1.5 Fourth Generation Plan Organization

Watershed management plans should contain several clearly defined elements, as outlined in Minnesota Statue 103B.231, subdivision 6. By following this guidance, the URRWMO can carefully identify current and potential issues within the watershed, and framed the proposed Goals, Policies and Implementation plan accordingly. This plan is divided into five Chapters as follows:

- (1) Introduction: Describes the purpose of the URRWMO, history, responsibilities, current operations, and the components of this management plan.
- (2) Inventory and Condition Assessment: Describes the physical environment of the watershed including the topography, geology, soils, biological and human environment, existing land use, surface water system, wetlands, and floodplains.
- (3) Assessment of Issues and Opportunities: Describes the issues identified by the URRWMO through a gaps analysis and a series of public meetings, where individuals vocalized their concerns and prioritize identified issues within the watershed.
- (4) Goals and Policies: Describes the goals and policies the Board will work towards in the next ten-year period covered by this Plan.
- (5) Implementation Plan: Describes the proposed action and implementation plan that the Board will undertake to achieve the Goals and Policies of the plan. Includes a discussion of implementation costs and financing and how the Board will evaluate progress and the requirements of the member communities.

CHAPTER 2 – Inventory and Condition Assessment

This chapter summarizes the land and water resources within the URRWMO. It contains information regarding the topography, climate and precipitation, soils, geology, vegetation, wildlife, existing and future land use, surface waters, wetlands, floodplains, and groundwater.

2.1 Watershed Physical Environment

As required in Minnesota Rules Section 8410.0060, this section of the plan provides a general description and summary of the climate, geology, surficial topography, surface and groundwater resource data, soils, land use, public utility services, water based area land ownership, fish and wildlife habitat, unique features, scenic areas and possible pollutant sources. This section also identifies where detailed information can be obtained for many of these areas of concern. This information is provided to the extent necessary to provide guidance to the URRWMO in managing water resources and is not intended to be used for anything beyond high-level planning.

2.1.1 Location

The Upper Rum River Watershed is located in the northwest portion of the Minneapolis-St. Paul seven county Metropolitan Area, and is comprised of all or part of six cities in Anoka County, as listed in Table 2-1. Figure 2-1 displays the watershed boundary and location within the county.

Table 2-1: URRWMO Communities

Community	St. Area within Watershed (sq. mi.)
Bethel	1
East Bethel	30.7
Ham Lake	1.7
Nowthen	35.2
Oak Grove	35.2
St. Francis	23.4
Total	127.2

2.1.2 Topography and Drainage

The topography of the Upper Rum River Watershed varies from the highest elevation of approximately 1,130 feet above mean sea level in the northwestern corner to the lowest elevation of about 860 feet at the point that the Rum River leaves the watershed boundary in the south-central area. In general, the land is quite flat with gently sloping areas.

The Upper Rum River Watershed contains numerous lakes, wetlands, watercourses and ditches. The watershed contains four major DNR Public Watercourses: (1) Cedar Creek, (2) Ford Brook, (3) Seelye Brook, and (4) Rum River. Water collects in these systems and is eventually discharged to the Rum River.

The subwatershed boundaries tributary to lakes and streams within the watershed are outlined on Figure 2-2.

2.1.3 Climate/Precipitation

Precipitation is monitored at numerous sites surrounding the Upper Rum River Watershed, including a Station in St. Francis that has been recording precipitation, snowfall and snow depth since 1990. These stations are monitored by volunteer and various government agencies to develop a comprehensive record of weather patterns within the region. Data can be retrieved from the Minnesota Climatology Working Group, MNDNR, or the Midwestern Regional Climate Center. Summary precipitation data for the St. Francis monitoring station is provided in Table 2-2.

Table 2-2: Precipitation Summary for the St. Francis Monitoring Station (217308).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average (in)	0.75	0.89	1.41	2.11	3.41	3.84	3.65	4.15	3.24	2.09	1.4	0.99
Median (in)	0.58	0.73	1.32	1.96	3.29	3.39	3.28	4.58	3.11	1.57	1.16	0.86
Low Value (in)	0.01	0	0.19	0.19	1.1	0.22	1.34	0.11	0.35	0.2	0.05	0.09
High Value (in)	3.28	2.82	3.86	7.63	7.39	10	6.91	6.82	6.98	7	3.86	3.1

* Source: Midwestern Regional Climate Center

Standards for characterizing precipitation events have been developed based upon monitoring data. Precipitation events are characterized based upon the probability of a storm event with a given total precipitation to occur in any given year. Often times this is expressed as a return interval. For instance, a 50-year storm event is a rainfall event that has a 2% chance of occurrence in any given year. The criteria for characterizing storm events in east central Minnesota are in Table 2-3, derived specifically for the Upper Rum River Watershed based on the NOAA Atlas 14 Precipitation Frequency Estimates in GIS format.

Table 2-3: Frequency Distribution of Precipitation Events.

Storm Duration	Recurrence Interval							
	1-year	2-year	5-year	10-year	25-year	50-year	100-year	200-year
5-min	0.36	0.43	0.53	0.62	0.74	0.84	0.94	1.17
10-min	0.53	0.62	0.78	0.91	1.09	1.23	1.37	1.71
15-min	0.64	0.76	0.95	1.11	1.33	1.50	1.67	2.09
30-min	0.91	1.07	1.35	1.57	1.89	2.13	2.38	2.96
60-min	1.17	1.39	1.75	2.06	2.51	2.87	3.24	4.16
2-hr	1.43	1.70	2.15	2.55	3.13	3.60	4.09	5.35
3-hr	1.59	1.88	2.39	2.85	3.53	4.09	4.69	6.26
6-hr	1.85	2.19	2.79	3.34	4.17	4.88	5.64	7.64
12-hr	2.13	2.50	3.18	3.80	4.74	5.53	6.38	8.63
24-hr	2.44	2.83	3.54	4.19	5.20	6.03	6.94	9.31

*The data in Table 2-3 was derived from the NOAA Atlas 14 GIS raster dataset and is specific to the Upper Rum River Watershed (averaged across the watershed). Any modeling for designs should follow the data provided by MN NRCS. All precipitation events are reported in inches.

NOAA Atlas 14 Precipitation-Frequency Atlas of the United States Volume 8 Version 2.0: Midwestern States (Colorado, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, Wisconsin), U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, Silver Spring, Maryland, 2013

2.1.4 Soils

There are four general soil associations within the watershed as determined by the “Soil Survey of Anoka County, Minnesota” as follows:

Zimmerman-Isanti-Lino Association

The topography of these soils is level to undulating. Zimmerman soils are excessively drained soils consisting of very dark gray to dark-brown fine sand underlain by yellowish-brown and light yellowish-brown fine sand. Isanti soils are very poorly drained black fine sandy loam underlain by gray and dark gray fine sand. These soils occur in depressions and low lying areas. Lino soils are somewhat poorly drained black, dark gray or dark grayish-brown loamy fine sand underlain by mottled brown and light brownish gray-fine sand. The high water table is at or near the surface in many of the depressions that occur throughout this association. This association dominates from the eastern border of the watershed to the Rum River.

Hubbard-Nymore Association

The topography of these soils is gently sloping and excessively drained sandy soils throughout. Hubbard soils are black and dark grayish brown at the surface and are underlain by dark brown and yellowish brown coarse sand. Nymore soils are very dark gray and black to very dark grayish brown loamy sand underlain by dark brown loamy sand. It is an outwash plain that is dissected by drainage ways and dotted with large depressions. This association is prominent along the Rum River and between Lake George and Cedar Creek.

Heyder-Kingsley-Hayden Association

The topography of these soils is gently undulating to steep they are often excessively drained to well drained soils formed in loamy glacial till. Heyder and Kingsley soils occur on hill crests and hillsides. Heyder soils are very dark grayish-brown fine sandy loam underlain by grayish-brown fine sandy loam. With the exception of Emmert-Kingsley association in the northwest this soil dominates the watershed from its western border to Seeyle Brook and the Rum River.

Emmert- Kingsley Association

The topography of these soils is gently undulating to steep. They are often excessively drained to well-drained soils formed in loamy and sandy glacial drift, much of the association in the watershed is gravel coarse sand. Emmert soils consist of dark gray gravelly coarse sandy loam underlain by brown to very pale brown coarse sand or gravelly coarse sand. They typically occupy irregularly-shaped knolls and hills. Kingsley soils occupy hill crests and hillsides. Kingsley soils have a surface layer of very dark gray fine sandy loam underlain by pale brown fine sandy loam. This association is only present in the northwestern corner of the watershed.

These soils can be described based on their hydrologic characteristics (Table 2-4). The majority of soils in the Upper Rum River Watershed are Groups A and A/D. All soils listed as Group A/D are extremely wet soils and are considered D soils in the undrained condition since they are ponded or saturated and would result in discharge if additional precipitation were added. From a resource management standpoint they do not present the same concerns as Group D soils found in uplands. Most of Nowthen and western St. Francis is Group B soils with only small areas scattered in the remainder of the watershed. The watershed has Group C soils located in western St. Francis, northwestern Nowthen and two small areas in southern Nowthen.

Table 2-4: Hydrologic Soil Groups

Group A	(Low runoff potential) – Soils having high infiltration rates even when thoroughly wetted, consisting chiefly of deep, well to excessively drained sands and/or gravel. These soils have a high water transmission rate and would result in a low runoff potential. Min infiltration rate: greater than 0.30 inch/hr.
Group B	Soils having moderate infiltration rates when thoroughly wetted, consisting chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures. These soils have a moderate water transmission rate. Min infiltration rate: 0.15 to 0.30 inch/hr.
Group C	Soils having slow infiltration rates when thoroughly wetted, consisting chiefly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine texture and a slow infiltration rate. These soils have a slow water transmission rate. Min infiltration rate: 0.05 to 0.15 in/hr.
Group D	(High runoff potential) – Soils having very slow infiltration rates when thoroughly wetted, consisting chiefly of clay soils with a high swelling potential, soils with a high permanent water table, soils with clay pan or clay layer at or near the surface, and shallow soils over nearly impervious materials. These soils have a very slow water transmission rate. Min infiltration rate: 0 to 0.05 in/hr.

Source: Hydrology Guide for Minnesota, U.S. Dept of Ag, Soil Conservation Service, St Paul, Minnesota²

A detailed map showing all the soil types of Anoka County is provided by in the United States Department of Agriculture Soil Conservation Service publication entitled Soil Survey of Anoka County, Minnesota. A

complete digital representation of the soils survey data is available and was utilized for soil characteristics maps. Figure 2-3 shows the soils within the watershed based on hydrologic soil classifications.

2.1.5 Geology

2.1.5.1 Anoka County Geologic Atlas Update

In 2009, watershed organizations, including the URRWMO jointly paid the local cost necessary for the Minnesota Geological Survey to prepare an Anoka County Geologic Atlas to obtain important geologic and hydrogeologic information that will help address watershed management issues. In 2013, Part A (geology) of the Atlas was published. Part B (hydrogeology) was published in 2016. The Geologic Atlas provides important information for the inventory and assessment of the geology and groundwater resources within the Upper Rum River Watershed.

2.1.5.2 Surficial Geology

The landscape of the Upper Rum River Watershed was shaped by several ice advances into east central Minnesota during the last glaciation, which occurred about 10,000 years ago. In the Upper Rum River Watershed a large glacial outwash deposit, called the Anoka Sandplain, is the dominant geomorphic feature. It was formed largely by glacial drainage from the receding Grantsburg Sublobe of the Des Moines glacier. The Surface of the Anoka Sandplain is flat to moderately undulating. Low regions of upland represent areas of till left from previous ice movements that were not buried by the outwash sand. Other features of positive relief are patches of sand dunes formed by southwesterly winds after the outwash streams left the Sandplain. Landscape features of negative relief include numerous lakes and marshes, which formed as ice blocks, originally buried by the outwash sand that melted to create the depressions, and are now filled with water or organic soils. As a result of the above-mentioned glacial actions, glacial outwash is the predominant surficial geologic formation in the watershed, about one-third of which is covered by organic soils.

Topography in the URRWMO differs from the rest of Anoka County due to an end moraine. The glaciers deposited large mounds of gravel in what is now the western part of the City of St. Francis and northwestern Nowthen. Melt water from the retreating glaciers shaped much of what is now Anoka County, a large outwash plain dominated by gently rolling sand and shallow lakes and wetlands. The highest point of the WMO area is in the northwestern St. Francis at an elevation of 1130 feet above sea level (this is also the highest point in Anoka County). The lowest point is 860 feet above sea level in the southern edge of the WMO area where Cedar Creek meets the Rum River.

2.1.5.3 Bedrock Geology

The surficial glacial deposits of the URRWMO overlie bedrock of Cambrian sandstones that dip gently to the southeast. The uppermost formation across most of the URRWMO is the Tunnel City Group (Upper Cambrian). This formation was formerly named the Franconia Formation. The Tunnel City Group is a very fine to coarse grained, commonly silty and glauconitic sandstone with some shale and dolomite. The Tunnel City Group formation is 100 to 200 feet (30 to 60 meters) thick. In the URRWMO, it is thickest in the east and thins in the west.

In the areas where the Tunnel City Group has eroded away, narrow bands of the Wonewoc Sandstone (Lower Cambrian) exist as the uppermost bedrock formation. The Wonewoc Sandstone was formerly classified as two formations: Ironton and Galesville Sandstone. From a hydrogeologic standpoint, the Ironton formation is now commonly referred to as the upper Wonewoc and the Galesville is referred to as the lower Wonewoc. The upper Wonewoc is a white to grey, medium grained, moderately well to poorly sorted commonly silty quartzose sandstone. It is at most 46 feet (14 meters) thick. The lower Wonewoc is a white to grey predominantly medium grained, well sorted quartzose sandstone. It is as much as 100 feet (30 meters) thick. The boundary between these two portions of the Wonewoc sandstone are often difficult to determine. Like the Franconia, the Ironton and Galesville Sandstone formations were renamed after the Minnesota Geological Survey unified their designations to correspond with Wisconsin Geologic Survey designations.

Underlying the Wonewoc Formation is the Eau Claire Formation. The Eau Claire Formation is the uppermost bedrock in the northwest corner of the URRWMO. The Eau Claire formation is composed of red shale, grey-green shale, fine grained quartzose sandstone and fine grained glauconitic quartzose sandstone. The shale's are generally interbedded layers within the quartzose sandstone and are less than 8 feet (2.5 meters) thick. This formation is nearly 200 feet (60 meters) thick.

2.2 Watershed Biological Environment

2.2.1 Biodiversity Significance Ranks

The Minnesota Biological Survey (MBS) conducts field surveys to evaluate the distribution and status of the state's plants, animals, and native communities. Each site that is surveyed is assigned a biodiversity significant rank, based on the following criteria:

- the presence of rare species populations
- the size and condition of native plant communities within the site
- the landscape context of the site

The four biodiversity significant ranks are defined by MDNR as:

Outstanding

Sites contain the best occurrences of the rarest species, the most outstanding examples of the rarest native plant communities, and/or the largest, most ecologically intact or functional landscapes.

High

Sites contain very good quality occurrences of the rarest species, high-quality examples of rare native plant communities, and/or important functional landscapes.

Moderate

Sites contain occurrences of rare species, moderately disturbed native plant communities, and/or landscapes that have strong potential for recovery of native plant communities and characteristic ecological processes.

Below

Sites lack occurrences of rare species and natural features or do not meet MBS standards for outstanding, high, or moderate rank. These sites may include areas of conservation value at the local level, such as habitat for native plants and animals, corridors for animal movement, buffers surrounding higher-quality natural areas, areas with high potential for restoration of native habitat, or open space.

Site rankings within the Upper Rum River Watersheds are shown on Figure 2-4. This information should be used by the member communities for land planning and development review. Note that the MBS does not cover the entire state. Survey sites are selected by the DNR staff and through consultation with resource managers within the region. Areas that are not mapped can include those where native plant communities have been altered by human actions and/or native plant communities are below the minimum size criteria for mapping.

The MDNR also identifies Lakes of Biological Significance (LBS) based on four different community types: aquatic plants, fish, amphibians and birds. Note that many Minnesota lakes have not been sampled for plants and animals, so the LBS list will periodically be revised based on updated sampling information. Lake rankings (outstanding, high or moderate) and also shown on Figure 2-4.

2.2.2 Natural Areas and Wildlife Management Areas

In addition to the areas noted as part of the Minnesota Biological Survey, a number of natural areas and wildlife management areas are within the watershed as listed below:

- Cedar Creek Ecosystem Science Reserve
The Cedar Creek Ecosystem Science Reserve (CCESR), located in East Bethel in the northeastern portion of the URRWMO, was established in 1940 for the study and preservation of this mosaic of natural areas where the three major biomes of Minnesota merge, northern coniferous, eastern broadleaf deciduous forest and prairie/savanna to the west. CCESR is considered a site of outstanding biodiversity by the Minnesota County Biological Survey.
- Burman Wildlife Management Area
Additional unique vegetation communities like wet meadows, hardwood swamps and dry oak forests are included in the Burman Wildlife Management Area in the City of Oak Grove and farther down the stream along Cedar Creek. Oak forests, other hardwood stands, and commercial and conservation pine groves are also common features of the landscape.
- Bethel Wildlife Management Area
- Carl B Bonnell Wildlife Management Area
- Robert and Marilyn Burman Wildlife Management Area
- Mallard Marsh Wildlife Management Area
- Lake George Aquatic Management Area
- Sandhill Crane Natural Area
- Wildlife Corridors
- State Wildlife Action Plan
The MNDNR developed the 2015-25 Wildlife Action Plan, which can be referenced to understand the greatest conservation needs of the state, and assist in focusing planning efforts of the URRWMO.

- Central Region Regionally Significant Ecological Areas (CRRSEA)
The MNDNR has conducted an analysis to identify regionally significant terrestrial and wetland ecological areas. Areas are classified as Moderate, High or Outstanding, and can provide important ecological functions. Within the URRWMO, 3.6 square miles are classified as Moderate, 4.8 square miles are High, and 37.7 square miles are Outstanding. Figure 2-5 displays the Regional Significant Ecological Areas within the URRWMO.

2.2.3 Greenway Corridors

Beginning in 1999, the Anoka County Parks and Anoka Conservation District has been involved in several wildlife/greenway corridor projects. This includes inventorying the Minnesota Land Cover Classification System and identifying wildlife corridors that can be included in local comprehensive plans. Incorporating open space into planning efforts can improve property values, protect and improve water quality, and promote conservation of wildlife habitat.

The Metro Conservation Corridors (MeCC) is a strategy for prioritizing areas for habitat protection within the Twin Cities metro area. The MeCC focuses planning efforts on strategic areas, and should improve the cost-effectiveness of projects by enhancing communication between different partner organizations. Leveraging state funding, MeCC projects include the restoration/enhancement upland and wetland habitats, acquiring conservations easements, and acquiring land. Figure 2-6 displays the Metro Conservation Corridor within the URRWMO. Completed MeCC projects within the URRWMO are listed below.

Anoka County Parks, Restoration
Metro Greenways Program (2003), 150 acres

Beach Farm (257), Acquisition (Conservation Easement)
Minnesota Land Trust (2003), 70 acres

Deer Lake (405), Acquisition (Conservation Easement)
Minnesota Land Trust (2009), 45 acres

Emmans Farm (280), Acquisition (Conservation Easement)
Minnesota Land Trust (2003), 80 acres

Emmans Farm (281), Acquisition (Conservation Easement)
Minnesota Land Trust (2003), 12.5 acres

NW Anoka County Greenway, Acquisition (Conservation Easement)
Metro Greenways Program (2003), 64.8 acres

Rum River (360), Acquisition (Conservation Easement)
Minnesota Land Trust (2007), 53 acres

2.2.4 Unique Features and Scenic Areas

2.2.4.1 Rare and Endangered Species

The Upper Rum River watershed provides habitat for a significant number of Blanding's turtles (*Emydoidea blandingii*), a State Threatened Species. As part of the Rum River watershed, the URRWMO area is considered by the Nongame Wildlife Program to be potentially important for Blanding's turtles, because of verified sightings of the species and at least some remaining habitat.

In addition to Blanding's turtles, the Cedar Creek Natural History Area (NHA) and the Helen Allison Savanna Scientific and Natural Area (adjacent to the southeast boundary of Cedar Creek NHA and outside of the watershed) support many rare plants. Their combined areas contain: five state Endangered, three state Threatened, and six state Special Concern plant species. Habitat for red-shouldered hawks (*Buteo lineatus*), a Special Concern species, and Sandhill cranes (*Grus Canadensis*), a species recently removed from Special Concern status on the state list, is also provided. The areas' natural communities form a complex of forests and wetlands that not only support a significant number of rare species, but also provide important habitat for more common native plants and animals. These two areas are high priority sites of statewide significance.

Two significant wetlands occur within the Sandhill Crane Natural Area: Tamarack Swamp Mineotrophic Subtype #30 and Shrub Swamp#25. A state threatened plant, *Viola lanceolata* #24 occurs on the north side of Neds Lake, just north of the park/forest boundary. Sandhill cranes have been heard in the marshes south of Neds Lake.

A biologically sensitive area is located along that portion of Cedar Creek extending southwest from Cedar Drive (Hwy 13) to Lake George Boulevard. Eight Natural communities, including an oak savannah, hardwood, shrub, tamarack swamps, oak forests and an emergent marsh form a complex of native upland and lowland communities. A rare, but unlisted, plant, *Polygonum arifolium* #15, Blanding's turtles and Sandhill cranes have been documented in the area.

Four high quality natural communities are located west of Norris Lake and Mud Lake. They include a rich fen, shrub swamp, tamarack swamp, and cattail marsh. Blanding's turtles have been found in or near Norris Lake from 1955-1989. Three additional natural communities, including rich fen, oak forest, and an oak savannah, occur in an area of southwest Oak Grove.

A state Threatened plant (*Rotala ramosior*) has been found along three shorelines with and adjacent to John Anderson Memorial Park in East Bethel. The occurrence within the park is located on Coopers Lake. Two additional occurrences are located on Minard Lake and on a small lake southeast of Coopers Lake.

In Nowthen, a bald eagle nest (*Haliaeetus leucocephalus*) on the east side of Goose Lake has been active since 1993.

Two high quality forest communities occur on the east side of an oxbow in the Rum River, approximately one mile north of St. Francis. A high quality complex of upland forest and swamp is located north of Highway 28 in St. Francis. Two rare plants were found within the complex: *Panax quinquefolius*, a state listed Special Concern species, *Polygonum arifolium*, a rare, but unlisted species.

Two high quality wetlands occur adjacent to an intermittent stream that enters Seelye Brook. North of the complex is a Maple-Basswood Forest which supports *Panax quinquefolius*.

The MNDNR has mapped out Native Plant Communities (sometimes called natural communities) that are considered remnants of pre-settlement vegetation. Native plant communities have undergone very little human disturbance since pre-settlement times. They can be generically classified into groups by vegetation and major habitat features. Like much of the larger Twin Cities Metropolitan Area, the URRWMO has only small patches of pre-settlement native plant communities remaining with many occurring in the Cedar Creek Ecosystem Science Reserve.

Native plant communities are functional units of the natural landscape, classified and described by considering vegetation, hydrology, landform, soils and natural disturbance regimes. The native plant community system and subtype descriptions given below describe vegetation and habitat characteristics present in the Upper Rum River Watershed. Of the ~7,000 acres of natural communities within the watershed, approximately 25% are located the Cedar Creek Ecosystem Science Reserve (Table 2-5, Figure 2-7). Future priorities and protection efforts may be added to the URRWMO plan with the completion of future inventories and assessments.

Table 2-5: Native Plant Communities in the Upper Rum River Watershed

System Description	Native Plant Community	# Sites within URRWMO	Acres In URRWMO	S Rank*
Acid Peatland System	Low Shrub Poor Fen	13	57	S5
Fire-Dependent Forest/Woodland System	Central Dry Oak-Aspen (Pine) Woodland	3	109	
	Oak - (Red Maple) Woodland	31	572	S4
	Oak - Aspen Woodland	39	548	S2
	Pin Oak - Bur Oak Woodland	27	502	S3
	Southern Dry-Mesic Oak (Maple) Woodland	16	154	
Floodplain Forest System	Silver Maple - (Virginia Creeper) Floodplain Forest	5	60	S3
Forested Rich Peatland System	Alder - (Maple - Loosestrife) Swamp	16	476	S5
	Tamarack Swamp (Southern)	32	484	S2S3
Lakeshore System	Sand Beach (Inland Lake)	3	28	S1
Marsh System	Cattail - Sedge Marsh (Northern)	2	157	S2
	Northern Bulrush-Spikerush Marsh	7	427	
	Northern Mixed Cattail Marsh	14	322	
Mesic Hardwood Forest System	Red Oak - Basswood Forest (Noncalcareous Till)	1	4	S4
	Red Oak - Sugar Maple - Basswood - (Bitternut Hickory) Forest	7	130	S3
	Red Oak - Sugar Maple - Basswood - (Large-Flowered Trillium) Forest	7	23	S4
Open Rich Peatland System	Graminoid - Sphagnum Rich Fen (Basin)	4	177	S4
	Northern Rich Fen (Basin)	10	85	
Upland Prairie System	Dry Barrens Oak Savanna (Southern), Oak Subtype	15	263	S1S2
Wet Forest System	Black Ash - (Red Maple) Seepage Swamp	1	5	S1S2
	Black Ash - Yellow Birch - Red Maple - Alder Swamp (Eastcentral)	4	79	S4
	Black Ash - Yellow Birch - Red Maple - Basswood Swamp (Eastcentral)	28	540	S3
	Lowland White Cedar Forest (Northern)	8	166	S3
Wet Meadow/Carr System	Sedge Meadow	24	305	S4 or S5
	Sedge Meadow, Tussock Sedge Subtype	2	144	S4
	Willow - Dogwood Shrub Swamp	53	1,193	S5
Total		372	7,011	

*S rank: Conservation Status

S1: Critical imperiled, S2: Imperiled, S3: Vulnerable to Extirpation, S4: Uncommon but not Rare, S5: Common and Abundant

The information on Table 2-5 was derived from a GIS database provided the Minnesota Department of Natural Resources based on results from the Minnesota Biological Survey, State Park land cover data, Forestry native plant community data, and Wildlife Management Areas land cover data.

Rare features data included in Table 2-6 was provided by the Natural Heritage and Nongame Research Program of the Division of Fish and Wildlife, Minnesota Department of Natural Resources(DNR) and were current as of October 2004. These data are not based on an exhaustive inventory of the state. The lack of data for any geographic area shall not be constructed to mean that no significant features are present. In addition, there may be inaccuracies in the data, of which the DNR is not aware and shall not be held responsible for. Permission to use this data does not imply endorsement or approval by the DNR of any interpretations or products derived from the data.

Table 2-6: Rare Species in the Upper Rum River Watershed

Common Name	Scientific Name	Status	# Reported in URRW
Plants			
American Ginseng	<i>Aristida tuberculosa</i>	SPC	2
Beach-Heather	<i>Hudsonia tomentosa</i>	SPC	1
Clinton's Bulrush	<i>Scirpus clintonii</i>	SPC	1
Cross-Leaved Milkwort	<i>Polygala cruciata</i>	END	2
Halberd-Leaved Tearthumb	<i>Polygonum arifolium</i> var. <i>pubescens</i>	NON	3
Lance-Leaved Violet	<i>Viola lanceolata</i>	THR	3
Least Moonwort	<i>Botrychium simplex</i>	THR	3
Long-Bearded Hawkweed	<i>Hieracium longipilum</i>	NON	2
Ram's-head Lady's Slipper	<i>Cypripedium arietinum</i>	THR	2
Rhombic-Petaled Evening Primrose	<i>Oenothera rhombipetala</i>	SPC	2
Sea-beach Needlegrass	<i>Aristida tuberculosa</i>	SPC	1
Tall Nut-rush	<i>Scleria triglomerata</i>	END	2
Tooth-cup	<i>Rotala ramosior</i>	THR	3
Twisted Yellow-eyed Grass	<i>Xyris torta</i>	END	1
Virginia Bartonnia	<i>Bartonia virginica</i>	END	2
Walter's Barnyard Grass	<i>Echinochoa walteri</i>	NON	1
Water Willow	<i>Decodon verticillatus</i>	SPC	1
White Wild Indigo	<i>Baptisia alba</i>	SPC	1
Birds			
Bald Eagle	<i>Haliaeetus leucocephalus</i>	SPC	2
Red-Shouldered Hawk	<i>Buteo lineatus</i>	SPC	3
Sandhill Crane	<i>Grus Canadensis</i>	NON	8
Hooded Warbler	<i>Wilsonia citrine</i>	SPC	1
Reptiles			
Blanding's Turtle	<i>Emydoidea blandingii</i>	THR	42
Butterflies			
Karner Blue	<i>Lycaeides melissa samuelis</i>	END	1
Leonard's Skipper	<i>Hesperia leonardus</i>	SPC	2
Regal Frittilary	<i>Speyeria idalia</i>	SPC	1
Insects			
A Species of Jumping Spider	<i>Paradamoetas fontana</i>	SPC	1
	<i>Metaphidippus arizonensis</i>	SPC	1
	<i>Tutelina formicaria</i>	SPC	1
Mollusk			
Black Sandshell Mussel	<i>Ligumia recta</i>	SPC	1
Creek Heelsplitter Mussel	<i>Lasmigona compressa</i>	SPC	1

SPC = Special Concern, THR = Threatened, END = Endangered, NON = Not Listed But Rare

The URRWMO does not have any forestry state land. However, there are some the DNR offers a range of different services/information that can help support and protect forested areas within the URRWMO. Information on each of these programs are available on the DNR's website:

- Forested riparian areas can provide plant diversity, wildlife and fish habitat, nutrient/sediment/water interception as well as recreational opportunities. Anyone who currently is managing riparian forests are more recommended to consult the Minnesota Forest Resource Council's Voluntary Site-Level Forest Management Guidelines for Landowners, Loggers and Resources Managers to maintain these ecosystems.
- Forest Stewardship Program is intended to support private landowners with 20+ acres of forested land. For a fee, a DNR Forester can provide advice, support and develop a plan for the forested land to make it eligible for property tax relief programs and state cost-share assistance for management work.
- Community Forestry information is targeted towards urbanized areas and communities. There are grant programs, details on the DNR's Arbor Month, and information other best management practices available for public use on the DNR's website.
- Emerald Ash Borer is of growing concern across the state. Member cities and residents within the URRWMO are also recommended to considering future impacts of the Emerald Ash Borer on their community. The MDNR has more information on how to prepare for any financial impacts communities will have resulting from tree deaths.
- The School Forest Program act as a classroom for students and also provide water quality benefits. Two schools within the URRWMO are enrolled in the DNR's School Forest Program: Cedar Creek Community School and East Bethel Community School.
- The Minnesota Forest Legacy Program provides conservation easements for private forests. A portion of the URRWMO is within the Lower St. Croix Forest Legacy Area.

2.2.4.2 **Scientific and Natural Areas**

There are no DNR Designated Scientific and Natural Areas within the watershed.

2.2.4.3 **Recreational and Scenic Riverways**

The Rum River is a state designated Scenic and Recreational River way, flowing south from Lake Mille Lacs 145 miles to its confluence with the Mississippi River in the City of Anoka. The river was added to Minnesota's Wild and Scenic Rivers Program in 1978. This covers the stretch from Mille Lacs, Sherburne, Isanti, and Anoka Counties.

Classifications of wild rivers are those which exist in a free-flowing state with excellent water quality and with adjacent lands that are essentially primitive or undeveloped (i.e., adjacent lands still present an overall natural character, but in places may have been developed for agricultural, residential or other land uses).

Classifications of recreational rivers are those that may have undergone some impoundment or diversion in the past and that may have adjacent lands which are considerably developed, but that are still capable of being managed so as to further the purposes of this act. This means that bordering lands may have

already been developed for a full range of agricultural or other land uses, and may also be readily accessible by pre-existing roads or railroads.

Wildlife and fish can be found along or in the Rum River; white-tailed deer, gray and fox squirrels, cottontail rabbits, snowshoe hares, beavers, minks, muskrats, raccoons, loons, great blue herons, songbirds, and waterfowls nesting are a few of the animals found along the Rum River. Smallmouth Bass, Northern Pike, and Walleyes can be found in the Rum River. Smallmouth Bass are popular among the anglers along the river. Northern Pike are common near the headwaters. Walleyes are common in the river from Princeton to Anoka. The Rum River Watershed contains extensive backwater marshes, sandy upland plains, farmland and bottom lands covered with maple, elm and other hardwoods. The remains of a once vast pine forest can be seen, near the river's lowest reaches, through the red and white pine trees.

2.3 Watershed Human Environment

2.3.1 Current Land Use

Existing land use within the watershed describes the history of the area and its future. As shown on the existing land use map (Figure 2-8, based on the Metropolitan Council's 2010 Generalized Land Use), approximately 15% of the watershed is residential development. Agriculture production is another common land use, particularly in Nowthen. Following settlement of the area, farming was a common land use with row crops and hay as common crops. Sod and tree farming are other forms of agriculture in the watershed, supplying the areas growing landscape needs. Parkland and public land make up 8% of the watershed with Cedar Creek Ecosystem Reserve (CCESR) making up nearly half of the public open space. Wetlands and lowlands for the most part are unavailable for development; however, these lands are used for recreational hunting, bird watching, hiking and fire wood gathering.

There have been two major changes in land use since European settlement: the initial clearing of land for agriculture production and now the conversion of those agricultural lands and additional clearing for roads, houses, businesses and other facilities that support a growing population. As the population and individual households increase so do the stresses on the natural environment of the watershed. Since most of the current and future households within the watershed are serviced by individual sewage treatment systems and individual wells there is the potential for water impairment if local and state laws are not followed.

2.3.2 Future Land Use

The development that has generally occurred within the URRWMO boundary has consisted primarily of land use conversion from agricultural to rural residential. This land use change has resulted in a decrease of storm water runoff volume. Where areas have developed more densely, an increase in runoff volume has occurred.

Portions of St. Francis, Bethel, Oak Grove and East Bethel are served by municipal water supplies or waste water treatment facilities. Other areas require the use of individual septic systems and wells. These individual systems limit where dense development will occur. The planned land use within the WMO is shown in Figure 2-9 (Regional Planned Land Use, Metropolitan Council).

The Metropolitan Council produced forecasts for population and households for the entire metropolitan region from 2010 to 2040 in 10 year increments. Forecasts were adopted in May 2014, and updated in July 2015. Forecasts for the communities with the URRWMO shown in Table 2-7.

Table 2-7: Metropolitan Council Population & Household Forecast

Community	Population				Households			
	2010	2020	2030	2040	2010	2020	2030	2040
Bethel	466	480	520	550	174	190	220	230
East Bethel	11,626	12,400	15,400	18,400	4,060	4,700	6,000	7,400
Ham Lake	15,296	16,200	17,700	18,700	5,171	5,800	6,600	7,100
Nowthen	4,443	4,590	5,100	5,500	1,450	1,600	1,860	2,100
Oak Grove	8,031	8,600	9,500	10,400	2,744	3,100	3,600	4,100
St. Francis	7,218	8,200	10,400	12,600	2,520	3,100	4,100	5,100

2.3.3 Water Based Recreation

There are several park facilities within the watershed that provide activities such as swimming, fishing, and boating. The following parks are location at lakes and water bodies within the URRWMO:

Sandhill Crane Natural Area (East Bethel)

This natural consists of 172 acres intended to remain natural without trails or roads.

Lake George Park (Oak Grove)

The 265 acre park includes a boat launch, picnic areas, a swimming beach, and hiking trails.

Rum River Central Park (Oak Grove)

This park is partly within the City of Oak Grove and partly within the City of Andover. The park has trails, camping, and picnic areas. A boat launch is available within the City of Andover.

Pickerel Lake Park (Nowthen)

A boat access is available at Pickerel Lake.

East Twin Lake Park (Nowthen)

This park offers a swimming beach, picnic areas, trails, and a boat access.

Rum River Canoe Access (St. Francis)

A walk-in boat access is available on the Rum River in St. Francis.

2.3.4 Water Appropriations

The Minnesota DNR regulates surface water and groundwater appropriations through a permitting program. Active surface water and groundwater appropriations can be found on the MDNR's website at:

https://www.dnr.state.mn.us/waters/watermgmt_section/appropriations/index.html

A search of the MNDNR Permitting and Reporting System (MNPARS) database was completed to identify all water users withdrawing more than 10,000 gallons of water per day or 1 million gallons per year. This is common during the construction of new structures and utilities, and dewatering is required. A permit is also required for maintenance of stormwater ponds that require dewatering in excess of 10,000 gallons per day or one million gallons per year. The information obtained from MNPARS for all active surface and groundwater appropriation permits (thru 2015) is shown in Figure 2-10. Local municipalities are encouraged to communicate the Water Appropriation Permit requirements to their residents. The MNDNR should be contacted for current details regarding specific permits.

Member communities can reference the DNR Water Use records to follow the trend of water use within the URRWMO (and their community) to become more aware of the locations of aquifers within the region and access trends of groundwater use.

2.4 Watershed Water Resources

2.4.1 Riparian Protection and Water Quality Practices

In 2015, the Minnesota Legislature passed (and revised in 2016) statutes to require the inventory and land use practices for riparian (lakes, streams and rivers) protection and water quality (Minnesota Statute 103F.48). Commonly referred to as the "Buffer Law," soil and water conservation districts were required to provide the completed an inventory of lands areas that do not meet buffer requirements to local water management authorities. The Local water management authorities must then address implementation of the recommendations when updating their plans.

Anoka Conservation District has completed an inventory of lands areas that do not meet buffer requirements ("Additional Waters"), and provided the criteria to the URRWMO on June 30th, 2017. The Anoka Conservation District, in accordance with MN Statute 103F.48, identified water 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.

This Buffer Law presents new challenges and opportunities for the County, its watershed management organizations/districts and residents. The URRWMO Board discussed the implementation of ACD's recommendations for these "Additional Waters". At this time, the URRWMO is focused on other implementing projects to support specific goals within the current 10-year planning cycle (see Chapter 4).

However, the URRWMO will reference the ACD's "Explanatory Supplement" for guidance on placement of future riparian buffers, specifically the results of their GIS analysis.

2.4.2 Lakes

There are thirty-one (31)-named lakes within the URRWMO boundary; Table 2-8 provides information on all of the named lakes, including the DNR lake number, surface area, maximum depth, use classification, DNR shoreland management lake classification, overall condition, and water quality sampling information collected by the MPCA. Figure 2-11 shows the location of the named lakes and ponds within the URRWMO.

All of the lakes within the Upper Rum River Watershed have the use classification of 2B, 3C (2B: a healthy, warm water aquatic community. 3C: Industrial cooling and a materials transport use without a high level of treatment). The DNR Shoreland Management Lake Classification varies by lake. The three classes include:

- Natural Environment Lakes usually have less than 150 total acres, less than 60 acres per mile of shoreline, and less than three dwellings per mile of shoreline. They may have some winter kill of fish; may have shallow, swampy shoreline; and are less than 15 feet deep.
- Recreational Development Lakes usually have between 60 and 225 acres of water per mile of shoreline, between 3 and 25 dwellings per mile of shoreline, and are more than 15 feet deep.
- General Development Lakes usually have more than 225 acres of water per mile of shoreline and 25 dwellings per mile of shoreline, and are more than 15 feet deep.

Table 2-8: Characteristics of Lakes in the Upper Rum River Watershed

Lake	DNRID#	Surface Area (ac)	Max Depth (ft)	Use Classification	DNR Shoreland Management Lake Classification*	Overall Condition**	10-Year Average of All Summer Samples***			
							TP (µg/L)	Chlorophyll-a (µg/L)	Secchi Depth (m)	Number of samples
Bass	02-0135-00	76.9	5	2B, 3C	NE					
Bear	02-0131-00	21.4	unknown	2B, 3C	NE					
Benjamin	02-0136-00	31.6	unknown	2B, 3C	NE					
Bethel Pond	02-0772-00	unknown	unknown	2B, 3C						
Booster Pond	02-0056-00	5.4	unknown	2B, 3C	NE					
Burns	02-0122-00	85.7	18	2B, 3C	NE					
Cedar Bog	02-0152-00	3.3	unknown	2B, 3C						
Coopers	02-0070-00	46.2	8	2B, 3C	NE					
Deer	02-0059-00	71.0	9	2B, 3C	NE					
East Twin	02-0133-00	76.0	66	2B, 3C	NE	2	21	5	4	33, 32, 32
Eckstrom	02-0129-00	6.0	unknown	2B, 3C	NE					
Fish	02-0065-00	318.9	10	2B, 3C	NE					
George	02-0091-00	480.4	32	2B, 3C	GD	2	28	8	2	44, 44, 122
Goose	02-0127-00	64.9	unknown	2B, 3C	NE					
Grass	02-0092-00	12.3	unknown	2B, 3C	NE					
Hickey	02-0096-00	40.5	unknown	2B, 3C	NE					
Lone Pine	02-0055-00	5.7	unknown	2B, 3C	NE					
McCann	02-0138-00	85.8	unknown	2B, 3C	NE					
Minard	02-0067-00	126.7	7	2B, 3C	RD		89	2	1	9
Mud	02-0060-00	20.4	4	2B, 3C	NE					
Mud	02-0105-00	73.5	unknown	2B, 3C	NE					
Mud	02-0097-00	0.9	unknown	2B, 3C	NE					
Neds	02-0057-00	163.8	3.5	2B, 3C	NE					
Norris	02-0106-00	55.0	17	2B, 3C	NE				3	18
Nowthen Pond	02-0126-00	6.1	unknown							
Pickrel	02-0130-00	238.7	5	2B, 3C	NE	1	24	7	1	19, 19, 19
Pinnaker	02-0128-00	36.9	unknown	2B, 3C	NE					
Rogers	02-0104-00	41.3	unknown	2B, 3C	RD	3	59	20	1	25, 25, 25
Sand Shore	02-0102-00	38.2	unknown	2B, 3C	NE				2	4
Swan	02-0098-00	33.1	2	2B, 3C	NE					
Twin	71-0001-00	32.4	18	2B, 3C	NE				3	44

*DNR Shoreland Management Lake Classification

GD: General Development, NE: Natural Environment, RD: Recreational Development

**Overall Conditions

1: Suitable for swimming and wading, with good clarity and low algae levels throughout the open water season.

2: Suitable for swimming and wading, with good clarity and low algae levels throughout the open water season. Concentrations of mercury in fish tissue exceed the water quality standard.

3: Not always suitable for swimming and wading due to low clarity or excessive algae caused by the presence of nutrients such as phosphorus in the water.

***10-year Average of All Summer Samples provided by the MPCA. Additional sampling has been conducted by other organizations and is not included within the statistics.

Blanks within the table are due to data availability.

All of the member communities within the URRWMO have completed a shoreland ordinance, shown in Table 2-9.

Table 2-9: Shoreland Management Ordinances

Local Government Unit	Adopted Shoreland Ordinance
Nowthen	Yes
City of Bethel	Yes
City of East Bethel	Yes
City of Ham Lake	Yes
City of St. Francis	Has Rum River Scenic District and Urban Stormwater Ordinance
City of Oak Grove	Yes

Anoka Conservation District collects water quality samples within some of the lakes in the Upper Rum River Watershed. Figure 2-11 displays the ACD monitoring sites in lakes between 2006 and 2018; a summary of the ACD sampling efforts are described in Chapter 1 Section 3.2 of the plan. Results of the historical monitoring efforts are available on the URRWMO website:

<http://www.urrwmo.org/monitoring>

The Minnesota Pollution Control Agency submitted a list of 303(d) impaired waters on April 4, 2018 and the list was approved by the EPA on January 28, 2019. Two (2) lakes within the Upper Rum River watershed were listed as impaired:

East Twin Lake
Affected designated use: Aquatic consumption
Pollutant or Stressor: Mercury in fish tissue
TMDL approved in 2008

Lake George
Affected designated use: Aquatic consumption
Pollutant or Stressor: Mercury in fish tissue
TMDL approved in 2007

2.4.3 Rivers and Streams

The URRWMO has approximate 155 miles of rivers and streams within its boundaries (based on the National Hydrology dataset). These include portions of the following named rivers/streams: Cedar Creek, Crooked Brook, Ford Brook, Mahoney Brook, Rum River, and Seelye Brook. Figure 2-11 shows the location of the named rivers and streams within the URRW.

Anoka Conservation District collects water quality samples within some of the rivers in the URRWMO. Figure 2-11 displays the ACD monitoring sites in rivers between 2006 and 2016; a summary of the ACD sampling efforts are described in Chapter 1 Section 3.2 of the plan. Results of the historical monitoring efforts are available on the URRWMO website:

<http://www.urrwmo.org/monitoring>

The Minnesota Pollution Control Agency submitted a list of 303(d) impaired waters on April 4, 2018 and the list was approved by the EPA on January 28, 2019. Six (6) river/stream segments within the Upper Rum River watershed were listed as impaired (Table 2-10).

Three (3) segments of the Rum River immediately downstream of the URRWMO are also listed as impaired, and any actions taken by the URRWMO might impact these segments as well.

Table 2-10: MPCA's 2018 Impaired Waters List (Rivers and Streams)

Within the URRWMO or Downstream	Water body name	Water body description	Year added to List	AUID	Affected designated use	Pollutant or stressor
Within URRWMO	Cedar Creek	Headwaters to Rum R	2016	07010207-521	Aquatic Recreation	Escherichia coli
Within URRWMO	Crooked Brook	CD 28 to Cedar Cr	2006	07010207-575	Aquatic Life	Dissolved oxygen
Within URRWMO	Mahoney Brook	T33 R24W S34, south line to Cedar Cr	2016	07010207-682	Aquatic Life	Fishes bioassessments
Within URRWMO	Seelye Brook	Headwaters to Rum R	2016	07010207-528	Aquatic Recreation	Escherichia coli
Within URRWMO	Rum River	Seelye Bk to Cedar Cr	1998	07010207-503	Aquatic Consumption	Mercury in fish tissue
Within URRWMO	Rum River	Stanchfield Cr to Seelye Bk	1998	07010207-504	Aquatic Consumption	Mercury in fish tissue
Downstream	Rum River	Cedar Cr to Trott Bk	1998	07010207-502	Aquatic Consumption	Mercury in fish tissue
Downstream	Rum River	Trott Bk to Anoka Dam	1998	07010207-666	Aquatic Consumption	Mercury in fish tissue
Downstream	Rum River	Madison/Rice St in Anoka to Mississippi R	1998	07010207-556	Aquatic Consumption	Mercury in fish tissue

2.4.4 Ditches

The watershed contains a number of private and public ditches. These ditches were constructed in the late 1800's and early 1900's. Minimal maintenance has been performed on these ditches since their construction. While original construction plans exist for many ditches, the "as-built" drawings do not, thus making repairs and maintenance problematic. The Anoka County Highway Department is the ditch authority for the County Ditches in the watershed. Table 2-11 lists the County Ditches and Figure 2-12 shows the location of the ditches.

Table 2-11: County Ditches within the URRWMO

Ditch No.	Length (miles)	Year Constructed	Location
13	11.48	1891	East Bethel
14	3.97	1891	Nowthen
18	3.47	1893	St. Francis, Oak Grove
19	12.76	1893	St. Francis, Oak Grove
21 (71)	4.54	1893	Ham Lake, Oak Grove
27	8.65	1899	Nowthen
28	7.33	1898	East Bethel, Ham Lake
30	1.1	1898	St. Francis, Nowthen
36	2.65	1899	East Bethel
38	2.43	1900	East Bethel
42	3.83	1907	Nowthen
48	4.98	1908	East Bethel, Oak Grove
49	9.29	1909	Nowthen
50	0.64	1910	Nowthen
64	2.96	1920	Nowthen
65	2.53	1921	Nowthen
67	3.03	1922	East Bethel
28	1.1		Ham Lake, East Bethel

2.4.5 Water Quality Trends

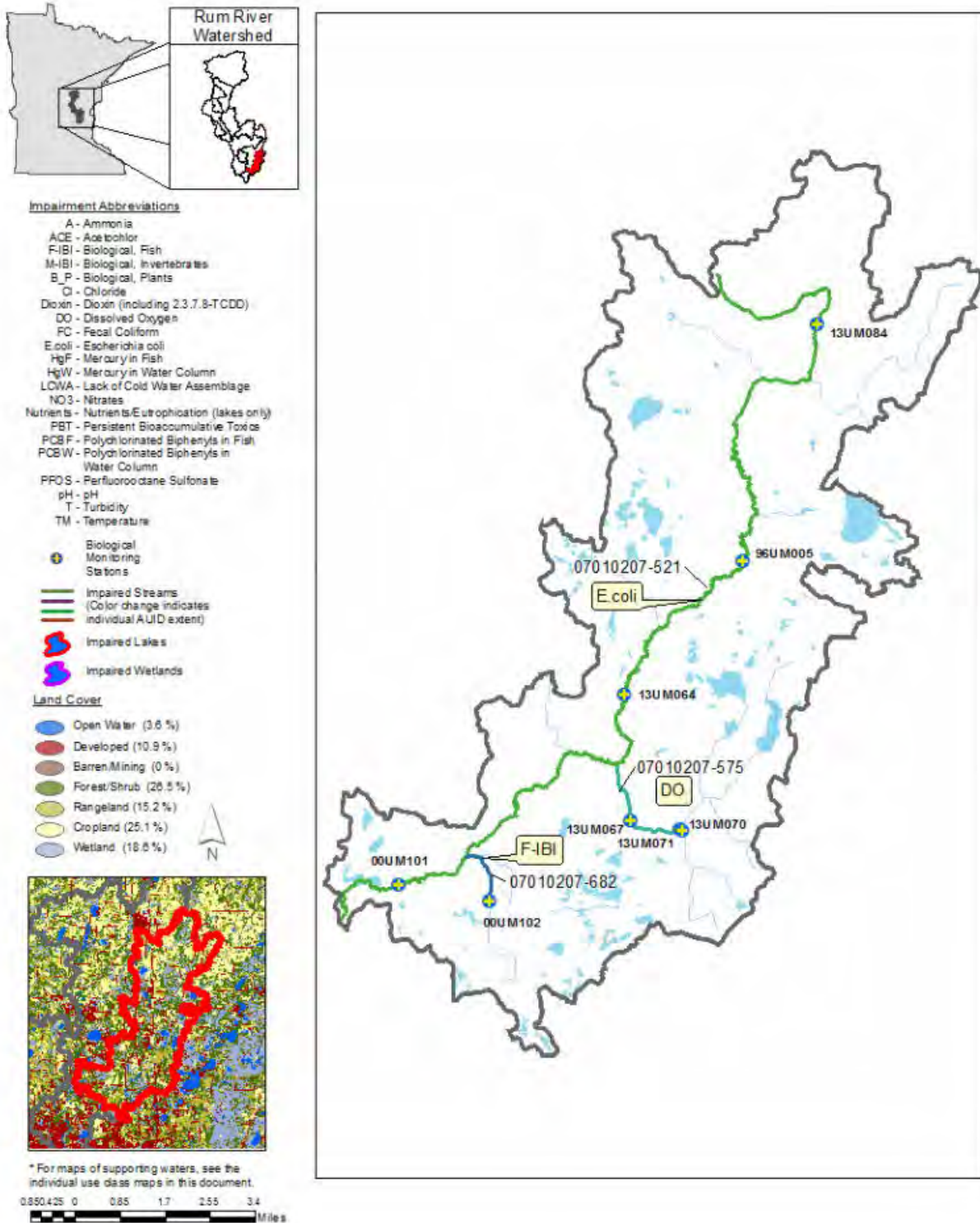
Comprehensive review of all water quality information is pivotal in identifying long term trends within the URRWMO, and can be used to prioritize waterbodies for water quality improvement efforts. The Rum River Watershed Monitoring and Assessment Report, published by the PCA in October 2016, highlighted some of the visible water quality trends within the larger Rum River watershed (HUC 8 scale). The report also provides information on water quality trends at a subwatershed scale – aggregated HUC 12 and HUC 14 subwatersheds, with drainage areas of approximately 300-500 square miles. A complete copy of the report can be found at the MNPCA website below:

<https://www.pca.state.mn.us/sites/default/files/wq-ws3-07010207b.pdf>

A basic summary of water quality sampling results identified within the 2016 report within the URRWMO boundary is outlined within this document. For more detailed information, please refer to the complete report. Four (4) aggregated HUC 12 and 14 subwatersheds fall partially within the URRWMO boundary: Cedar Creek, Lower Rum River, Seelye Brook, and Trott Brook. The following graphics are taken from the report are included within this document to facilitate a more comprehensive understanding of measured trends and impairments within the URRWMO.

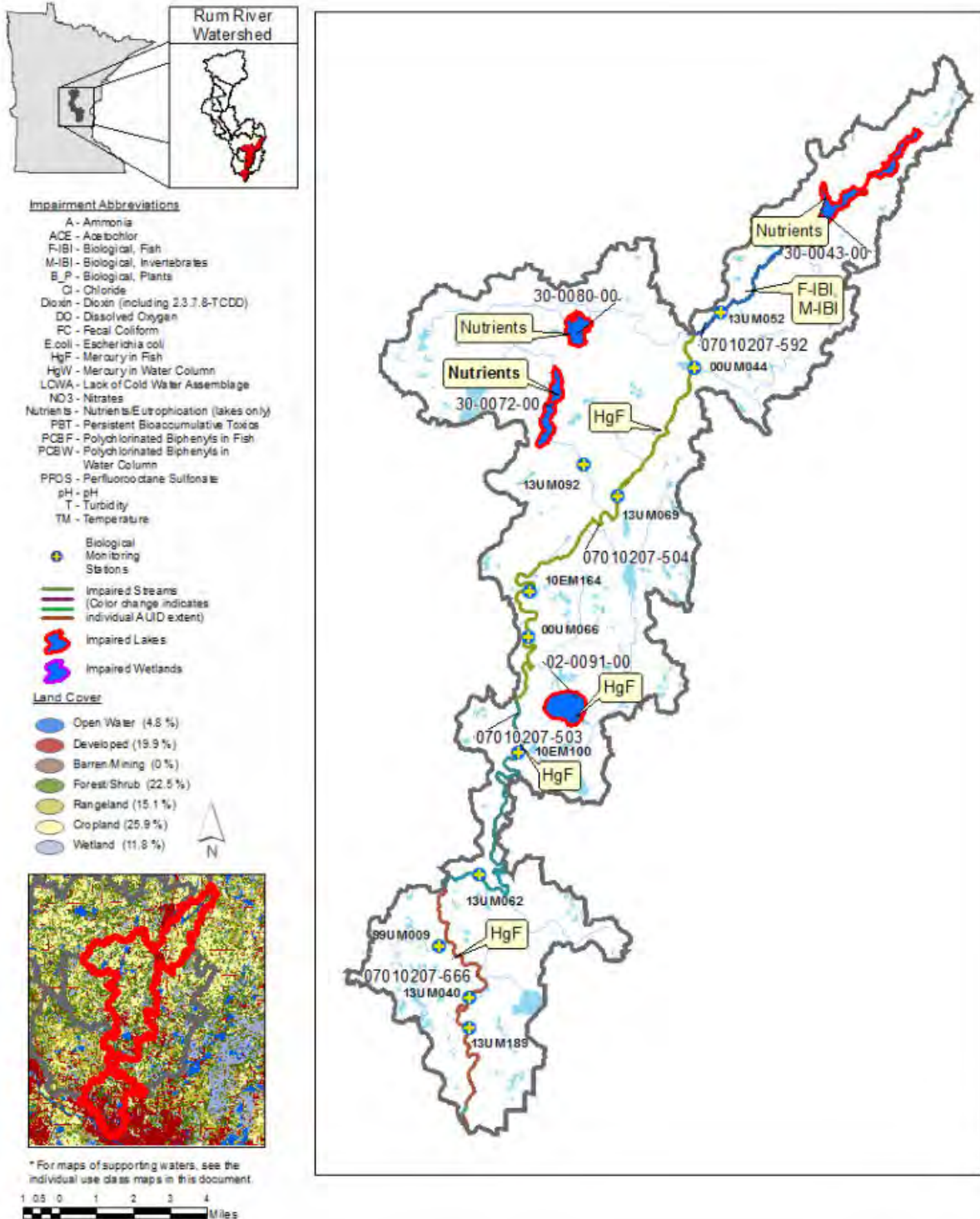
Graphic 2-1: Currently listed impaired waters by parameter and land use characteristics in the Cedar Creek Aggregated 12-HUC. (Graphic from Rum River Watershed Monitoring and Assessment Report, October 2016)

Cedar Creek



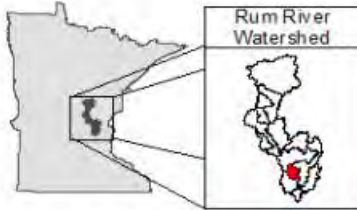
Graphic 2-2: Currently listed impaired waters by parameter and land use characteristics in the Lower Rum River Aggregated 12-HUC. (Graphic from Rum River Watershed Monitoring and Assessment Report, October 2016)

Lower Rum River



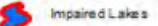
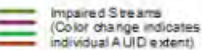
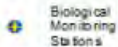
Graphic 2-3: Currently listed impaired waters by parameter and land use characteristics in the Seelye Brook Aggregated 12-HUC. (Graphic from Rum River Watershed Monitoring and Assessment Report, October 2016)

Seelye Brook



Impairment Abbreviations

- A - Ammonia
- ACE - Aesbochlor
- F-BI - Biological, Fish
- M-BI - Biological, Invertebrates
- B_P - Biological, Plants
- Cl - Chloride
- Dioxin - Dioxin (including 2,3,7,8-T-CDD)
- DO - Dissolved Oxygen
- FC - Fecal Coliform
- E.coli - Escherichia coli
- HgF - Mercury in Fish
- HgW - Mercury in Water Column
- LCWA - Lack of Cold Water Assemblage
- NO3 - Nitrates
- Nutrients - Nutrients/Eutrophication (lakes only)
- PBT - Persistent Bioaccumulative Toxics
- PCBF - Polychlorinated Biphenyls in Fish
- PCBW - Polychlorinated Biphenyls in Water Column
- PFS - Perfluorooctane Sulfonate
- pH - pH
- T - Turbidity
- TM - Temperature



Land Cover

- Open Water (0.8%)
- Developed (6.7%)
- Barren/Mining (0%)
- Forest/Shrub (29.5%)
- Rangeland (25.4%)
- Cropland (22.9%)
- Wetland (14.8%)

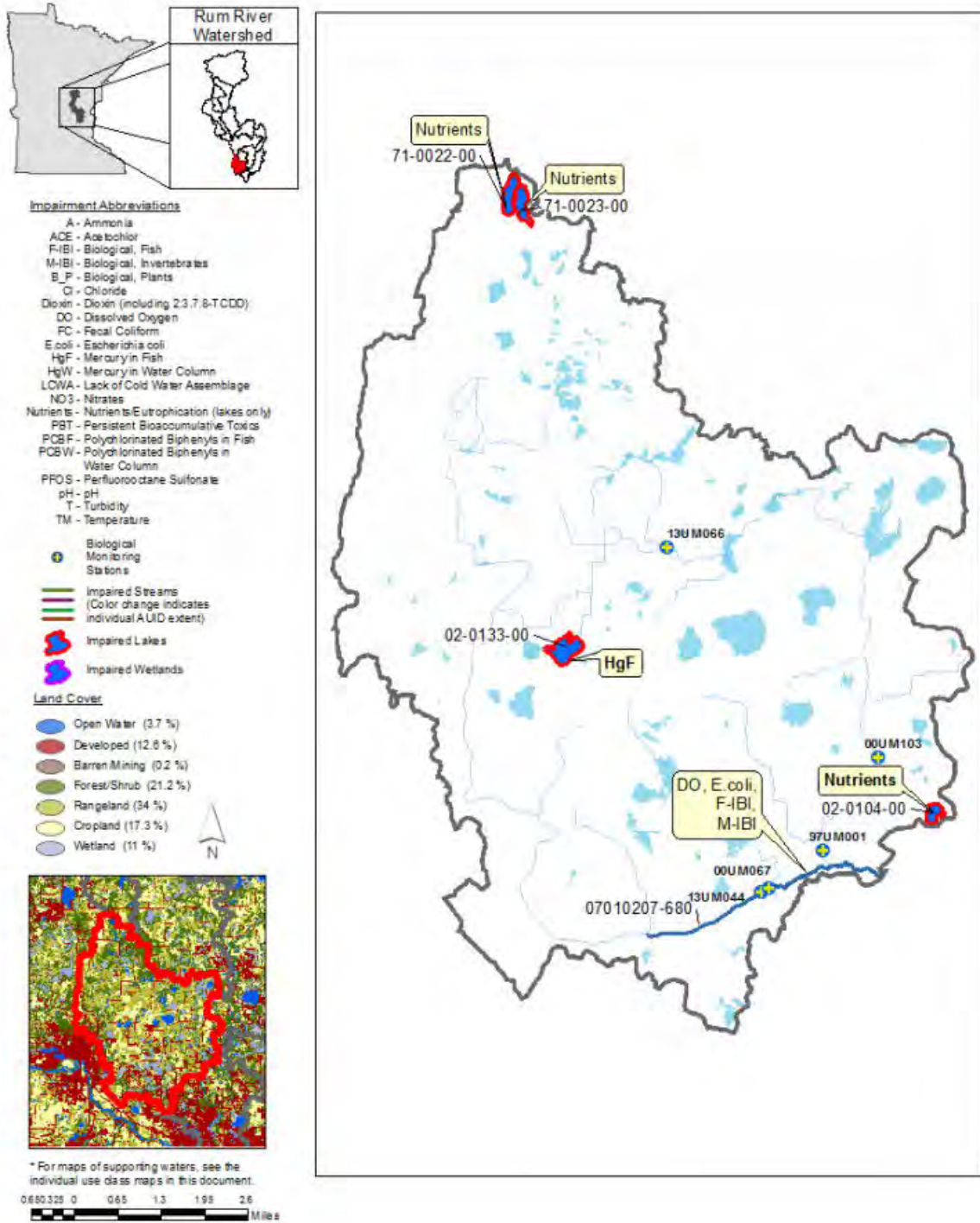


* For maps of supporting waters, see the individual use class maps in this document.



Graphic 2-4: Currently listed impaired waters by parameter and land use characteristics in the Trott Brook Aggregated 12-HUC. (Graphic from Rum River Watershed Monitoring and Assessment Report, October 2016)

Trott Brook



Water quality standards define a concentration (or condition) of surface waters that allow those waters to meet their designated uses. Standards can be numerical (e.g. a concentration of a pollutant) or narrative (e.g. statement regarding the biological condition of a waterbody). Carefully reviewing if a waterbody meets these standards can assist in prioritizing where water quality improvement projects should be implemented throughout the watershed. The Rum River Watershed Restoration and Protection Strategy (WRAPS) Report also leveraged the same water quality assessment document when prioritizing project locations and developing implementation strategies. The following four tables provide insight into some of the existing water quality conditions throughout the watershed.

Table 2-12 provides details on the aquatic life and recreation assessments for stream reaches, focusing on only those streams and sampling locations that fall within the URRWMO. This information can be used to determine if the stream is meeting those standards appropriate for its designated uses. Four of the monitored streams meet the standards and have full support for the Aquatic Life Designated Use, two (Crooked Brook and Mahoney Brook) are not meeting the standards. Cedar Creek and Seelye Brook are not meeting the standards for Aquatic Recreation.

Table 2-13 provides the Minnesota Stream Habitat Assessment (MSHA) rating for those streams within the URRMO boundaries. This offers insight as to how well the stream reach is providing a healthy habitat for fish and other aquatic species. The Rum River has a 'Good' MSHA score, six (6) stream segments have a 'Fair' classification, and three (3) are classified as 'Poor'.

Table 2-14 outlines the Channel Condition Assessment for those stream reaches within the URRWMO. Understanding the physical indicators of the channel condition can help identify locations where channel banks are unstable, and potentially help prioritize bank stabilization projects. The banks of the Rum River and segment of Seelye Brook were classified as 'Fairly Stable', eight (8) reaches were classified as 'Moderately Unstable', and one (1) segment of Cedar Creek was classified as 'Severely Unstable'.

Table 2-15 displays the current lake assessments for those waterbodies within the URRWMO. Four (4) of the five lakes support Aquatic Recreation; Rogers lake is classified as non-supporting.

Table 2-12: Aquatic life and recreation assessments on stream reaches. (Table derived from Rum River Watershed Monitoring and Assessment Report, October 2016)

Aggregated HUC 12	AUID Reach Name , Reach Description	Biological Station ID	Reach Length (miles)	Use Class	Aquatic Life Indicators:											Aquatic Life	Aquatic Rec. (Bacteria)
					Fish IBI	Invert IBI	Dissolved Oxygen	TSS	Secchi Tube	Chloride	pH	Ammonia -NH ₃	Pesticides ***	Eutrophication			
														Phosphorous	Response Indicator		
Cedar Creek	07010207-521 Cedar Creek, Headwaters to Rum R	00UM101, 13UM064, 13UM084	28.55	WWg	MTS	MTS	IF	MTS	MTS	MTS	MTS	MTS		MTS		FS	NS
	07010207-575 Crooked Brook, CD 28 to Cedar Cr	13UM067	2.32	WWg	MTS	MTS	IF	IF	IF		IF	IF		IF		NS	NA
	07010207-682 Mahoney Brook, T33 R24W S34, southline to Cedar Cr	00UM102	1.24	WWg	EXS	MTS	IF	IF	IF		IF	IF		IF		NS	NA
Lower Rum	07010207-503 Rum River, Seelye Bk to Cedar Cr	10EM100	6.79	WWg	MTS	MTS	IF	IF	IF		IF	IF		IF		FS	NA
	07010207-504 Rum River, Stanchfield Cr to Seelye Bk	13UM069, 00UM066	34.41	WWg	MTS	MTS	MTS	MTS	MTS	MTS	MTS	MTS		IF		FS	NA
Seelye Brook	07010207-528 Seelye Brook, Headwaters to Rum R	00UM104, 13UM079	12.4	WWg	IF*	IF*	IF	MTS	MTS	MTS	MTS	MTS		IF		IF*	NS
Trott Brook	07010207-587 Unnamed ditch, Unnamed ditch to Goose Lk	13UM066	1.09	WWm	MTS	MTS	IF	IF	IF		IF	IF		IF		FS	NA

Abbreviations for Indicator Evaluations: MTS = Meets Standard; EXS = Fails Standard; IF = Insufficient Information

Abbreviations for Use Support Determinations: -- = No Data, NA = Not Assessed, IF = Insufficient Information, FS = Full Support (Meets Criteria); NS = Impaired (Fails Standards)

Key for Cell Shading: = existing impairment, listed prior to 2014 reporting cycle; = new impairment; = full support of designated use; = insufficient information.

Abbreviations for Use Class: WWg = warmwater general, WWm = Warmwater modified, WWe = Warmwater exceptional, CWg = Coldwater general, CWe = Coldwater exceptional,

LRVW = limited resource value water

*Assessments were completed using proposed use classifications changes that have not yet been written into rule.

Table 2-13: Minnesota Stream Habitat Assessment (MSHA) Table derived from Rum River Watershed Monitoring and Assessment Report, October 2016

Aggregated HUC 12	# Visits	Biological Station ID	Reach Name	Land Use (0-5)	Riparian (0-15)	Substrate (0-27)	Fish Cover (0-17)	Channel Morph. (0-36)	MSHA Score (0-100)	MSHA Rating
Cedar Creek	1	00UM101	Cedar Creek	3.5	10.5	14	8	13	49	Fair
	3	00UM102	Mahoney Brook	3.08	9.83	10	12.67	18	53.58	Fair
	1	13UM064	Cedar Creek	3.5	12	15	8	20	58.5	Fair
	1	13UM067	Crooked Brook	4.5	11	8.25	13	21	57.75	Fair
	1	13UM070	Unnamed ditch (Branch 3 Lateral 2)	1.75	9.5	4	1	7	23.25	Poor
	1	13UM071	County Ditch 28	3.75	10	9	6	7	35.75	Poor
Lower Rum River	4	10EM100	Rum River	3.25	12.63	20.46	13.5	26	75.84	Good
	1	00UM066	Rum River	3.5	14	24	16	34	91.5	Good
Seelye Brook	3	00UM104	Seelye Brook	3	11	10.87	12	20	56.87	Fair
	3	13UM079	Seelye Brook	3.42	13.67	10.93	10	12.33	50.35	Fair
Trott Brook	1	13UM066	Unnamed ditch	2.5	10	9	14	2	37.5	Poor

Qualitative habitat ratings

= Good: MSHA score above the median of the least-disturbed sites (MSHA>66)

= Fair: MSHA score between the median of the least-disturbed sites and the median of the most-disturbed sites (45 < MSHA < 66)

= Poor: MSHA score below the median of the most-disturbed sites (MSHA<45)

Table 2-14: Channel Condition and Stability Assessment (CCSI) Table derived from Rum River Watershed Monitoring and Assessment Report, October 2016

Aggregated HUC 12	# Visits	Biological Station ID	Stream Name	Upper Banks (43-4)	Lower Banks (46-5)	Substrate (37-3)	Channel Evolution (11-1)	CCSI Score (137-13)	CCSI Rating
Cedar Creek	1	00UM101	Cedar Creek	30	29	32	11	102	severely unstable
	1	13UM071	County Ditch 28	31	17	26	3	77	moderately unstable
	1	13UM070	Unnamed ditch	27	15	30	3	75	moderately unstable
	1	00UM102	Mahoney Brook	20	25	21	3	69	moderately unstable
	1	13UM067	Crooked Brook	21	25	10	3	59	moderately unstable
	1	13UM064	Cedar Creek	12	13	22	3	50	moderately unstable
Lower Rum River	1	10EM100	Rum River	6	13	16	3	38	fairly stable
	1	00UM066	Rum River	15	9	11	3	38	fairly stable
Trott Brook	1	13UM066	Trib. to Goose Lake	18	10	28	3	59	moderately unstable
Seelye Brook	2	00UM104	Seelye Brook	10	15.5	22	4	51.5	moderately unstable
	1	13UM079	Seelye Brook	13	29	30	5	77	moderately unstable
	1	13UM079	Seelye Brook	7	15	15	3	40	fairly stable

Qualitative channel stability ratings

■ = stable: CCSI < 27
 ■ = fairly stable: 27 < CCSI < 45
 ■ = moderately unstable: 45 < CCSI < 80
 ■ = severely unstable: 80 < CCSI < 115
 ■ = extremely unstable: CCSI > 115

Table 2-15: Lake assessments. Table derived from Rum River Watershed Monitoring and Assessment Report, October 2016

Aggregated HUC 12	Name	MNDNR Lake ID	Area (acres)	Trophic Status	Percent Littoral	Max. Depth (m)	Mean Depth (m)	CLMP Trend	Mean TP (µg/L)	Mean chl-a (µg/L)	Mean Secchi (m)	AQR Support Status	AQL Support Status
Cedar Creek	Minard	02-0067-00	127	E		2.1			88.63	1.8	1.1	FS	
Lower Rum River	George	02-0091-00	480	E	79	9.8	2.4	D	28	8.1	2.1	FS	IF
Trott Brook	Rogers	02-0104-00	41	E				I	59	19.7	1.1	NS	
	Pickerel	02-0130-00	239	M		1.5		I	24	7.4	1.4	FS	IF
	East Twin	02-0133-00	76	M		20.1	4.0	NT	22	5.2	3.7	FS	IF

Abbreviations: D -- Decreasing/Declining Trend H – Hypereutrophic FS – Full Support
 I -- Increasing/Improving Trends E – Eutrophic NS – Non-Support
 NT – No Trend M – Mesotrophic IF – Insufficient Information O - Oligotrophic

Key for Cell Shading: = existing impairment, listed prior to 2016 reporting cycle; = new impairment; = full support of designated use

The Rum River WRAPS (released July 2017) Report summarizes water quality trends within the larger HUC-8 scale watershed. This watershed approach was designed to characterize all of the waterbodies in a comprehensive manner, provide a vision of overall watershed health, and provide a cost-effective way for smaller organizations (like the URRWMO) to focus activities on high priority areas. A brief summary of this document as it pertains to the URRWMO is included within this text. A complete copy of the report can be found at the MNPCA website below.

<https://www.pca.state.mn.us/water/watersheds/rum-river>

Within the URRWMO, three (3) lakes had enough data available to determine trends in water clarity. East Twin Lake (02-0133) exhibited no trend, Lake George had strong evidence of a declining trend, and Pickerel Lake had evidence that it was improving. The WRAPS recommended that Lake George be a short term priority for focused water quality planning efforts.

The WRAPS document also reported on water quality trends within the Rum River. One stream sampling location falls downstream of the URRWMO boundary along the Rum River at the Pleasant Street Bridge in Anoka, MN (Site ID H21021001). For the period of record sampled (1953 through 2010), total suspended solids decreased by 72%, total phosphorus decreased by 52%, nitrate/nitrite had increased by 22%, biochemical oxygen demand decreased by 65% and chlorides increased by 606%. It is suspected that decreases in suspended solids, total phosphorus, and biological oxygen demand are due to upgrades at the wastewater treatment plants. Although nitrates/nitrites and chlorides are increasing, the river still meets the water quality standards.

Water quality sampling data has been collected on behalf of the URRWMO by Anoka County. A series of basic plots were created during the development of this plan and are included in Appendix C of this document. More information regarding the URRWMO water quality sampling can be found on the URRWMO website.

2.4.6 Wetlands

A wetland inventory has been completed by the US Fish and Wildlife Service as published on the National Wetland Inventory (NWI). Wetlands cover more than one-quarter of the watershed, totaling over 23,000 acres (Figure 2-13). This inventory was originally conducted using aerial photos and infrared photos from 1979 to 1988, and was updated through the MNDNR in a multi-agency collaborative effort. This wetland inventory updated is based on 2010 and 2011 digital aerial photos.

A complete listing of the 'Wetland Standards' (adopted February 3rd, 2009) can be found on the URRWMO website.

2.4.7 Public Waters

Minnesota State Statutes identify public waters (Statue 103G.005, Subdivision 15); DNR Waters has regulatory jurisdiction over these lakes, wetlands and watercourses. The DNR Public Waters/Wetlands map is shown on Figure 2-14.

2.4.8 Floodplain

The Upper Rum River Watershed includes ~14,650 acres of mapped 100-year floodplain and ~3,080 acres of mapped 500-year floodplain (Figure 2-15). It is important to note that these areas of mapped floodplain are not inclusive of all floodplains in the URRWMO. These floodplains band the streams of the watershed including Seelye Brook, Ford Brook, Cedar Creek and some of the major ditches. Other large floodplain areas are part of the watershed's major wetland complexes including those in northeastern Nowthen and those near the Sandhill Crane Natural Area. Flood Data are derived from the Flood Insurance Rate Maps (FIRMs) published by the Federal Emergency Management Agency (FEMA). The FIRM is the basis for floodplain management, mitigation, and insurance activities for the National Flood Insurance Program (NFIP). Insurance applications include enforcement of the mandatory purchase of flood insurance by property owners who are being assisted by Federal Programs or by federally supervised, regulated or insured agencies or institutions in the acquisition or improvement of land facilities located or to be located in identified areas having special flood hazards.

The National Flood Insurance Program originally mapped the Upper Rum River Watershed's flood boundaries as part of the Flood Insurance Studies in 1979 and 1980. Recently, these maps were updated to County-wide format in 2015, which can be found on FEMA's website (www.msc.fema.gov). Refer to Flood Insurance Study (FIS) Reports 27003CV001A and 27003CV002A for details about the County-wide study. Flood Insurance Rate Map (FIRM) panel 27003CIND1A is the map index covering the URRW, and can be used to identify the appropriate map panels for each community.

Note that new precipitation frequency estimates were published in NOAA Atlas 14 (see Section 2.1.3 for more information of these estimates specific to the URRWMO). Member communities might consider remapping their floodplains and associated models using these updated estimates. The URRWMO is supportive of any floodplain remapping efforts.

The Flood Insurance Study of Anoka County (27003CV001A) includes a list of peak discharges for the 1-percent-annual-chance-event (e.g. 100-year flood) within Volume 1, Table 6. This table was reviewed to identify the locations within the URRWMO and the reported peak discharges are included in Table 2-16.

Table 2-16: Peak discharges for detailed study locations within the URRWMO
Table derived from FEMA's Flood Insurance Study of Anoka County, MN
27003CV001A, Effective Date December 16, 2015, Table 6

Flooding Source	Location	Peak Discharge (cubic ft/sec) 1-Percent-Annual-Chance
Cedar Creek	At confluence with Rum River	1,160
	Approx. 0.73 miles from Viking Blvd NW/County Rd 22	999
	Below confluence of Crooked Brook	999
	Above confluence of Crooked Brook	704
	Above MN State Hwy 65	519
Ford Brook	Approx. 0.36 miles downstream of Verde Valley Rd NW	766
Rum River	Just upstream of confluence with Seelye Brook	13,600
Seelye Brook	Approx. 0.49 miles upstream of Francis Blvd NW/State Hwy 47	1,537

The URRWMO Board has discussed flooding and determined there are no flood problem areas of priority concern within the URRWMO at this time. This information was based on the board members communication with their constituents.

2.4.9 Groundwater

2.4.9.1 Surficial Aquifers

The surficial outwash (Anoka Sand Plain) deposits located across the eastern two-thirds of the URRWMO will yield small to large quantities of water. Where the aquifer has sufficient saturated thickness, a well may yield several hundred gallons of water per minute. The grey till (surficial material) in the western third of the URRWMO will yield little water because of the low hydraulic conductivity associated with till.

However buried lenses of sand and gravel located within the till may yield sufficient water depending on thickness and extent of the layers. The red drift and ice contact deposits in the northwest corner of the URRWMO may yield sufficient quantities of water. It is difficult to predict high water yielding capacity due to the stratified zones and varying hydraulic conductivities.

The regional groundwater flow within the surficial aquifers and glacial drift is generally to the southeast, except near the Rum River and Cedar Creek where ground water tends to flow toward these surface waters. Rum River and Cedar Creek are predominately discharge areas for groundwater. Therefore, Cedar Creek and Rum River would be characterized as known groundwater and surface water connections. Areas not near the Rum River and Cedar Creek are predominately groundwater recharge areas.

2.4.9.2 **Bedrock Aquifers**

The Tunnel City Group (formerly the Franconia Formation) which covers all but the northwest corner of the URRWMO has moderate to high water yielding capacity. The Wonewoc sandstone (formerly the Ironton and Galesville Sandstone Formations) lies to the northwest of the Tunnel City Group and is the uppermost bedrock in a band approximately 1.6 to 3.2 kilometers (1 to 2 miles) wide. The Tunnel City Group and Wonewoc Aquifer has moderate to high water yielding capabilities. The hydraulic conductivities are variable in these aquifers, with the highest generally in the lower Wonewoc (formerly named the Galesville Sandstone). Wells in these aquifers may be capable of yielding several hundred gallons of water per minute.

Underlying the Tunnel City Group and Wonewoc formations is the Eau Claire formation. The Eau Claire formation may yield low quantities of water in certain locations, but is not generally considered an aquifer. The Eau Claire formations act as a confining layer between the Cambrian sandstones and the Cambrian Mt. Simon-Precambrian Hinckley aquifers. The Mt. Simon-Hinckley Aquifer, which underlies the entire URRWMO, dips gently to the southeast. Regional groundwater flow in the Mt. Simon-Hinckley Aquifer is to the southeast. The water in the aquifer is under artesian pressure.

2.4.9.3 **Groundwater Quality**

The metropolitan area is developed over an extensive groundwater aquifer system that consists of several good sources of water separated and protected by relatively impervious confining layers. Hazardous waste sites, sanitary landfills, dump sites, feedlots, pipelines, and leaking underground or above ground storage tanks or spills and private disposal sites may contaminate groundwater resources.

Drinking water throughout the URRWMO is obtained primarily from shallow private wells. A large portion of St. Francis and 7% of Oak Grove's population is served by municipal well and water systems. The remaining residential and commercial properties within the URRWMO utilize private wells for potable and other water needs. The high yielding Prairie du-Chien- Jordan aquifer that is available in other Twin Cities Metropolitan areas is not available in the URRWMO. As a result residents in the URRWMO must rely on the shallow surficial drift aquifer, which is highly susceptible to contamination in most areas. The bedrock aquifers available include the Tunnel City Group-Wonewoc and lower lying Mt. Simon-Hinckley aquifer.

Most ground water quality protection is in the form of Wellhead Protection Planning. The primary purpose of these plans is to identify potential sources of contamination and put a plan in place to protect groundwater supplies and areas where special measures are most needed. Ten Anoka County cities formed a Joint Powers Organization (JPO) to jointly collaborate in the joint implementation of common elements of their wellhead protection plans to maximize their effectiveness and reduce costs. The Anoka County Municipal Wellhead Protection Group (ACMWPG) serves as an advisory committee, allowing coordination of communities whose wellhead protection areas often extend into an adjacent community. On April 7, 2014, the St. Francis City Council joined the JPO.

The protection of water quality is a function of numerous statutes, rules and programs that are implemented by various federal, state and local agencies. Surface and groundwater water resources are interconnected are best managed in a comprehensive manner. Instead of preparing a county groundwater protection plan (under Minnesota Statute 103B.255), Anoka County has established a Water Task Force to develop collaborative initiatives to enhance the water protection actions of state and local

agencies including the URRWMO. While state agencies may establish water protection programs, it is communities that are generally responsible for implementation and monitoring the programs to determine that they are sufficient and effective. Watershed Plans that protect the quality of surface water also protects groundwater. Surface water and precipitation recharges groundwater by infiltration on land and by surface water infiltration.

The URRWMO area is also within the source water protection area for the cities of Minneapolis and St. Paul. These cities draw drinking water from the Mississippi River approximately 20 miles downstream from the URRWMO. Source water protection planning for these cities is being coordinated by the Minnesota Rural Water Association (MRWA). The URRWMO will work with the MRWA through the implementation schedule in this plan to protect and improve source water drinking supplies in areas downstream of the URRWMO.

The URRWMO has one superfund site within its boundary, the East Bethel Sanitary Landfill. Volatile organic compounds were found in on-site monitoring wells, and the site was placed on the Minnesota Permanent list of Priorities in 1984. Site remediation continues, with groundwater quality improving. More information can be found on the EPA's website:
<https://cumulis.epa.gov/supercpad/cursites/csinfo.cfm?id=0503926>

CHAPTER 3 – Assessment of Issues and Opportunities

This chapter of the plan outlines the issues and opportunities facing the URRWMO. Issue identification was a fundamental aspect of developing this plan, which included a careful review of the Third Generation Plan by watershed stakeholders, paying particular attention to the historically identified issues.

A series of four public meetings were conducted in 2016 with watershed and to help identify gaps in the activities and regulations in the watershed relative to the requirements of Minnesota Rule 8410, Minnesota Statue 103B and local needs. In addition, all available information related to the Rum River Watershed Restoration and Protection Strategy (WRAPS) was incorporated into the discussions.

3.1 Assessment of Problems and Issues

3.1.1 Identifying Gaps

The URRWMO identified gaps in spring/summer of 2016, receiving additional input from stakeholders in September 2016. It was noted that input received was primarily from members of the URRWMO board; additional stakeholder opinions would be desirable for future efforts to identify gaps within the watershed. Table 3-1 shows the identified problems/issues in nine categories:

- Surface Water Quality
- Development management
- Local (Municipal) Surface Water Management Planning
- Wetlands
- Agricultural Management
- Forest Resources
- Invasive Species
- Groundwater
- Funding

Table 3-1: Identified Concerns, Issues and Gaps within the URRWMO.

#	Identified Concern/Issue/Gap
Surface water quality	
1	The URRWMO is implementing a water quality monitoring plan to track water quality trends and evaluate effectiveness of policies and land use practices. *Note that this concern was stated in 2016. Since that time, the URRWMO has approved additional water quality sampling through 2019.
2	The following water bodies have been listed as impaired by the MPCA: Lake George: Mercury East Twin Lake: Mercury Rum River: Mercury Crooked Brook: Low oxygen Seelye Brook: E. Coli Cedar Creek: E. Coli Mahoney Brook: Fish bioassessments
Development Management	
3	Lack of consistent guidelines or minimum runoff control requirements for new development and redevelopment. This includes Post-construction Stormwater Management, Floodplain Management, and Shoreline Management.
4	Limited understanding and information available regarding the location and size of landlocked basins within the watershed. Allowing development project to construct new outlets for these basins could impact the rest of the watershed.
5	Many mapped flood zone designations within the URRWMO are classified as Zone A, meaning that a detailed modeling has not yet been performed. Therefore, because "detailed hydraulic analyses have not been performed on these areas, no base flood elevations are shown."
Local (Municipal) Surface Water Management Planning	
6	The location of all of the publically and privately owned Best-Management-Practices (BMPs) are not known by the URRWMO at this time. Knowing their locations, relative age, and efficiency will be helpful for future planning efforts. Individual communities might be tracking this information; if so, there is a need for increased communication between member communities and the URRWMO.
7	Individual member communities have local surface water management plans. Some of these plans overlap, covering the same geographic area. However, the subwatershed boundaries do not match between the plans, and the modeling outputs (e.g. direction of flow, peak flows, and discharge locations) are also inconsistent.
8	Road salt application in the winter might be impacting local streams, increasing chloride concentrations. Over-salting might also be causing communities to spend more money on road maintenance than is needed.

Table 3-1(cont.): Identified Concerns, Issues and Gaps within the URRWMO.

#	Identified Concern/Issue/Gap
Wetlands	
9	Wetland buffer standards are inconsistent between member communities, and might not meet current state standards.
Agricultural Land Management	
10	Agricultural sites that are good options for implementing Best Management Practices (to improve water quality) are unknown at this time. Identifying these locations can help with future planning efforts.
11	Funding opportunities for agricultural Best Management Practices are available, and could be better utilized by stakeholders within the URRWMO. Also, the URRWMO might also provide funding to support BMP implementation.
Forest Resources	
12	Emerald Ash Borer is a non-native invasive species that has been infecting and killing ash trees.
13	Portions of the URRWMO were historically forested. Restoring forests within the floodplain might be a natural floodplain management technique that warrants consideration.
Invasive Species	
14	There is limited understanding of the extent of invasive species within surface waters in the URRWMO. Mitigation measurements are not feasible without understanding the scale and extent of the problem.
15	Public understanding of invasive species is limited, and public involvement would be necessary for limiting the spread of invasive species.
16	Individualized plans for mitigating invasive species are not available at this time. Local communities might be interested in developing a site-specific study and or mitigation plan for reducing invasive species in their surface waters.
Groundwater	
17	Little is known about ground water levels, water quality and trends over time within the URRWMO. Groundwater concerns are often regional, and will extend beyond the limits of the URRWMO.
18	It is not known if the region has the groundwater capacity to support private wells.
Funding	
19	Funding within the URRWMO is limited for larger scale projects. There are opportunities for alternative funding sources, but they are not currently being utilized.

3.1.2 WRAPS Findings and Proposed Actions

The Minnesota Pollution Control Agency used a watershed-based approach to identify and address threats to water quality by: (1) collecting water quality data, (2) assessing the monitoring results, (3) developing strategies to restore and improve the water bodies (Watershed Restoration and Protection Strategy, WRAPS), and then (4) implementing projects across the watershed. This process is completed on a 10-year cycle across the 80-major watersheds within the state.

The URRWMO falls within the Rum River watershed, and new WRAPS report was being completed during the writing of the URRWMO plan. The preliminary and final findings were presented to the URRWMO to assist into their planning process, and incorporated into this plan. Figure 3-1 shows the waterbodies of interest within the WRAPS report.

In July 2017, the final Rum River WRAPS report was published. The WRAPS study identified different waterbodies to be prioritized for short-term or long-term protection based on water quality monitoring data, a series of different modeling tools, and public input. More details on the prioritization process can be found in the WRAPS report:

<https://www.pca.state.mn.us/water/watersheds/rum-river>

Within the URRWMO, Lake George was classified as a short-term priority, citing declining water quality trends. The Rum River was also classified as a short-term priority, as it is vulnerable to riparian corridor land use changes, habitat degradation and erosion. The Rum River was also classified as a long-term priority for multiple reasons: it has high value for fishing and recreation (classified as a State Wild & Scenic Recreation River), the adjacent land is subject to land use change and increased drainage, and the river was commonly mentioned in stakeholder feedback as a waterbody of concern.

The URRWMO wants to maintain continuity with the WRAPS report, and therefore will prioritize water quality improvement projects within Lake George and the Rum River. In addition, the URRWMO will adopt those strategies listed within the WRAPS report for waterbodies within the URRWMO boundary. A copy of the Rum River WRAPS Strategies within the URRWMO (as derived from tables 3.3-7 and 3.3-8) is provided in Table 3-2 to provide additional clarity on how the WRAPS strategies apply to the watershed planning area.

Several other waterbodies, including Crooked Brook and Seelye Brook, within the boundaries of URRWMO are also classified by MPCA as impaired. While these streams were not given highest priority by the URRWMO within this version of the URRWMO Plan, it is recognized that efforts to improve the water quality in these waterbodies is needed. The URRWMO will coordinate with partners, specifically the Anoka County Conservation District, if a partner's planning efforts focus on improvements within these water bodies within the URRWMO.

Improvements in waterbodies upstream of the URRWMO will also have significant impacts on the water quality within the URRWMO boundaries. Therefore, the URRWMO will regularly participate in neighboring watershed planning efforts to developed unified solutions, improve communication, and increase collaboration on shared issues.

Table 3-2: Rum River WRAPS Strategies within the URRWMO.
Derived from tables 3.3-7 and 3.3-8 in The Rum River Watershed Restoration and Protection Strategy Report, July 2017

Waterbody and Location		Parameter	Water Quality		Strategies	Strategy Type	Estimated Scale of Adoption Needed	Primary Responsibility								Timeline to reach WQ goal	Interim 10-yr Milestone	
Waterbody ID	Location & Counties		Current Conditions	Goals/Targ ets				Wshd. Distt.	MDA	SWCD	MPCA	MS4	County	DNR	Other			
Rum River	Anoka, Isanti	MSHA and TP	MSHA average score rated "good". TP mean is 123.1 mg/L	Keep MSHA average scores at "good" rating. Reduce TP to fall below standard.	Streambank or Shoreline Protection	Riverbank stabilization and near-shore gully stabilization. Stabilize eroding streambanks with native vegetation plantings; forested plantings on outside river bends; no variances for buildings on outside bends.	Determine through inventory work			x							>30 years	1 mi. eroding riverbank stabilized
					Inventory/Mapping	Identify parcels with high values for water quality, riparian corridor connectivity and habitat. Protect through easement for fee title acquisition. Inventory and prioritize erosion sites.	100% of river corridor			x					x	5 years	100% of river corridor	
					Streambank or Shoreline Protection	Secure shoreland protection through easement, fee title purchase, or other means. Or improve habitat on private parcels. Highest priority on ecological restoration of rivers-edge ag fields.	2 easements obtained			x				x		20 years	1 easement.	
					Urban Stormwater Management Practices	Stabilize outfalls and stormwater discharge points. Install stormwater treatment identified in SWCD subwatershed assessments and elsewhere.	Watershed wide				x	x				10 years	Completion	

Table 3-2: Rum River WRAPS Strategies within the URRWMO.
Derived from tables 3.3-7 and 3.3-8 in The Rum River Watershed Restoration and Protection Strategy Report, July 2017

Waterbody and Location		Parameter	Water Quality		Strategies	Strategy Type	Estimated Scale of Adoption Needed	Primary Responsibility							Timeline to reach WQ goal	Interim 10-yr Milestone	
Waterbody ID	Location & Counties		Current Conditions	Goals/Targets				Wshd. Distt.	MDA	SWCD	MPCA	MS4	County	DNR			Other
All applicable lakes and streams	All applicable counties	multiple	Varies	Monitoring /Data Collection	See section 4 of this report for water monitoring recommendations.	N/A	x		x	x					>30 years	Data collected.	
				Urban Stormwater Management Practices	MIDS or similar should be adopted for new development and redevelopment.	MIDS adopted.					x	x				MIDS drafted	
				Conservation Drainage	Minimize cleaning of ditches or similar improvements that export water from the landscape more quickly.	No net increase of water.			x							No net increase of water.	
				Inventory/Mapping	Inventory sizing and elevation of culverts. An inventory will allow future unpermitted changes to be detected and corrected.	Inventory completed.	x		x		x	x	x	x	x	5 years	Inventory completed
					Inventory/upgrade stormwater infrastructure that may be undersized based on projected changes in storm volume and frequency.		x		x		x	x	x	x	30 years		
				Streambank or Shoreline Protection	Riparian habitat protection and restoration through BMPs, & easements.	Acres of protected habitat increased.			x							20 years	No net loss of habitat
					Correct bank erosion, including a modest number of large bank failures and large number of modest bank failures.	75% problem areas fixed.			x					x			25% sites fixed.
Regulations/Ordinances/ Enforcement	Local enforcement of existing regulations including buffer law, scenic and recreational river rules, and shoreline ordinances.	100% compliance.							x	x		10 years	100% compliance.				

- Management Considerations for the Entire Rum River Watershed While the tables above provide waterbody-specific management direction, cohesive management across the entire Rum River Watershed is critical. The State of Minnesota has recognized this, and
- Focus efforts – watershed-wide, efforts must focus substantial resources on the highest priorities. Efforts that are broadly scattered geographically are less likely to be effective.
 - Hydrological changes and flooding – Increased drainage, including that which occurs by cleaning ditches which have been idle for long periods, has the potential to negatively impact all downstream entities with flooding. Similarly, wetland restoration and
 - Water quality – While downstream impacts of water quality in the river are obvious, many of the lakes in the watershed are inter-connected with the river as well.
 - River’s scenic nature – This State Wild, Scenic and Recreational River is a high priority regionally.
 - Consistency – Studies and inventories, such as culvert inventories, are best done in a coordinated fashion with the same methods and outputs in order to best direct management efforts.
 - Modeling – The HSPF model and Scenario Application Manager (SAM) tool, developed as part of this WRAP, can be used to evaluate management scenarios in the future.

3.2 Identification of Priority Issues and Policies

The URRWMO Board and Citizen and Technical Advisory Committees identified the following issues during the planning process. Issues are listed in the order of importance adopted by those participating in the discussion. Other potential issues have been raised; however, their relative ranking of was significantly lower than those reported here. These issues are in many ways fundamentally different from those identified in the 2007 plan, both in terms of their content (or omission).

1. **Funding:** Funding available to the watershed through member communities is very limited. Additional funding is necessary to take on actions suggested by advisory committees and anticipated to be identified by the Rum River WRAPS. Throughout this planning period, the Board agreed to increase the funding for the URRWMO initiatives and take advantage of grant opportunities in order to implement projects and meet the plan goals.
2. **Water Quality:** Sampling programs conducted by the WMO have shown a trend of increasing Total Phosphorus concentrations (although Rogers Lake has shown a decline in Phosphorus concentrations). This trend does not appear to be paralleled by increasing trends in chlorophyll-a concentrations or decreasing trends in secchi depth (except for East Twin Lake). The Rum River WRAPS has identified several impaired waterbodies that the URRWMO should address, specifically Lake George and the Rum River. Any water quality projects that are selected will prioritize these waterbodies. Tropic state index graphs and water quality trend information are included in Appendix C.

It was noted within the planning process that studies on “in-lake issues” for Lake George might be valuable, possibly focusing on plants, fish habitat and/or motor boat impacts. The URRWMO is supportive of this type of research and could be included within a future SWAS.

3. **Water Resources Inventory:** There is little information available regarding the location and quality of potentially critical water resources such as land locked basins and wetlands. Additionally, the location, condition, and function of constructed stormwater management practices within the watershed are not documented in any way currently useful for watershed planning.
4. **Shoreline Protection:** Erosion and sedimentation issues continue on some streams in the watershed; notably the Rum River itself.

The URRWMO Board plans to address each of these issues through the implementation of the following policies.

Cooperation. The primary focus of the URRWMO will be on water resource management issues that transcend municipal boundaries. The member communities are required by this Plan to revise their local surface water management plans to incorporate additional activities regarding assessment and planning for stormwater runoff, specifically in the areas of regional accounting of peak rates of discharge, volume of runoff, and water quality.

Monitoring. The watershed will continue to conduct flow and level monitoring as well as water quality sampling programs. The current program operated by the URRWMO will be reviewed and revised as

appropriate. Additionally, the URRWMO will conduct watershed reconnaissance projects, either desktop or field exercises to create a database of water resources information for the watershed. This information will be disseminated to stakeholder groups including member Cities for use in local planning efforts.

Regulation. The URRWMO will continue to require local municipalities to implement regulatory programs geared toward the protection of water resources. Depending on the findings of revised local water management plans and other monitoring programs and studies conducted by the URRWMO, local regulatory programs may need to be revised to include additional water resources protection measures. Regardless, all regulatory programs will be required to be updated to incorporate evaluations of current hydrological information (notably NOAA Atlas 14) and to be consistent with other State and Federal requirements.

Operation. The operation strategy for this plan is targeted primarily at member communities with some areas targeted at the public and/or another agency. Activities which will specifically be conducted by URRWMO include:

- Conducting water quantity and quality studies to understand baseline conditions and to identify trends.
- Active participation in discussions about upstream projects, outside of the URRWMO, that may affect water quality or flooding in the URRWMO.
- Review of local water management plans to evaluate their consistency with the Watershed Plan and the Rules and Operations outlined in Appendix D.
- Encouragement of donations, grants, and in kind contributions of public and private organizations for plan implementation.
- Conducting annual reviews of the Watershed Management Plan and its implementation.

CHAPTER 4 – Goals

Based on the identification and prioritization of issues/gaps within the watershed, the URRWMO developed a set of goals and policies that will guide implementation efforts. These goals were developed based on the inputs from the URRWMO stakeholders, the WRAPS report, and communications with staff from the ACD and other governmental organizations. It should be noted that the priority issues for URRWMO stakeholders and other government agencies varied considerably. However, the goals presented within this plan reflect those selected by the URRWMO Board.

The status of each of these goals will be tracked annually in accordance with Chapter 5 – Implementation Plan. The goals identified in each Goal Area are prioritized in order of importance (i.e. Goal A. 1. a higher priority than Goal A. 2.) On an annual basis the WMO will notify member communities of the following goals and the requirements necessary to achieve them. Member communities will be expected to review and update their ordinances and policies to ensure they align with WMO goals.

The following sections provide background information and context for each Goal Area, and lists the URRWMO's associated goals. The goal statements are relisted in Table 4-1 for emphasis and readability.

4.1 Goal Area A: Water Quantity and Floodplain Management

One of the URRWMO's responsibilities is to prevent and mitigate flooding throughout the watershed. The following goals address flooding issues by confirming that development and redevelopment within the watershed does not result in downstream flooding. The main focus is to maintain the current flood profile within the watershed.

Floodplain management is the management of development and other activities in or near the floodplain to prevent flood damages as well as the construction of capital improvement projects that change the way in which flood water moves through a watershed, generally intended to reduce risk of flood damage to existing structures and infrastructure. The Federal Emergency Management Agency (FEMA) has created maps which identify many areas of 100-yr floodplain within the boundaries of the URRWMO; however, it is recognized that FEMA maps are not inclusive of all floodplains within URRWMO. Furthermore, due to limitations in the development of these maps, both in terms of financial and technical resources, the URRWMO recognizes that the FEMA maps may not be accurate in all instances. The URRWMO requires member cities to operate within the limitations of available resources, to manage floodplains and development within floodplains to prevent, to the maximum extent practicable, development which will be at risk to 100-yr flood damage as well as activities which may increase flood risk for existing development.

Goal A. 1. Require member communities to update post-construction stormwater management ordinances to be compliant with all applicable Federal, State, and local standards. Protect against development related flooding by requiring local communities to enforce rate control and infiltration requirements. Measurable by communities maintaining post-development 2-, 10-, and 100-yr peak runoff rates at predevelopment levels.

Goal A. 2. Require member communities to update floodplain management ordinances to be compliant with all applicable Federal, State, and local standards. Maintain existing floodplain storage volumes and provide adequate conveyance for flood flows. Measureable by community

annual reports that document the volume of floodplain fill and compensatory storage as well as infrastructure design to serve regulated development.

Goal A. 3. Control increase in runoff volume from landlocked basins by only allowing outlets in conformance with approved local plans. Prohibit new discharges from landlocked basins unless an engineering study is completed to evaluate the effects of the outlet and design to mitigate impacts.

Goal A. 4. Improve BMP performance by requiring member communities to conduct physical inspections to identify any issues or deviations from construction plans and then ensuring any deficiencies are corrected. Measurable by community annual reports that document any required corrective measures and time-frames to complete these items.

4.2 Goal Area B: Water Quality

Several waterbodies in the URRWMO boundaries have been listed as impaired, including Lake George, East Twin Lake, the Rum River, Crooked Brook, Seelye Brook, Mahoney Brook, and Cedar Creek. The following goals focus on improving the water quality in lakes in streams.

Goal B. 1. Require member communities to update post-construction stormwater management ordinances to be compliant with all applicable Federal, State, and local standards.

Goal B. 2. Protect water quality by requiring local communities to enforce post development stormwater quality treatment practices in conformance with state and federal standards. Measureable by community annual reports that document that regulated developments achieved minimum levels of water quality treatment.

Goal B. 3. Improve Total Phosphorus concentration in Lake George and the Rum River in accordance with goals and timeline of the Rum River WRAPS.

Goal B. 4. Conduct a Rum River WRAPS progress review in 2022.

Goal B. 5. Improve BMP performance by requiring member communities to conduct physical inspections to identify any issues or deviations from construction plans and then ensuring any deficiencies are corrected. Measurable by community annual reports that document any required corrective measures and time-frames to complete these items.

The WRAPS study of the Rum River Watershed was completed in July 2017. The URRWMO wants to maintain continuity between its 10-year plan and the WRAPS recommendations. Therefore, the strategies listed within the WRAPS report are included within the Strategies and Implementation Schedule (see Chapter 5).

Management needs for the watershed exceed available resources, and therefore prioritization and focus is needed to achieve goals in high priority areas. The Rum River and Lake George were selected as the highest priority waterbodies within this planning cycle, which is concurrent with the findings of the 2017 WRAPS study. Several other waterbodies, including Crooked Brook, Seelye Brook, Mahoney Brook, and Cedar Creek, within the boundaries of URRWMO are also classified by MPCA as impaired. While these

streams were not given highest priority by the URRWMO within this version of the URRWMO Plan, it is recognized that efforts to improve the water quality in these waterbodies is needed. The URRWMO will coordinate with partners, specifically the Anoka County Conservation District, if a partner's planning efforts focus on improvements within these water bodies within the URRWMO.

4.3 Goal Area C: Wetlands

WMO member communities serve as the Local Government Units (LGUs) for managing wetlands under the Wetland Conservation Act (WCA). The duties of the LGU includes reviewing and approving wetland delineations, wetland exemptions/no-loss applications, and wetland replacement plan applications. Other responsibilities include coordinating Technical Evaluation Panel meetings and communications, enforcing wetland monitoring activities, and coordinating with other agencies to enforce violations. The following goals focus on fulfilling all of the LGU requirements for wetland protection and conservation.

Goal C. 1. Continue current local municipality responsibility as Local Government Unit (LGU) for implementation of the Wetland Conservation Act (WCA). Measurable by community annual reports that document all regulated developments complied with applicable wetland standards and quantification of wetland impacts and mitigation areas. MnDOT will continue to be the WCA LGU within state road right-of-ways.

Goal C. 2. Technical Advisory Committee (TAC) will convene to revise wetland buffer standards.

4.4 Goal Area D: Groundwater

Maintaining clean groundwater supplies is critical to the human and environmental health of the watershed. The URRWMO aims to ensure a sustainable groundwater supply for the region.

Goal D. 1. Protect the quantity and quality of groundwater resources.

4.5 Goal Area E: Drainage Systems

The jurisdictional drainage ditches within the URRWMO are under the ditch authority of Anoka County Highway Department (see Table II-3 for a summary of the ditch-drainage systems within the watershed). Within the Fourth Generation Plan, the URRWMO recommends continuing with the current ditch authority.

Goal E. 1. Continue current Anoka County Highway Department jurisdiction over county ditches in the watershed. Discuss annually if reassigning the jurisdiction over County ditches is in the best interest of the watershed.

Goal E. 1. Complete a WMO-wide culvert inventory (sizes, elevations, etc) and provide survey results, observations, and recommendations to member communities and Anoka County.

4.6 Goal Area F: Reduce Erosion

Although erosion occurs naturally, it is often accelerated through human activities, and can be a major contributor to water pollution. The following goal focuses on reducing erosion in water courses within the URRW, with an initial action item prioritizing an assessment of the Rum River.

Goal F. 1. Prevent erosion of soil into the Rum River by supporting implementation of projects identified by the 2017 ACD Rum River Bank Erosion Assessment.

Goal F. 2. Require member communities to update their construction site erosion control ordinances to be compliant with all applicable Federal, State and local standards.

4.7 Goal Area G: Protect and Enhance Fish and Wildlife Habitat

Diverse and healthy ecosystems are beneficial for maintaining a wildlife habitat, and can positively affect soils, surface water quality, fisheries, landscape aesthetics, and recreation opportunities. Invasive species may cause economic and/or environmental harm to human health or threaten natural resources within the watershed. The following goal focuses on addressing aquatic invasive species (AIS) that inhabit waterbodies that threaten to damage natural resources and local economies.

Goal G. 1. Provide education about the prevention and control of aquatic and invasive species by updating the WMO website to incorporate educational materials.

Goal G. 2. Protect shoreline areas from development by requiring member communities to update their shoreland management ordinances to be compliant with all applicable Federal, State and local standards.

4.8 Goal Area H: URRWMO Operations and Programming

The URRWMO operates several routine programs, including developing an annual budget for projects within the watershed, identifying funding and grant opportunities to supplement the WMO's budget, operating a public education and outreach program, and maintaining a monitoring program (to identify issues within the watershed and evaluate progress towards goals.) The following goals focus on the fulfilling these regular programming activities for the URRWMO.

Goal H. 1. Identify and operate within a sustainable funding level that is affordable to member cities.

Goal H. 2. Foster implementation of watershed management programs by proactively seeking grant funding.

Goal H. 3. Operate a public education and outreach program prioritizing elected and appointed officials to build better understanding between all stakeholders. Measurable by the annual attendance of elected and appointed officials of member communities (individuals not already on the WMO board) as well as the public.

Goal H. 4. Operate a monitoring program sufficient to characterize water quantity, water quality, and biotic integrity in the watersheds and to evaluate progress toward meeting goals. Measurable by revising the water quality monitoring plan in 2018 to comply with the recommendation of the Rum River WRAP and implementation of revised plan from 2019 through 2028.

Table 4-1: URRWMO Plan Goals (2019-2028)

Goal Area A Water Quantity and Floodplain Management	Goal A.1	Require member communities to update post-construction stormwater management ordinances to be compliant with all applicable Federal, State, and local standards. Protect against development related flooding by requiring local communities to enforce rate control and infiltration requirements. Require the use of either the 24-hr NOAA Atlas-14 data averaged for the URRWMO (Table 2-3 within the URRWMO Plan) or the NRCS published county-wide data for Anoka County, whichever is greater. Measurable by communities maintaining post-development 2-, 10-, and 100-yr or below peak runoff rates and volumes at predevelopment levels.
	Goal A.2	Require member communities to update floodplain management ordinances to be compliant with all applicable Federal, State, and local standards. Maintain existing floodplain storage volumes and provide adequate conveyance for flood flows. Measureable by community annual reports that document the volume of floodplain fill and compensatory storage as well as infrastructure design to serve regulated development.
	Goal A.3	Control increase in runoff volume from landlocked basins by only allowing outlets in conformance with approved local plans. Prohibit new discharges from landlocked basins unless an engineering study is completed to evaluate the effects of the outlet and design to mitigate impacts.
	Goal A.4 (B.5)	Improve BMP performance by requiring member communities to conduct physical inspections to identify any issues or deviations from construction plans and then ensuring any deficiencies are corrected. Measurable by community annual reports that document any required corrective measures and time-frames to complete these items.
Goal Area B Water Quality	Goal B.1	Require member communities to update post-construction stormwater management ordinances to be compliant with all applicable Federal, State, and local standards.
	Goal B.2	Protect water quality by requiring local communities to enforce post development stormwater quality treatment practices in conformance with state and federal standards. Measureable by community annual reports that document that regulated developments achieved minimum levels of water quality treatment.
	Goal B.3	Improve Total Phosphorus concentration in Lake George and the Rum River in accordance with goals and timeline of the Rum River WRAPS.
	Goal B.4	Conduct a Rum River WRAPS progress review in 2022.
	Goal B.5 (A.4)	Improve BMP performance by requiring member communities to conduct physical inspections to identify any issues or deviations from construction plans and then ensuring any deficiencies are corrected. Measurable by community annual reports that document any required corrective measures and time-frames to complete these items.
Goal Area C Wetlands	Goal C.1	Continue current local municipality responsibility as Local Government Unit (LGU) for implementation of the Wetland Conservation Act (WCA). Measurable by community annual reports that document all regulated developments complied with applicable wetland standards and quantification of wetland impacts and mitigation areas. MnDOT will continue to be the WCA LGU within state road right-of-ways.
	Goal C.2	Technical Advisory Committee (TAC) will convene to revise wetland buffer standards.

Table 4-1 Continued: URRWMO Plan Goals (2019-2028)

Goal Area D Groundwater	Goal D.1	Protect the quantity and quality of groundwater resources. Measurable by community annual reports that document that they are complying with their applicable wellhead protection plans. Also measurable by community annual reports that document that developments are complying with infiltration standards (including any prohibitions).
Goal Area E Drainage Systems	Goal E.1	Continue current Anoka County Highway Department jurisdiction over county ditches in the watershed. Discuss annually if reassigning the jurisdiction over County ditches is in the best interest of the watershed.
	Goal E.2	Complete a WMO-wide culvert inventory (sizes, elevations, etc) and provide survey results, observations, and recommendations to member communities and Anoka County.
Goal Area F Reduce Erosion	Goal F.1	Prevent erosion of soil into the Rum River by supporting implementation of projects identified by the 2017 and 2018 ACD Rum River Bank Erosion Assessments.
	Goal F.2	Require member communities to update their construction site erosion control ordinances to be compliant with all applicable Federal, State and local standards.
Goal Area G Protect and Enhance Fish and Wildlife Habitat	Goal G.1	Provide education about the prevention and control of aquatic and invasive species by updating the WMO website to incorporate educational materials.
	Goal G.2	Protect shoreline areas from development by requiring member communities to update their shoreland management ordinances to be compliant with all applicable Federal, State and local standards.
Goal Area H Commission Operations and Programming	Goal H.1	Identify and operate within a sustainable funding level that is affordable to member cities.
	Goal H.2	Foster implementation of watershed management programs by proactively seeking grant funding.
	Goal H.3	Operate a public education and outreach program prioritizing elected and appointed officials to build better understanding between all stakeholders. Measurable by the annual attendance of elected and appointed officials of member communities (individuals not already on the WMO board) as well as the public.
	Goal H.4	Operate a monitoring program sufficient to characterize water quantity, water quality, and biotic integrity in the watersheds and to evaluate progress toward meeting goals. Measurable by creating a water quality monitoring plan (2019-2028) that complies with the recommendations of the Rum River WRAP and the URRWMO's Plan.

CHAPTER 5 – Implementation Plan

This Chapter describes the responsibilities of the Upper Rum River Watershed Management Organization and the responsibilities the URRWMO has delegated to its member cities. Many agencies also have jurisdiction within the URRWMO; however, the roles and responsibilities of those agencies are not discussed in this plan. This Chapter presents the URRWMO implementation program, including its capital improvement program (CIP) and other implementation responsibilities.

A structured implementation schedule follows that documents all of the strategies that will be undertaken in an effort to meet the goals set forth in Chapter 4. This is paired with a 10-year operating budget, where the costs associated with each strategy are accounted for in terms of their projected timelines, as well as annual administrative activities.

This current plan is a transition in comparison to prior URRWMO plans: from studying and monitoring towards project implementation. Projects have been identified primarily by the ACD, with the understanding that the URRWMO will contribute a portion of the funding required for implementation and assist in finding grants for the remaining costs. Grant matching money will be saved annually by the URRWMO, and dispersed as individual projects move forward.

5.1 URRWMO Responsibilities

The URRWMO serves many water resource management roles, as listed in Minnesota Statutes 103B and summarized in Chapter 1. While the URRWMO is the entity ultimately responsible for fulfilling the duties of Minnesota Statutes 103B, the URRWMO seeks to collaborate with its member cities, community groups, and others to achieve its goals. With specific regard to action items documented in this plan, the URRWMO will conduct the following activities over the duration of the planning period where this plan is applied:

1. Conduct Annual Reporting and Evaluations
2. Conduct Water Quality Monitoring
3. Intercommunity Planning
4. Implementation of the URRWMO Capital Improvement Program

5.1.1 Reporting and Evaluation

The URRWMO is responsible for evaluating its progress in achieving its goals and reporting annually to the Board of Water and Soil Resources (BWSR), per Minnesota Rules 8410.0150. Within the first 120 days of the calendar year, the URRWMO must submit to BWSR an activity report for the previous calendar year. The URRWMO must submit an audit report for the previous fiscal year within 180 days of the end of the URRWMO fiscal year. The required contents of the annual activity report are specified in Minnesota Rules 8410. Generally, the URRWMO's annual report includes:

1. An activity report documenting:
 - o Current board members, contacts, employees, and consultants serving,
 - o A summary of significant trends in water quality indicated by sampling data,
 - o Progress in implementing the watershed management plan,
 - o Status of local plan adoption and implementation,

- Educational activities undertaken in the previous year
- 2. The proposed next year's work plan
- 3. A financial and audit report including a projected annual budget and contributions from member communities

The annual report provides an opportunity for the URRWMO to assess the effectiveness of implementation of its goals and policies. If the URRWMO determines that programmatic changes are necessary, the URRWMO will amend the Plan to reflect the needed changes and/or adopt new rules or policies that require the cities to effect the needed changes via city regulatory controls.

If annual review of member city actions (or inaction) reveals implementation inconsistent with the URRWMO Plan, the URRWMO will take action to ensure that URRWMO rules and policies are being implemented by the member cities. The steps below describe how the URRWMO will handle any instances where member cities are not complying with the URRWMO Plan:

- a) Staff/URRWMO Board members identify the issue. It should be brought to the URRWMO Board for review and first try to correct the problem at the staff level.
- b) If corrective action is unsuccessful, the issue will be escalated to the URRWMO Board and LGU City Council.
- c) If the issue is still unresolved, the URRWMO Board will notify BWSR for additional guidance since the issue could limit the URRWMO's ability to implement the plan.

The URRWMO will continue to maintain its website, as required by Minnesota Statute 8410.0150. The website will contain the location, time, agenda, and minutes for organization meetings; contact information for the organization staff; the current watershed management plan; annual activity reports; rules and requirements; a list of the URRWMO Managers, Alternate Managers, and designated officers; and a list of employees and contact information.

The URRWMO website is located at: www.urrwmo.org

Historically, the URRWMO has not had its own staff, nor assigned city staff or consultant staff with authority to maintain the daily operations of the WMO, represent the WMP to other regulatory agencies, and oversee the implementation of the plan. This issue was identified in the [2014 Performance Review and Assistance Program \(PRAP\) report](#) (page 29).

As part of this 4th generation plan focused on implementation of projects within the WMO, it was deemed necessary to hire a Watershed Management Coordinator. This individual will be available to represent the Board to municipalities, agencies and other water resource management entities. The responsibilities of this position will also include:

- Facilitating regular URRWMO meetings
- Manage the Technical Advisory Committee (TAC)
 - Oversee organization and composition of TAC
 - Establish meeting schedules, discussion topics, and secure venues
 - Conduct meetings and manage discussions
 - Prepare meeting minutes and compile final reports on TAC guidance
- Facilitating the review of local watershed plans

- Conduct reviews personally and/or
- Contract/arrange technical review by others
- Identifying grant/funding opportunities and compiling/submitted grant application materials
- Monitoring the WMO plan schedule and budget
- Documenting education/outreach activities
- Posting materials to the URRWMO website
- Compiling the annual activity report based on responses from member communities
 - Prepare annual Financial Report
 - Prepare Annual Report to BWSR
- Conduct a biennial evaluation of progress towards goals and implementation actions

Member communities will be responsible for updating their local ordinances and provide feedback to the URRWMO on their annual reporting forms. If needed, the URRWMO Board will authorize the Watershed Coordinator to complete a review of updated ordinances to confirm they comply with the URRWMO's Standards.

URRWMO meetings will take place regularly throughout the year (approximately 10 meetings), and Technical Advisory Committee (TAC) meetings will be scheduled based on planning needs and the implementation schedule. It is predicted that two (2) TAC meetings will occur in 2019, four (4) meetings in 2020 and 2021, and then once per year for the period of 2022-2028.

The URRWMO is required to evaluate the implementation of the actions in its plan at least every two years (MN Administrative Rules 8410.0105 Subp. 1C). The Watershed Management Coordinator will be responsible for creating a biennial reporting form to fulfill this requirement. In crafting this form, the Watershed Management Coordinator will take into account the following items:

- Confirm receipt of the annual reporting forms from the member communities. Use these annual reports as well as personal communication to determine if member communities are complying with the URRWMO plan. If local communities are found to be out of compliance, follow the procedures listed in above within Section 5.1.1 of this plan.
- Reference all of the action items listed within the Strategies and Implementation Schedule (Table 5-3). A goal and timeline are listed for each action item, which can be used to formally evaluate progress towards the URRWMO goals. The Watershed Coordinator will report to the URRWMO Board if any changes need to be made to the implementation schedule as a result of this evaluation, and suggest plan amendments.
- Review the URRWMO Website to confirm that all items are current. Provide feedback to the board if changes to the website are required to better support the implementation of the plan.
- Review water quality sampling results. Any trends should be reported to the Board to assess progress towards water quality improvement and/or suggest changes to the implementation schedule based on the findings.

5.1.2 Water Quality Monitoring

The URRWMO will continue to monitor water quality of waterbodies within the URRWMO (Goal H.4). In November 2018 the URRWMO reviewed its annual monitoring plan and made adjustments to the plan in response to changing conditions in the watershed, the findings of other studies (such as the Rum River WRAPS) and the updated goals and strategies within this plan.

A subcommittee of board members and the ACD met to draft the monitoring schedule for the next ten years. The URRWMO then convened a Technical Advisory Committee meeting on November 20th 2018 and solicited their input into this revised water quality monitoring plan. The URRWMO monitoring schedule are shown in Table 5-1. Note that some sites are currently being monitored by other agencies while other sites are partially funded by the URRWMO in cooperation with other organizations.

Note that the URRWMO will provide a fixed amount annually for the monitoring program. Any unused funds in one year will be placed into a rollover account to be used in subsequent years when costs are greater than \$7,500. Table 5-2 outlines the estimated annual costs roll over contribution/deductions to fund the URRWMO Water Quality monitoring by contract with ACD.

Table 5-1: URRWMO 10-year Monitoring Schedule and Cost Estimates

Type	Site	Monitored by funded the URRWMO every (x) yrs	Percentage of Monitoring Cost provided by the URRWMO										10-Yr Total	Site Notes	Goal/Purpose	Program Notes		
			2019	2020	2021	2022	2023	2024	2025	2026	2027	2028						
Lake Levels	Volunteers																	
	Lake George	1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	\$3,636.73	Critical to monitor due to new weir.	Track water levels to address concerns, blockages, etc in an informed manner.	ACD installs/surveys gauge and manage data. Volunteers collect data.	
	East Twin Lake	1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	\$3,636.73	Data has led to past corrective actions (blockage clearing) by city.				
	Coopers Lake	1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	\$3,636.73					
Minard Lake	1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	\$3,636.73	Lake level complaints led to monitoring initiation in 2011.					
Lake Water Quality ACD option	Lake George	4	100%					100%						\$6,322.41	Declining lake wq trends and upcoming projects makes frequent monitoring a priority. Additional years of monitoring are highly desirable whenever funding allows.	Track declining trend and effectiveness of installed projects.	ACD collects 10 samples/yr at 1 m depth. Includes total phosphorus, chlorophyll-a, secchi transparency, temp, dissolved oxygen, conductivity, turbidity, salinity. Includes report, trend analysis and presentation to lake group.	
	East Twin Lake	3			100%				100%				\$6,609.80	URRWMO will seek a volunteer to monitor through the CAMP program; if none is found the URRWMO will fund ACD monitoring. Baseline data exists. Every 3rd yr monitoring sufficient to track trends.				
	Pickereel Lake	0 (Monitored by Met Council)											\$0.00	Met Council is monitoring				
	Fish Lake	0 (Monitored by Met Council)											\$0.00	Met Council is monitoring				
Lake Water Quality CAMP volunteer option	Lake George	0 (monitored by ACD)												\$0.00	Declining lake wq trends and upcoming projects makes frequent monitoring a priority.	Track declining trend and effectiveness of installed projects.	Met Council volunteer program requiring local sponsor. One time up front equip cost of \$225 plus \$750 annually (2019 cost). WMO would need to secure a volunteer. Add \$150/yr for ACD to pick up volunteer's samples 3-4x/yr as required so Met Council staff can get samples from a gov't office. Analyses include TP, chlorophyll-a, secchi transparency and temp. Includes short report.	
	East Twin Lake	3											\$0.00	Priority, high quality recreational lake. Few homes and not-every-year monitoring - difficult to find volunteer? Seek volunteer, if none secured use ACD option. Baseline data exists. Every 3rd yr monitoring sufficient to track trends.				
	Pickereel Lake	0 (Monitored by Met Council)											\$0.00	Met Council monitoring this lake				
	Fish Lake	0 (Monitored by Met Council)											\$0.00	Met Council monitoring this lake				
Stream Water Quality	Rum R at CR 24	3				50%	50%			50%	50%			\$3,452.30	Top of URRWMO	Long term trend analysis.	Baseline data exists, so monitoring 1 of every 3 yrs with 8 samples seems sufficient. To spread costs the URRWMO has monitored 4 samples per yr instead of 8, and done this two yrs in a row. Pushed the start date out to 2022 due to higher budgets already in 2019-2021.	
	Rum R at CR 7	3				50%	50%			50%	50%			\$3,452.30	Bottom of URRWMO			
	Seelye Br at CR 7	3				50%	50%			50%	50%			\$3,452.30	St. Francis WWTP discharges to this stream have changed.			
	Cedar Cr at CR 9	3				50%	50%			50%	50%			\$3,452.30	Impaired water.			
	Ford Br at CR63	3				50%	50%			50%	50%			\$3,452.30				
	Ditch 19 at Rum River	0												\$0.00	No monitoring planned. Possible future monitoring considered.			
Stream Water Levels	Rum R at CR 24	0												\$0.00	USGS has Rum River water level monitoring station.	Not selected because there are no flooding concerns, nor need to calculate pollutant loading.	Monitored up until the mid 2000's. Switched to recording water level only when water quality samples are taken for cost savings.	
	Rum R at CR 7	0												\$0.00				
	Seelye Br at CR 7	0												\$0.00				
	Cedar Cr at CR 9	0												\$0.00				
	Ford Br at CR63	0												\$0.00				
Reference Wetlands	East Twin Ref Wtld	1	60%	60%	60%	60%	60%	68%	100%	100%	100%	100%		\$5,985.55	Annual URRWMO contributions are scaled such that overall monitoring program costs do not exceed a \$7,500 URRWMO Board-set limit. The Anoka Conservation District will close funding gaps for reference wetlands not paid by URRWMO.	Ensure wetland regulatory determinations are accurate, fast and less expensive for the applicant.	Program designed to help ensure accurate wetland regulatory determinations for residents. 19 sites county wide, all of which are paid by the WMO/WVD except in the URRWMO where the WMO only pays for 3 of 5.	
	Lake George Ref Wtld	1	60%	60%	60%	60%	60%	68%	100%	100%	100%	100%		\$5,985.52				
	Alliant Tech Ref Wtld	1	60%	60%	60%	60%	60%	68%	100%	100%	100%	100%		\$5,985.52				
	Cedar Ref Wtld	1	60%	60%	60%	60%	60%	68%	100%	100%	100%	100%		\$5,985.52				
	Viking Ref Wtld	1	60%	60%	60%	60%	60%	68%	100%	100%	100%	100%		\$5,985.52				
Biomonitoring	Rum River at St. Francis HS	0 (to be funded with non-URRWMO dollars)												\$0.00	URRWMO supports this program, but funding must be from outside sources. Funding from the American Legion is likely. URRWMO, ACD and/or will submit funding requests.	Outreach and education.	Program defunded by URRWMO around 2012. Previously river biota were monitored with students for 15+ yrs. It's an outreach program as much as monitoring. School as expressed interest in restarting it.	
Total Annual Cost			\$5,015.00	\$3,301.65	\$5,372.19	\$7,486.62	\$9,842.88	\$6,272.03	\$5,519.36	\$10,245.03	\$13,006.78	\$8,606.70	\$74,668.23					

Table 5-2: URRWMO Funding Plan for Water Monitoring

The URRWMO will provide \$7,500 of local funds annually. Any unused funds in one year will be placed into a rollover account to be used in subsequent years when costs are >\$7,500. Estimated costs are from the Anoka Conservation District for 2019 plus 3.5% inflation estimate for subsequent years.

Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Annual URRWMO Funding Amount	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500	\$7,500
Est Annual Cost	\$5,015	\$3,302	\$5,372	\$7,487	\$9,843	\$6,272	\$5,519	\$10,245	\$13,007	\$8,607
Monitoring Rollover Acct										
Contributions	\$2,485	\$4,198	\$2,128			\$1,228	\$1,981			
Funds Used				-\$13	\$2,343			\$2,745	\$5,507	\$1,107
Balance	\$2,485	\$6,683	\$8,811	\$8,825	\$6,482	\$7,710	\$9,690	\$6,945	\$1,438	\$332

5.1.3 URRWMO Intercommunity Planning

The URRWMO relies on the member cities for primary management of runoff and water management issues. The URRWMO will provide leadership and assist member cities with intercommunity water management issues. To this end, the URRWMO will:

- 1. Review Local Plans** – Review city local water management plans for consistency with URRWMO goals and intercommunity consistency. Refer to **Appendix D** for details regarding the URRWMO Standards, Regulations, and Operations. If needed, the URRWMO Board will authorize the Watershed Coordinator to complete a review of updated ordinances to confirm they comply with the URRWMO’s Standards.
- 2. Review Local Ordinances** – Review local ordinances for consistency with URRWMO goals and conformance with minimum state and federal standards. (Goals A.1, A.2, B.1, F.2, and G.2)
- 3. Conduct Subwatershed Assessment Studies (SWAS)** – Support SWASs in **Appendix G** that identify and prioritize best management practices at a more localized scale to assist in project selection by TAC. (Goal B.3). Locations of SWAS will be recommended by the TAC and selected by the URRWMO Board with consideration of these priority subwatersheds:

Highest priority

- Rum River direct drainage (minor watershed #21095)
- Pickrel Lake
- Ford Brook

Medium priority

Seelye Brook

East Twin Lake

Others as recommended by the TAC and amended into the plan by URRWMO Board

4. Technical Advisory Committee – Establish a Technical Advisory Committee for purposes of providing leadership for conducting local surface water management plans. The technical advisory committee will be convened at varying intervals and may include different representatives depending on the elements of local planning being considered. It is anticipated that the TAC will provide input on the following items at a minimum:
 - a) Developing a revised annual report form. Items to be included are details on regulatory activities and development plans (e.g. application of rate control, floodplain, wetland regulations, etc.) The annual report form is used as a measurement tool for many of the URRWMO Plan strategies, and therefore the forms needs to be comprehensive to address each of the appropriate strategies (see Section 5.3).
 - b) Reviewing and revising the wetland buffer standards. (Goal C.2)
 - c) Developing land locked basin standards. Any development that allows discharge from landlocked basins will require an engineering study, and the TAC should outline at a minimum (1) what is required in the engineering report and (2) what constitutes acceptable safeguards for opening a closed depression. (Goal A.3)
 - d) Standardizing approaches for conducting watershed culvert inventory data collection. (Goal E.2)
 - e) Standardizing approaches for conducting inspections of existing stormwater BMPs. This will allow all member communities to evaluate things such that maintenance needs and/or improvement opportunities using the same metrics. The TAC should outline the scope of work and develop a report form. (Goals A.4 and B.5)
 - f) Providing assistance to municipalities in ordinance revisions. Ordinances include construction site erosion & control, post-construction stormwater management, floodplain management and shoreline zoning. (Goals A.1, A.2, B.1, F.2, and G.2)
 - g) Project prioritization and selection. Select projects from Lake George Management Plan, St. Francis Stormwater Retrofit Analysis, Rum River Field Assessment, and any future SWAS. (Goal B.3)
 - h) Establish future Subwatershed Assessment Studies (SWAS). (Goal B.3)
 - i) Develop standards for Local Plans.
5. Water Quality Goals – Revisit and/or revise water quality goals for waterbodies based on the WRAPS report and the findings of the local water management plans.

6. **WRAPS Review** – Conduct a WRAPS review in 2022. (Goal B.4)
7. **Education and Outreach** – Operate an education and outreach program with the purpose of fostering a better understanding of watershed processes, promoting the URRWMO goals, and better engagement with stakeholders (Goal H.3).
 - One ‘targeted audience’ will be elected and appointed officials (who are not on the WMO board) encouraging their attendance at URRWMO meetings.
 - A second ‘target audience’ are members of the public who will be reached via the URRWMO website and annual newsletters prepared by member communities. The website and newsletters will promote ongoing activities of the URRWMO, identify current water quality improvement projects within the watershed, and provide tips on how individuals might participate/contribute to future activities.
 - Members of the URRWMO board will also represent the URRWMO by attending meetings held by other WMOs, Lake Associations, Government agencies, and other parties interested in maintain and improving water quality within the region.
 - The ACD created a staff position focused on education and outreach within the County, including those areas with the URRWMO. The URRWMO is highly supportive of this new initiative and supports the continuation/advancement of ACD’s outreach efforts.

5.1.4 Implementation of the URRWMO Capital Improvement Program

The URRWMO is responsible for developing and managing a capital improvement program (CIP), which includes the development and implementation of capital projects to address water quality, flooding, and other issues within the watershed. Local communities may have projects that the URRWMO will provide financial or technical assistance for, if requested by the member community. (Goal B.3)

Guidance documents help the URRWMO prioritize and select projects that advance the goals outlined within this plan. The URRWMO has adopted by reference all of the guidance documents within **Appendix F**. If future guidance documents are completed, the URRWMO can amend this plan (following Minnesota Rules 8410) and update **Appendix F** to identify all guidance documents adopted by reference. Prioritized projects are in **Appendix G**.

As of March 2019, an initial three guidance documents have been adopted by reference. Please refer to **Appendix F** to determine if more guidance documents have been adopted since this date.

(1) Lake George water quality projects

Monitoring in Lake George has revealed declining water quality trends. The ACD finalized a diagnostic study of potential water quality improvement projects around the lake in December 2018. The URRWMO supports this effort and will contribute a portion of the grant matching funds to support project development. The project prioritization is still ongoing at this time, but possible projects will include:

- Iron enhanced sand bench within the Lake George Regional Park
- Replace/repair Ditch 19 weir.
- Numerous lakeshore restorations.
- Wetland restorations, primarily north of the lake.

- Prevent increases in stormwater inflow to the lake by:
 - Requiring retention of stormwater in new developments.
 - Keeping landlocked areas landlocked.
 - Consider MIDS or similar stormwater standards within the lake's watershed.
 - Ensure culverts are replaced with culverts of the same size and elevation.
 - Minimize ditch cleaning that enhances water delivery to the lake.

The URRWMO has adopted it by reference and the TAC will use the analysis to recommend priority projects for implementation. Once a project is selected, the URRWMO will amend the URRWMO plan (following Minnesota Rules 8410) to clearly describe the project, the measureable goals to be achieved, the estimated total project cost, the URRWMO's cost, outside funding sources, and the project partners.

Within the ten-year planning cycle, the URRWMO will reduce watershed TP loading by 20lbs, so as to dampen the effects of wet years, which have 25% higher TP loadings and the poorest water quality. Refer to the Lake George Water Quality Improvement Assessment report for more details.

In addition, any new development that drains directly to Lake George will require pre- and post-development TP and runoff volume and rates to be the same. The results of this study suggest that there will be 65% TP increase using 2030 land use (assuming no BMPs are put into place).

(2) Rum River Field Assessment

Portions of the Rum River are experiencing significant bank erosion, which leads to reduced water quality. Some bank erosion is natural, but healthy levels of erosion are relatively slow and on a small scale in stable river system. Erosion can be accelerated by a variety of factors and result in higher sediment loads within the stream. ACD conducted a streambank inventory in 2017 and another in 2018 to identify sites with high levels of erosion, and soliciting interest from private landowners to participate in future projects. The URRWMO funded a portion of the 2017 study. In addition, erosion sites on public lands will be identified for the future for project development. The URRWMO supports this effort and will allocate a portion of the budget for grant matching funds.

The URRWMO TAC will use the inventory to recommend priority projects for implementation. Once a project is selected, the URRWMO will amend the URRWMO plan (following Minnesota Rules 8410) to clearly describe the project, the measureable goals to be achieved, the estimated total project cost, the URRWMO's cost, outside funding sources, and the project partners.

Within the ten-year planning cycle, the URRWMO will install riverbank stabilization projects achieving 180 tons/yr of suspended solids reduction and 250 lbs/yr total phosphorus reduction. 25 project sites have been identified (refer to ACD riverbank inventory guidance document). Of these sites 9 are cedar tree revetments, 9 are bioengineering with minor grading and light toe armoring and two are hard armoring including significant regrading and rip rap to a 10-year flood elevation.

(3) City of St. Francis Stormwater Retrofit Analysis

The City of St. Francis coordinated with ACD to conduct a city-wide stormwater BMP retrofit analysis. The report identified and ranked seventeen (17) water quality improvement projects all of which drain to the Rum River. Projects were ranked by nutrient reduction (TP and TSS) and also assigned an estimated project cost and annual maintenance fees. This allows for project prioritization on a rating scale (e.g. \$ per lb TP removed per year). Since all of the BMPs drain to the Rum River, these projects would provide a water quality benefit to all of the communities downstream.

The Rum River WRAPS includes Urban Stormwater Management Practices in communities along the Rum River within their Strategy Table for the Lower Rum River HUC 10 Subwatershed (see Table 3-3). Supporting urban stormwater BMP projects in St. Francis would therefore align well with the WRAPS strategy.

The URRWMO TAC use the analysis to recommend priority projects for implementation. Once a project is selected, the URRWMO will amend the URRWMO plan (following Minnesota Rules 8410) to clearly describe the project, the measureable goals to be achieved, the estimated total project cost, the URRWMO's cost, outside funding sources, and the project partners.

Within the ten-year planning cycle, the URRWMO will install projects reducing phosphorus by at least 3 lbs/yr and suspended solids by 500 lbs/yr.

These three plans are examples of a Subwatershed Assessment Study (SWAS), which are invaluable for project selection. Other communities within the URRWMO might also undertake similar efforts, and bring the final report to the URRWMO for review. Upon acceptance by the URRWMO, the URRWMO will amend the URRWMO plan (following Minnesota Rules 8410) to adopt the new SWAS as a guidance document, revising Appendix F accordingly. All SWAS's will clearly describe the project(s), the measureable goals to be achieved, the estimated total project cost, the URRWMO's cost, outside funding sources, and the project partners.

Locations of SWAS will be recommended by the TAC and selected by the URRWMO Board with consideration of these priority subwatersheds:

Highest priority

Rum River direct drainage (minor watershed #21095)
Pickerel Lake
Ford Brook

Medium priority

Seelye Brook
East Twin Lake
Others as recommended by the TAC

If the TAC identifies a new priority subwatershed for a SWAS, the URRWMO will follow the plan amendment procedures outlined in Section 5.5.2. In order to simplify the amendment process, the plan was written so that changes can be made to Appendix F.

Note that the Pilot Watershed Based Funding identified metro communities as potential recipients for funding, but the proposed projects need to be specifically identified within an approved 8410 plan. Therefore, it is in the best interest of the URRWMO to quickly identify projects and amend the WMO plan accordingly in order to be eligible for funding opportunities.

5.2 Member City Responsibilities

The success of the URRWMO is dependent upon its leadership and the cooperation of the six member cities. The URRWMO relies on the member cities to perform many roles, as specified in the URRWMO's administrative policies (see Chapter 4.2.10), the JPA, or URRWMO actions. Generally, these roles and responsibilities include:

1. Manager and Alternate Manager appointment: Each member city is entitled to appoint two managers and one alternate manager to the URRWMO. Alternates only get to vote in the absence of a regular representative. Sections 2.2, 2.3, and 2.4 of the URRWMO's joint powers agreement documents the conditions for manager appointments.
2. Technical Advisory Committee (TAC): When the URRWMO decides to convene a TAC, the URRWMO will invite staff and/or elected officials from member communities to be part of the TAC. Addendum 2 to the URRWMO's joint powers agreement identifies roles and responsibilities of TAC members.
3. Local Water Management Plan: Each member city is required to prepare a local water management plan that conforms with the URRWMO Plan. The URRWMO will then review and, if appropriate, approve each local water management plan. Local plans are to include new and/or revised modeling studies to assess runoff rates, volumes and/or water quality in accordance with direction from the URRWMO TAC. Refer to Appendix D for details regarding the URRWMO Standards, Regulations, and Operations.
4. Official Controls (Ordinances): Each member city is required to update its ordinances (or other official controls) to conform to and implement the requirements of the URRWMO and the policies presented in this Plan. Affected ordinances/controls may include erosion and sediment control, wetland management, floodplain/zoning, stormwater management, and others.
5. Stormwater Inspections – Conduct inspections of existing stormwater management practices.
6. Culvert Inventory – Prepare an inventory of all drainage structures located along major open channel drainage systems that convey continuous flow.
7. TMDL Implementation Plans – Prepare implementation plans to comply with the recommendations of the approved TMDL studies, as they become available.

8. Capital Improvement Projects: Member cities implement the capital improvement projects identified herein.
9. Finances: Each member city is required to contribute annually to the URRWMO operating fund.
10. Annual Reporting: Each member city is required to complete an Annual Activity Report (Appendix E) to the URRWMO.

5.3 Strategies and Implementation Schedule

5.3.1 Implementation Program Components

As stated in the Chapter 5 introduction, this current plan is geared toward project development within the watershed, while maintaining a monitoring program and continuing administrative activities. An implementation schedule was created to provide clarity of each implementation activity: a strategy description, the responsible parties (e.g. URRWMO, Member Communities, or ACD), and timeframe for completion. Each activity is tied to one (or more) of the URRWMO goal statements, and was designed to be measurable. This will allow the URRWMO to regularly assess their process towards each goal, identify success-stories and problems, and keep the organization on a defined timeline. Each strategy was assigned an ID, which is cross referenced within the 10-year Implementation Budget (Section 5.3.1) to more adequately assess the costs associated with each activity. Table 5-3 provides a list of all the proposed strategies and an implementation schedule for the URRWMO within the 2019-2028 planning cycle.

Table 5-3: URRWMO 2019 – 2028 Strategies and Implementation Schedule

Goal Area	Goal	Location	Strategy Type	Strategy Description	Measurement Method	Goal/Target	Responsible Party		Time-line to reach goal	Interim 10-yr Mile-stone	Strategy ID †
							URRWMO	Community			
A: Water Quantity and Floodplain Management	A.1	Communities	Ordinance	<p>Establish a uniform minimum runoff control standard for new development and redevelopment that incorporates current stand federal standards. Maintaining post-development 2-, 10-, and 100-yr peak runoff rates at predevelopment levels.</p> <p>Review of local rate control and infiltration requirements to confirm compliance with URRWMO. If needed, the URRWMO Board will authorize the Watershed Coordinator to complete a review of updated ordinances to confirm they comply with the URRWMO's Standards.</p>	Minimum runoff control standard developed for the URRWMO & integrated into the approved Regulations table (Appendix D). Annual reports from communities indicating ordinance compliance.	100% compliance		x	2020		1
	A.2	Communities	Inventory	Documentation of development projects that impact floodplains.	Annual reports from communities documenting the volume of floodplain fill and compensatory storage.	100% compliance		x	Annually		2
	A.2	Communities	Ordinance	Review of local floodplain management ordinances to confirm compliance with federal, state and local standards. If needed, the URRWMO Board will authorize the Watershed Coordinator to complete a review of updated ordinances to confirm they comply with the URRWMO's Standards.	Annual reports from communities indicating ordinance compliance.	100% compliance		x	2020		3
	A.3	Watershed wide	Review	Prohibit new discharges from land locked basins unless an engineering study is completed to evaluate the effects of the outlet and design to mitigate impacts.	Annual report from the WMO documenting review process, discussion and decisions.	100% compliance	x		Annually		4
	A.4 (B.5)	Communities	Inventory	Complete a physical inspection of all BMPs and identify deficiencies and potential retrofits.	Reports from each community identifying BMP locations, condition and potential improvements.	100% compliance		x	2026		5

Table 5-3: URRWMO 2019 – 2028 Strategies and Implementation Schedule

Goal Area	Goal	Location	Strategy Type	Strategy Description	Measurement Method	Goal/Target	Responsible Party		Time-line to reach goal	Interim 10-yr Mile-stone	Strategy ID †
							URRWMO	Community			
B: Water Quality	B.1 & B.2	Communities	Ordinance	Review of post-development stormwater treatment ordinances to confirm compliance with federal, state and local standards. If needed, the URRWMO Board will authorize the Watershed Coordinator to complete a review of updated ordinances to confirm they comply with the URRWMO's Standards.	Annual reports from communities indicating ordinance compliance.	100% compliance		x	2020		6
	B.3 & H.4	Watershed wide	Sampling	Fund ongoing water quality sampling within the watershed through partnership with ACD.	Annual review of water quality sampling to detect trends of increasing/decreasing water quality	na	x*		Annually		7
					Review TP concentration in Lake George towards WRAPS goal	WRAPS Goal: TP=22.5mg/L	x*		20 years	TP <24 mg/L	8
					Review TP concentration in Pickerel Lake towards WRAPS goal	WRAPS Goal: TP=17.8mg/L	x*		30 years	TP < 23 mg/L	9
					Review TP concentration in East Twin Lake towards WRAPS goal	WRAPS Goal: TP=18.7mg/L	x*		20 years	TP= 20 mg/L	10
					Review TP concentration in Minard Lake towards WRAPS goal	WRAPS Goal: TP=28.3 mg/L	x*				11
					Review E.Coli concentration in East Twin Lake towards WRAPS goal	WRAPS Goal: Geo Mean: 126/100 ml Individual 1,260/100 ml	x*		35 years	Exceedance < 25%	12
					Review MSHA and TP concentration in Rum River towards WRAPS goal	WRAPS Goal: Keep MSHA average scores at "good" rating. Reduce TP to fall below standard.	x*		>10 years	Measured decrease in TP	13

Table 5-3: URRWMO 2019 – 2028 Strategies and Implementation Schedule

Goal Area	Goal	Location	Strategy Type	Strategy Description	Measurement Method	Goal/Target	Responsible Party		Time-line to reach goal	Interim 10-yr Mile-stone	Strategy ID †
							URRWMO	Community			
B: Water Quality (continued)	B.3	Lake George	Best Management Practices	Partner and fund a portion of water quality projects identified by ACD to improve water quality. Note that the TAC will prioritize project selection (Lake George, Rum River bank stabilization, projects identified within a SWAS).	Annual report from ACD indicating progress. Project description outlining TP load reductions for each implemented project.	Provide funding for 2+ projects within 10-year planning period. Reduce watershed TP loading by 20 lbs (9%). Any new development that drains directly to Lake George will require pre- and post-development TP and runoff volume and rates to be the same. (refer to Lake George Water Quality Improvement Assessment report)	x*		10 years	Complete 1 project. Start a 2nd project	14
	B.3 & F.1	Rum River	Best Management Practices	Partner and fund a portion of bank stabilization projects along the Rum River. ACD completed a stream bank inventory in 2017 & 2018 to identify potential sites and interested private landowners. Potential to complete projects on public property as well. Note that the TAC will prioritize project selection (Lake George, Rum River bank stabilization, projects identified within a SWAS).	Annual report from ACD indicating progress. Project description outlining TSS and TP load reductions for each implemented project.	Provide funding for 2+ projects within 10-year planning period Install riverbank stabilizations achieving 180 tons/yr of suspended solids reduction and 250 lbs/yr phosphorus reduction. 25 project sites have been identified (refer to 2018 ACD riverbank inventory guidance document).	x*		10 years	Complete 1 project. Start a 2nd project	15
	B.3	Rum River/St. Francis	Best Management Practices	Partner and fund an urban stormwater retrofit project that provides water quality benefits to the Rum River. TAC will recommend the project(s) based on SWAS and amend this plan with specific details to allow for grant funding. If additional SWAS's are completed, the TAC will incorporate new projects into consideration for prioritization.	Annual report from partner agency/community indicating progress. Project description outlining TSS and TP load reductions for each implemented project.	Provide funding for 2+ projects within 10-year planning period. Install projects reducing TP by at least 3 lbs/yr and TSS by 500 lbs/yr.	x	x	10 years	Complete 1 project. Start a 2nd project	16

Table 5-3: URRWMO 2019 – 2028 Strategies and Implementation Schedule

Goal Area	Goal	Location	Strategy Type	Strategy Description	Measurement Method	Goal/Target	Responsible Party		Time-line to reach goal	Interim 10-yr Mile-stone	Strategy ID †
							URRWMO	Community			
B: Water Quality (continued)	B.4	Watershed wide	Review	Review goals within WRAPS report, identify successful/under performing projects, and water quality sampling data. Revise WRAPS strategies based on progress.	At least 2 URRWMO board meetings focused on WRAPS progress towards goals. Participate in at least 50% of WRAPS meetings with partnering agencies.	Revised strategies by 2022	x		5 years		17
	B.5 (A.4)	Communities	Inventory	Complete a physical inspection of all BMPs and identify deficiencies and potential retrofits.	Reports from each community identifying BMP locations, condition and potential improvements.	100% compliance		x	2026		5
C: Wetlands	C.1	Communities	Ordinance	Require member communities to enforce regulatory controls for new development and redevelopment construction projects.	Annual reports from communities indicating ordinance compliance.	100% compliance	x		2020		18
	C.2	URRWMO	Ordinance	TAC will meet to discuss and revise wetland buffer standards. Standards will be distributed to member communities.	Meeting minutes from TAC meeting and revised standards documents.	100% compliance	x		2020		19
D: Groundwater	D.1	Communities	Ordinance	Require member communities to review (and enforce) wellhead protection plans and infiltration standards.	Annual reports from communities indicating ordinance compliance. One URRWMO meeting that includes a presentation of all wellhead protection plans within the URRWMO and their major components as an educational exercise.	100% compliance	x	x	2020		20
E: Drainage Systems	E.1	Watershed wide	Review	Consider reassigning the jurisdiction over the county ditches within the watershed.	One URRWMO meeting that discusses current policies in regards to ditches and consider potential improvements.	100% compliance	x		2021		21
	E.2	Watershed wide	Inventory	Provide funding for watershed culvert inventory. Coordinate with ACD to ensure consistent data collection methodology.	Inventory completion.	Inventory 100% complete	x*	x	2022		22

Table 5-3: URRWMO 2019 – 2028 Strategies and Implementation Schedule

Goal Area	Goal	Location	Strategy Type	Strategy Description	Measurement Method	Goal/Target	Responsible Party		Time-line to reach goal	Interim 10-yr Mile-stone	Strategy ID †
							URRWMO	Community			
F: Reduce Erosion	F.1 & B.3	Rum River	Best Management Practices	Partner and fund a portion of bank stabilization projects along the Rum River. ACD is completed a stream bank inventory in 2017 & 2018 to identify potential sites and interested private landowners. Potential to complete projects on public property as well. Note that the TAC will prioritize project selection (Lake George, Rum River bank stabilization, projects identified within a SWAS).	Annual report from ACD indicating progress.	Provide funding for 2 projects within 10-year planning period	x*		10 years	Complete 1 project. Start a 2nd project	15
	F.2	Communities	Ordinance	Review of local erosion control ordinances to confirm compliance with federal, state and local standards. If needed, the URRWMO Board will authorize the Watershed Coordinator to complete a review of updated ordinances to confirm they comply with the URRWMO's Standards.	Annual reports from communities indicating compliance.	100% compliance		x	2020		23
G: Protect and Enhance Fish and Wildlife Habitat	G.1	URRWMO	Education	Update URRWMO website to include education materials on the prevention and control of aquatic and invasive species. Materials provided by the Anoka County Parks Aquatic Invasive Species Prevention Program.	Website updated.	100% compliance	x		2020		24
	G.2	Communities	Ordinance	Review of local shoreland management ordinances to confirm compliance with federal, state and local standards.	Annual reports from communities indicating compliance.	100% compliance		x	2020		25
H: Commission Operations and Programming	All Goals	URRWMO	Administrative	Hire a Watershed Management Coordinator handle daily operations of the URRWMO and to represent the Board to municipalities, agencies and other water resource management entities.	Staff member hired	Staff member hired	x		2020		26
	H.1	Communities	Review	Review of annual budget and funding from member communities.	Meeting minutes from annual meeting addressing the URRWMO budget, 10-year plan goals, and funding needs.	Annual meeting with revised budget to reach 10-year plan goals.	x	x	Annually		27
	H.2	URRWMO	Grant Applications	Proactively research grant funding opportunities to support URRWMO projects.	Grant application and URRWMO annual reports.	Five grant applications within 10-year planning period	x		2028		28

Table 5-3: URRWMO 2019 – 2028 Strategies and Implementation Schedule

Goal Area	Goal	Location	Strategy Type	Strategy Description	Measurement Method	Goal/Target	Responsible Party		Time-line to reach goal	Interim 10-yr Mile-stone	Strategy ID †
							URRWMO	Community			
H: Commission Operations and Programming (continued)	H.3	URRWMO	Education	Promote investment within the watershed by encouraging members of the public and appointed officials from communities to attend URRWMO meetings.	Meeting attendance records.	20% of URRWMO meeting attendees are not members of the board	x	x	2028		29
	H.3	URRWMO	Education	Update (overhaul) the URRWMO website to keep up with current technology and security measures.	Website updated.	100% compliance	x		2020		30
	H.4 & B.3	Watershed wide	Sampling	Fund ongoing water quality sampling within the watershed through partnership with ACD.	Annual report from ACD on sampling. Revise sampling schedule annually.	Provide annual funding for sampling.	x*		Annually		7-13
	All Goals	Communities	Review	Each member city is required to prepare a local water management plan that conforms with the URRWMO Plan. The URRWMO will then review and, if appropriate, approve each local water management plan.	Annual reports from communities status of plan review and status of approval with URRWMO.	100% compliance	x	x	2020		31
	H.1, A.1, A.2, A.3, A.4, B.1, B.2, B.3, B.4, B.5, C.2, D.1, E.2, F.1, F.2	URRWMO	Review	Coordinate regular TAC meetings to review status of watershed planning efforts, specifically as it relates to ordinance updates & compliance, proposed project selection, and assessment towards water quality goals.	Meeting minutes from gatherings, published on the URRWMO website.	At least one meeting annually, with additional meetings scheduled early on within the planning period (2019-2021) to accomplish specific tasks listed in Section 5.1.3	x		Annually		32

†Some strategies appear twice within the table, and the ID is duplicated. These strategies were deemed to be of high importance to several goal areas, and therefore were repeated for emphasis.

*Some services might be contracted to ACD or other qualified consultant by the URRWMO to fulfill this responsibility.

5.3.2 Implementation Program Budget

Table 5-4 provides a comprehensive list of the projects, activities, and programs that comprise the URRWMO implementation program. Each of the strategies listed within Table 5-3 are cross-referenced to the budget to visualize how funds are allocated. Any annual activities were assigned a 2.5% inflation increase per year to account for rising project costs.

Three (3) different projects were identified throughout the planning process: Lake George Water Quality Projects, Rum River Bank Stabilization Projects and the St. Francis Stormwater BMP Retrofits (Section 5.1.4). The URRWMO is committed to supporting these efforts by allocating a portion of its annual funds for grant matching. Many grant applications require that the grantee “match” a portion of the funds that the grant provides. By offering a grant matching money, the URRWMO will improve the likelihood of a project receiving grant dollars.

However, since the timing of the grant applications are unknown, the URRWMO decided to start saving a set amount each year. All of the estimated grant matching amounts for the aforementioned three projects were summed and divided over the 10-year planning cycle. This allows the URRWMO to save over time, and grant matching funds will be available as applications are submitted.

In addition, if an implementation activity is completed under budget or no longer completed, the WMO will apply those remaining funds to address the next priority issue/project.

Table 5-4: 2019 – 2028 Implementation Program and Budget

Strategy ID	Description	Estimated hr/year	2019		2020		2021		2022		2023		2024		2025		2026		2027		2028		Notes on budget items†	
			WMO	MC	WMO	MC	WMO	MC	WMO	MC	WMO	MC	WMO	MC	WMO	MC	WMO	MC	WMO	MC	WMO	MC		
2, 4, 18, 20, 27, 29	Watershed Management Coordinator Cost for 2019 are based on estimated hours at a rate of \$80/hr	Annual Financial Report	(8)	\$640		\$656		\$672		\$689		\$706		\$724		\$742		\$761		\$780		\$799		
		Annual Report for BWSR	(16)	\$1,280		\$1,312		\$1,345		\$1,378		\$1,413		\$1,448		\$1,484		\$1,522		\$1,560		\$1,599		Each community committed to documenting local activities.
		Facilitate Regular URRWMO Meetings	(40)	\$3,200		\$3,280		\$3,362		\$3,446		\$3,532		\$3,621		\$3,711		\$3,804		\$3,899		\$3,996		Assumed 4 hours for Coordinator to organize 10 meetings per year.
		Semi-Annual TAC meeting‡	Variable. See notes.	\$3,200	\$9,000	\$6,560	\$18,450	\$6,724	\$18,911	\$1,723	\$4,846	\$1,766	\$4,967	\$1,810	\$5,091	\$1,856	\$5,219	\$1,902	\$5,349	\$1,949	\$5,483	\$1,998	\$5,620	Assuming 2.5% inflation increase per year for annual activities. Assuming 20 hours for Coordinator to organize each of the meeting and \$750 per community per meeting. Assuming two TAC meetings in 2019, four meetings in 2020 and 2021, and one meeting per year for 2022-2028.
		Review Local Water Management Plans	(96)			\$7,872																		Assuming 16 hours per community.
		Grant Applications	(45)	\$3,600		\$3,690		\$3,782		\$3,877		\$3,974		\$4,073		\$4,175		\$4,279		\$4,386		\$4,496		Assuming one (1) grant application per year.
		Misc. Administrative Activities	(20)	\$1,600		\$1,640		\$1,681		\$1,723		\$1,766		\$1,810		\$1,856		\$1,902		\$1,949		\$1,998		
	Watershed Insurance		\$2,300		\$2,358		\$2,416		\$2,477		\$2,539		\$2,602		\$2,667		\$2,734		\$2,802		\$2,872			
	Audit in 2020 and 2025																						Insurance dividends received annually should be placed in an account for future audits and watershed plan updates. Each audit is estimated to be approximately \$1000.	
	Secretarial Services		\$1,200		\$1,230		\$1,261		\$1,292		\$1,325		\$1,358		\$1,392		\$1,426		\$1,462		\$1,499			
24	Public Education & Outreach, Contracted to ACD		\$1,000		\$1,025		\$1,051		\$1,077		\$1,104		\$1,131		\$1,160		\$1,189		\$1,218		\$1,249			
7, 8, 9, 10, 11, 12, 13	Water Quality Monitoring		\$7,500		\$7,500		\$7,500		\$7,500		\$7,500		\$7,500		\$7,500		\$7,500		\$7,500		\$7,500		Reference Section 5.1.2 for more details on the Monitoring plan and funding schedule.	
24, 30	Website Maintenance and Updates		\$800		\$820		\$841		\$862		\$883		\$905		\$928		\$951		\$975		\$999		\$800 for annual maintenance with assumed 2.5% inflation increase per year.	
	Next 10-year plan update																				\$50,000			

Table 5-4: 2019 – 2028 Implementation Program and Budget

Strategy ID	Description	Estimated hr/year	2019		2020		2021		2022		2023		2024		2025		2026		2027		2028		Notes on budget items†
			WMO	MC	WMO	MC	WMO	MC	WMO	MC	WMO	MC	WMO	MC	WMO	MC	WMO	MC	WMO	MC	WMO	MC	
Projects	14	Lake George water quality project																					<p>Money will be used as the local match with principal funding from grants, completing one grant application per year. If grant funding is not secured for one specific year, the funds will be retained by the URRWMO and combined with future years' allocations for three years. If accumulated project funds meet 45K (or other amount determined by the board based on high-ranking projects), the following year(s) budgets for this item may be reduced to zero. Note that projects will be prioritized and selected by the TAC overtime. If the project cost exceeds grant funding availability, the URRWMO will revise their budgeting appropriately to accommodate.</p> <p>Current estimates are based on a 75K project/SWAS study, consisting of 60K in grant funds with the URRWMO providing a 25% match (15K), and assuming 2.5% inflation increase per year to account for rising costs.</p>
	15	Rum River bank stabilization project			15,000		15,375		15,759		16,153		16,557		16,971		17,395		17,830		18,276		
	16	Projects from Adopted Subwatershed Assessment Studies (SWAS) (e.g. St. Francis Stormwater Retrofit)																					
Inventories/ Assessments	22	Watershed Culvert Inventory				\$20,000		\$20,500															Each community committed to completing culvert inventory, in accordance with guidance provided by TAC.
	5	Stormwater BMP assessments											\$30,000									\$33,114	Assessments shifted to later within the 10-year cycle to assist in budgeting.
	1, 3, 6, 23, 25	Municipal Ordinance Review				\$30,000																	Each community committed to ordinance review, in accordance with guidance provided by TAC. Assuming five (5) ordinances to review for six (6) communities.
	16	Subwatershed Assessment Studies (SWAS) for Waterbodies of Interest					\$15,375				\$16,153				\$16,971					\$17,830			Anticipated to apply for grant funding for SWAS in 2020 and complete the SWAS the following year. Current estimates are based on a 60K SWAS study. This cycle will repeat biennially.
	17	WRAPS Review									\$3,500												
Totals for URRWMO and Member Communities			\$26,320	\$9,000	\$52,943	\$68,450	\$61,385	\$39,411	\$41,803	\$4,846	\$62,314	\$4,967	\$43,540	\$35,091	\$61,412	\$5,219	\$45,365	\$5,349	\$64,141	\$5,483	\$97,281	\$38,734	
Grant Funding	28	Assuming one (1) application per year, alternating an applications for a project and an application for a SWAS.			\$60,000		\$61,500		\$63,038		\$64,613		\$66,229		\$67,884		\$69,582		\$71,321		\$73,104		Current estimates are based on a 75K project/SWAS study, consisting of 60K in grant funds with the URRWMO providing a 25% match (15K), and assuming 2.5% inflation increase per year to account for rising project costs.

MC: Member Communities. Dollar amounts listed are cumulative for all communities. Values are only listed if the task is specifically for the URRWMO and not already within normal municipal budgeting. Estimated amounts will not be given to the WMO, but will be in-kind contributions.

†Assume 2.5% inflation increase per year for annual activities

‡Technical Advisory Committee (TAC) to meet more frequently between 2019-2021. Activities to include (in no particular order):

- a) Development of a revised annual report form. Things to be included are details on regulatory activities – development plans (application of rate control, floodplain, wetland regulations, etc.)
- b) Revised wetland buffer standards
- c) Land Locked Basin standards (what is required in a report, what constitutes acceptable safeguards for opening a closed depression)
- d) Culvert inventory (scope, means)
- e) BMP assessments (scope, report form)
- f) Municipal ordinance revisions (construction site E/C, post-construction stormwater management, floodplain management, and shoreland zoning).
- g) Project prioritization and selection from Lake George Management Plan, St. Francis Stormwater Retrofit Analysis, Rum River Field Assessment and future SWAS's.
- h) Establish future SWAS's.
- i) Develop standards for local plans. Potentially compare these with the Lower Rum WMO standards.

5.3.3 Funding

5.3.3.1 Funding Mechanisms Available to the URRWMO

URRWMO Operating Fund

Through the URRWMO JPA, each member city contributes annually to the URRWMO operating fund. The general fund is to be used for administrative purposes and certain operating expenses. Contributions to the operating fund by member cities is determined according each community's land area within the watershed as well as each community's market valuation in the watershed. Subdivision 2 of the URRWMO Joint Powers Agreement provides detail on how each city's annual contribution is determined.

The operating fund is used to pay for all URRWMO expenses including administrative expenses, plan development costs, review expenses, capital improvement costs, management programs, and management studies.

Ad Valorem Tax

Minnesota Statutes 103B.231 requires watershed districts and joint powers WMOs within the metropolitan area to prepare watershed management plans which are to include capital improvement programs. Minnesota Statute 103B.251 allows WMOs to certify capital improvements to the county for payment for capital improvement projects included in a WMO's watershed management plan. The county can then issues bonds and levy an ad valorem tax on all taxable property in the WMO (or subwatershed unit of the WMO) to pay for the projects.

URRWMO is not listed as a special taxing district under Minnesota Statutes 275.066 and so is not eligible to raise funds through direct Ad Valorem taxation as provided in Minnesota Statutes 103B.241.

Emergency Projects

Minnesota Statutes 103B.252 allows local units of government or WMOs with an approved and adopted plan to declare an emergency and order work to be done without a contract, and without levy limits.

5.3.3.2 Member City Funding

Funding mechanisms available to the member cities include:

- City General Funds
- Special Assessments
- Ad Valorem Taxes
- Stormwater Utility
- Development Fees
- Tax Increment Financing
- County Grants (e.g., Natural Resource Grants, Environmental Response Fund)

5.3.3.3 State Funding Sources

In addition to stormwater utility fees, taxes, assessments, and the other funding sources discussed above, the cities and/or the URRWMO could obtain funding from various state sources, such as grant and loan programs. The city could use loans for projects instead of city-issued bonds. The following paragraphs list various state-funded sources, grouped according to the state agency that administers the various funding programs.

The Board of Water and Soil Resources (BWSR) administers several grant programs, including the Clean Water Fund (CWF) program; cities and WMOs are eligible for CWF grants.

The Minnesota Pollution Control Agency (MPCA) administers the Clean Water Partnership (CWP) grant and loan program, USEPA funded Chapter 319 programs (including a TMDL implementation grant program), the Surface Water Assessment Grant program, Phosphorus Reduction Grant program, and the Clean Water State Revolving Fund program.

The Minnesota Department of Natural Resources (MDNR) administers many grant programs that could be appropriate for the cities or WMOs, including the Flood Hazard Mitigation Grant Assistance program, the Parks and Trails Legacy Grant program, trail grants programs, aquatic invasive species prevention grants and other aquatic plant management grant programs, shoreland habitat restoration grant program, and dam safety program. Funding for many of these programs changes after each legislative session.

Other state funding programs include the Legislative-Citizen Commission on Minnesota Resources' (LCCMR) funds for non-urgent demonstration and research projects, the Minnesota Department of Employment and Economic Development's (DEED) Contaminant Cleanup Development Grant Program, the Minnesota Department of Transportation (MnDOT) State Aid Funds, and ISTEAs funds.

At the time of drafting this plan, the URRWMO identified the Clean Water Funds Competitive Grant as a good fit for URRWMO project work and for additional Subwatershed Assessment Studies (SWAS's). Therefore, the current budget/implementation schedule allocated time/funds for one grant application per year. In addition, the URRWMO will submit for non-competitive Clean Water Funds, anticipated to be available either annually or biennially in the upcoming years.

The URRWMO will be selecting priority projects for implementation from three (3) existing study reports: Lake George water quality projects, Rum River bank stabilization projects, and St. Francis Stormwater BMP Retrofits (see Section 5.1.4). In the future, the URRWMO anticipates completion of a number of additional Subwatershed Assessment Studies which are expected to identify additional projects intended to improve water quality, reduce flooding or otherwise improve the watershed in accordance with the URRWMO goals. These projects will be added to previous study project recommendations for priority ranking by the TAC.

Once the TAC recommends the priority projects, the plan will be amended (following Minnesota Rules 8410) to clearly describe the project, the measurable goals to be achieved, the estimated total project cost, the URRWMO's cost, outside funding sources, and the project partners. At this stage, a specific grant funding opportunity will be selected based on the project type. The aforementioned agencies can provide clarity on the most appropriate grant opportunity.

5.3.3.4 **Federal Funding Sources**

The URRWMO and member cities may also receive funding from various federal sources which are diverse and too numerous to include in this document.

5.3.3.5 Private Funding Sources

In addition to state and federal funding sources, some private funding sources may be available.

5.4 Impacts on Local Government

5.4.1 URRWMO Operating Fund

The URRWMO’s intention is to minimize the duplication of efforts with member cities, and to limit additional requirements imposed upon local units of government as much as possible while still accomplishing the URRWMO’s purposes and implementing the Plan.

As in the past, the URRWMO’s implementation of watershed programs will be funded through the URRWMO’s operating fund (Table 5-5). Since the member cities contribute funds directly to the URRWMO operating fund, this has a direct financial impact on the member cities.

Table 5-5: Planned Member Community Financial Contributions to the URRWMO

Member Community	Estimated Contribution to URRWMO	2019	2020	2021	2022	2023	2024-2028
Bethel	1.08%	\$284	\$572	\$663	\$451	\$673	\$3,367
East Bethel	24.21%	\$6,372	\$12,817	\$14,861	\$10,121	\$15,086	\$75,472
Ham Lake	0.99%	\$261	\$524	\$608	\$414	\$617	\$3,086
Nowthen	23.66%	\$6,227	\$12,526	\$14,524	\$9,891	\$14,744	\$73,758
Oak Grove	29.69%	\$7,814	\$15,719	\$18,225	\$12,411	\$18,501	\$92,556
St. Francis	20.37%	\$5,361	\$10,784	\$12,504	\$8,515	\$12,693	\$63,501
TOTAL		\$26,320	\$52,943	\$61,385	\$41,803	\$62,314	\$311,740

Some URRWMO policies place increased responsibility on member cities. Some of the implementation program elements reflect the goals, policies, and requirements of state and regional units of government that local units of government would need to address regardless.

Some of the member cities already have ordinances in place that address many of the URRWMO requirements. Applicable ordinances address shorelands, floodplains, wetland protection, stormwater management, erosion control, and stormwater system maintenance. Local governments must adopt the MDNR’s shoreland regulations, if required by the MDNR.

The URRWMO is not increasing the wetland regulation burden for the member cities since those cities that are already acting as the Local Government Unit for the WCA will continue to do so (no change).

5.4.2 Local Water Management Plans and Official Controls

The URRWMO requires member cities to revise their official controls and management programs (e.g., ordinances) affected by the URRWMO Plan within 2 years of adoption of this URRWMO Plan. This is anticipated to represent a substantial effort on the part of each community and will represent a financial

cost in addition to addition to annual contributions to the URRWMO since it is anticipated the each city will need to engage the services of a consultant to develop revised local plans and then as required by 8410.0160 Subp. 6..

Local units of government are to maintain stormwater systems (storm sewers, ponding areas, ditches, water level control structures, etc.) under their jurisdiction in good working order to prevent flooding and water quality problems. The URRWMO requires that local plans assess the need for periodic maintenance of public works, facilities and natural conveyance systems, including the condition of public ditches constructed under Minnesota Statutes 103D or 103E, if they are under the cities' jurisdiction.

The local water management plan must identify official controls and programs (e.g., ordinances, management plans) which are used to enforce the policies and requirements of the URRWMO. Member city ordinances, management programs, and other official controls required by the URRWMO Plan must be implemented within 2 years of URRWMO Plan adoption. Revisions to local water management plans or local controls that are potentially inconsistent with the URRWMO plan must be submitted by the member cities to the URRWMO for review. The URRWMO has compiled their Standards, Regulations and Operations in Appendix D. All member communities should carefully review Appendix D to ensure that local water management plans are in compliance with the URRWMO.

“Local Water Management Plans and Official Controls” need to be consistent with the Local Plan Requirements identified in 8410.0105. Subp. 9 and 8410.0160. However, local comprehensive plans were due on December 31st, 2018, and therefore could not incorporate the updates to the URRWMO Plan. Therefore, any local comprehensive plans that were submitted by the 2018 deadlines will need to review the URRWMO plan and amend the Comprehensive Plans to comply with the URRWMO if there are any discrepancies. This review must be completed within 2-years of the URRWMO plan adoption. Subsequent updates of Local Plan Requirements and deadline shall follow 8410.0105. Subp. 9 and 8410.0160 and be completed in conjunction with member community's 10-year comprehensive plan update.

5.5 Plan Approval and Adoption

This Plan was submitted to the member cities, the BWSR, the MPCA, the MDNR, the Minnesota Department of Agriculture (MDA), the Minnesota Department of Health (MDH), the Metropolitan Council, the Minnesota Pollution Control Agency (MPCA), the Minnesota Department of Transportation (MnDOT), and Anoka County for review, in accordance with Minnesota statutes. The URRWMO held a public hearing on the Plan on March 13, 2019; BWSR approved the Plan on May 22, 2019; the URRWMO formally adopted this Plan on July 9, 2019.

5.5.1 Stakeholder and Public Involvement

Input from review agencies and other public stakeholders was solicited during the development of this Plan. Additionally, during the development of this plan, the URRWMO performed an exercise commonly known as a 'gaps analysis' to develop recommendations regarding additional technical data needed to further develop the URRWMO Plan. The gaps analysis considered responses to the Plan notification letter received from the BWSR, MDNR, Metropolitan Council, and Anoka County.

The gaps analysis considered concerns raised by the URRWMO managers, as well as responses from various review agencies and the public and led to the development of the current watershed program. The two most significant issues identified by the gaps analysis were:

1. A need for more comprehensive data regarding conditions within the watershed (such as the findings of comprehensive hydrologic, hydraulic, and water quality modeling). Some of this data exists within local planning documents, however, each document was developed in its own way and level of detail making them difficult to compare to one another.
2. A need to incorporate the findings of the Rum River WRAPS. At the time of the writing of this document the Rum River TMDL and WRAPS document has not been finalized, however, it is anticipated that these studies will provide significant technical data and findings that will assist the URRWMO in the development of future studies and capital improvement plans.

The URRWMO gathered input from the residents, elected and appointed officials, city staff, state agencies and other partners through this plan revision process. Beginning in November 2015, URRWMO sent a letter to stakeholders requesting input regarding priority concerns, water management goals, potential partnerships, watershed programs or anything of concern to the stakeholders. This letter was sent to 20 entities including the six URRWMO Member Cities, Anoka County, Anoka Conservation District, the Lower Rum River WMO, Isanti Co, Mille Lacs Co, Sherburne Co, the Sunrise River WMO, the MN DNR, the MN Dept. of Health, the MN Dept. of Agriculture, the Metropolitan Council Environmental Services, the MN Pollution Control Agency, the MN Dept. of Transportation, and MN BWSR. The URRWMO received responses from eight (8) of these entities, including one (2) cities, one (1) WMO, two (2) counties, and four (4) state agencies.

In spring 2016, representatives from URRWMO met with each member community to specifically solicit input from each member community regarding watershed planning issues. Through this process no technical issues were identified. Furthermore, each community voiced concerns about potential expansion of URRWMO programs that would result in additional annual expense to the Cities. Additionally, beginning in February 2016 and extending through November 2016, URRWMO held seven (7) meetings to develop the 4th generation watershed plan. This included an open house on June 29, 2016, a technical advisory committee meeting in the afternoon of July 2016, and a citizen advisory committee meeting in the evening of July 20, 2016.

A draft version of this plan was submitted for the 90-day review on October 11, 2017. Agencies comments provided by BSWR and Met Council required additional changes to this plan before it could be approved. The URRWMO Board members continued to hold meetings and maintain discussion with the agencies, and had a break through Workshop meeting on September 25th, 2018. Agencies and board members agreed on certain key elements to be included within the plan, and discussed a timeline for re-submittal. Specific items to be added included:

- Adopt by reference the yet-to-be-published Lake George Management Plan
- Adopt by reference the St. Francis Stormwater Retrofit Analysis
- Adopt by reference the Rum River Field Assessments (2017 and 2018)
- Commit to providing a local match for one project from each of the 3 (three) aforementioned Plans/Analysis/Assessment within the next planning cycle
- Actively pursue grants for State match

- Hire a Watershed Management Coordinator
- Identify members for TAC and develop a meeting schedule
- Complete additional SWAS studies leveraging grants through the Clean Water Fund

All of these elements were added into the plan document, with the understanding that plan amendments will be required in the near future, specifically after the TAC identifies priority projects. This plan will need to be amended to provide specifics about the selected project, the measurable goals to be achieved, the estimated total project cost, the URRWMO's cost, outside funding sources, and the project partners.

5.5.2 Amendments to Plan

It is the intention of the Upper Rum River Watershed Management Organization (URRWMO) to have this water management plan reviewed and approved by the Board of Water and Soil Resources (BWSR). This plan will be in effect for ten (10) years from the date of BWSR approval, unless significant changes to the plan are deemed necessary prior to that date.

All amendments to this Plan must follow the procedures set forth in this section, or as required by State laws and rules, as revised. Plan amendments may be proposed by any person, agency, city, or the County to the URRWMO Board, but only the URRWMO may initiate the amendment process. The URRWMO may amend its Plan in the interim if either changes are required or if problems arise that are not addressed in the Plan. Changes to this Plan not requiring an amendment are specified in Minnesota Administrative Rules 8410.0140 Subpart 1. C. Subp. 1a.

The URRWMO will follow the plan amendment process described in Minnesota Statutes 103B.231, Subd. 11 unless the proposed amendment is considered a minor amendment according to the provisions described in Minnesota Rules 8410.0140 Subp. 2. In accordance with Minnesota Statutes 103B.231, Subd. 11, the plan amendment process is the same as the Plan review process including submitting the amendment to:

- member communities,
- Anoka County
- state review agencies
- the Metropolitan Council, and
- BWSR

for a 60-day review; responding in writing to any comments from reviewers; holding a public hearing on the proposed amendment; submitting the final revised amendment and responses to comment to the BWSR for a 90-day review and approval.

The URRWMO will follow the minor plan amendment process, requiring only one 30-day review period, when proposed amendments are determined to be minor according to the provisions for minor amendments as established in Minnesota Rules 8410.0140 Subp. 2.

When and if plan amendments are completed, the URRWMO will prepare and distribute those amendments consistent with Minnesota Rules 8410. The URRWMO will maintain a distribution list of everyone receiving a copy of this Plan. Within 30 days of adopting an amendment, the URRWMO will

distribute copies of the amendment to everyone on the distribution list and post the amendment on the URRWMO website.

CHAPTER 6 – Acronyms

ACD	Anoka Conservation District
ACMWPG	Anoka County Municipal Wellhead Protection Group
AIS	Aquatic Invasive Species
BWSR	Board of Water and Soil Resources
CCESR	Cedar Creek Ecosystem Science Reserve
CIP	Capital Improvement Program
DNR	Department of Natural Resources
FEMA	Federal Emergency Management Agency
FIS	Flood Insurance Study
JPA	Joint Powers Agreement
KTF	Know the Flow (www.KnowTheFlow.us)
LGID	Lake George Improvement District
LID	Lake Improvement District
MBS	Minnesota Biological Survey
MeCC	Metro Conservation Corridors
MPCA	Minnesota Pollution Control Agency
MRWA	Minnesota Rural Water Association
NOAA	National Oceanic and Atmospheric Administration
SWAS	Subwatershed Assessment Study
TAC	Technical Advisory Committee
TMDL	Total Maximum Daily Load
TP	Total Phosphorus
URRW	Upper Rum River Watershed
URRWMO	Upper Rum River Watershed Management Organization
USGS	United States Geological Survey
WD	Watershed District
WMO	Watershed Management Organization
WRAPS	Watershed Restoration and Protection Strategy

FIGURES

Figure 2-1: Location Map

Figure 2-2: Subwatersheds

Figure 2-3: Hydrologic Soil Group

Figure 2-4: Biodiversity & Lakes of Biological Significance

Figure 2-5: Central Region Regionally Significant Ecological Areas

Figure 2-6: Metro Conservation Corridors

Figure 2-7: Native Plant Communities

Figure 2-8: Existing Land Use (2010)

Figure 2-9: Planned Land Use

Figure 2-10: Surface and Groundwater Appropriations

Figure 2-11: Surface Waters and Monitoring

Figure 2-12: County Ditches

Figure 2-13: National Wetland Inventory

Figure 2-14: DNR Public Waters/Wetlands

Figure 2-15: FEMA Floodplain

Figure 3-1: Watershed Restoration and Protection Strategy (WRAPS) Rivers/Streams and Waterbodies

GIS DATA SOURCES

Active Water Appropriation Permits	MNDNR Permitting and Reporting System
Aerial Imagery	USDA National Agriculture Imagery Program (NAIP) 2015
Basemap	ESRI
Central Region Regionally Significant Ecological Areas	MDNR
County Ditches	URRWMO
Existing Land Use	Metropolitan Council, Generalized Land Use 2010
Flood Zone Designations	FEMA (Anoka Co: 27003C 2015/12/15; Isanti Co: 27059C 2006/04/12; Sherburne Co: 27141C 2011/11/16)
Hydrologic Soil Groups	USDA-NRCS SSURGO Soils Database
Metro Conservation Corridors	MNDNR
Monitoring Locations	Annual Reports for the URRWMO
Municipal Boundaries	US Census (Topologically Integrated Geographic Encoding and Referencing, TIGER)
National Wetland Inventory	MNDNR
Native Plant Communities	MNDNR
Planned Land Use	Metropolitan Council, Regional Planned Land Use
Public Waters and Wetlands	MNDNR
Regionally Significant Ecological Areas	MNDNR
Roads	US Census (Topologically Integrated Geographic Encoding and Referencing, TIGER)
Site of Biodiversity Significance	Minnesota Biological Survey
Streams/Rivers	USGS National Hydrography Dataset (NHD)
Upper Rum River Boundary	MN Board of Water and Soil Resources (BWSR)
Waterbodies	USGS National Hydrography Dataset (NHD)
Watersheds (HUC 8 and 12)	USGS National Hydrography Dataset (NHD)

APPENDIX A

URRWMO Joint Powers Agreement

APPENDIX B

URRWMO Planning Communication Log

APPENDIX C

Tropic State Index Graphs and Water Quality Trends

APPENDIX D

URRWMO Standards, Regulations, and Operations

APPENDIX E

Annual Activity Report to the URRWMO

APPENDIX F

URRWMO Guidance Documents Adopted by Reference

APPENDIX G

URRWMO Project Prioritization