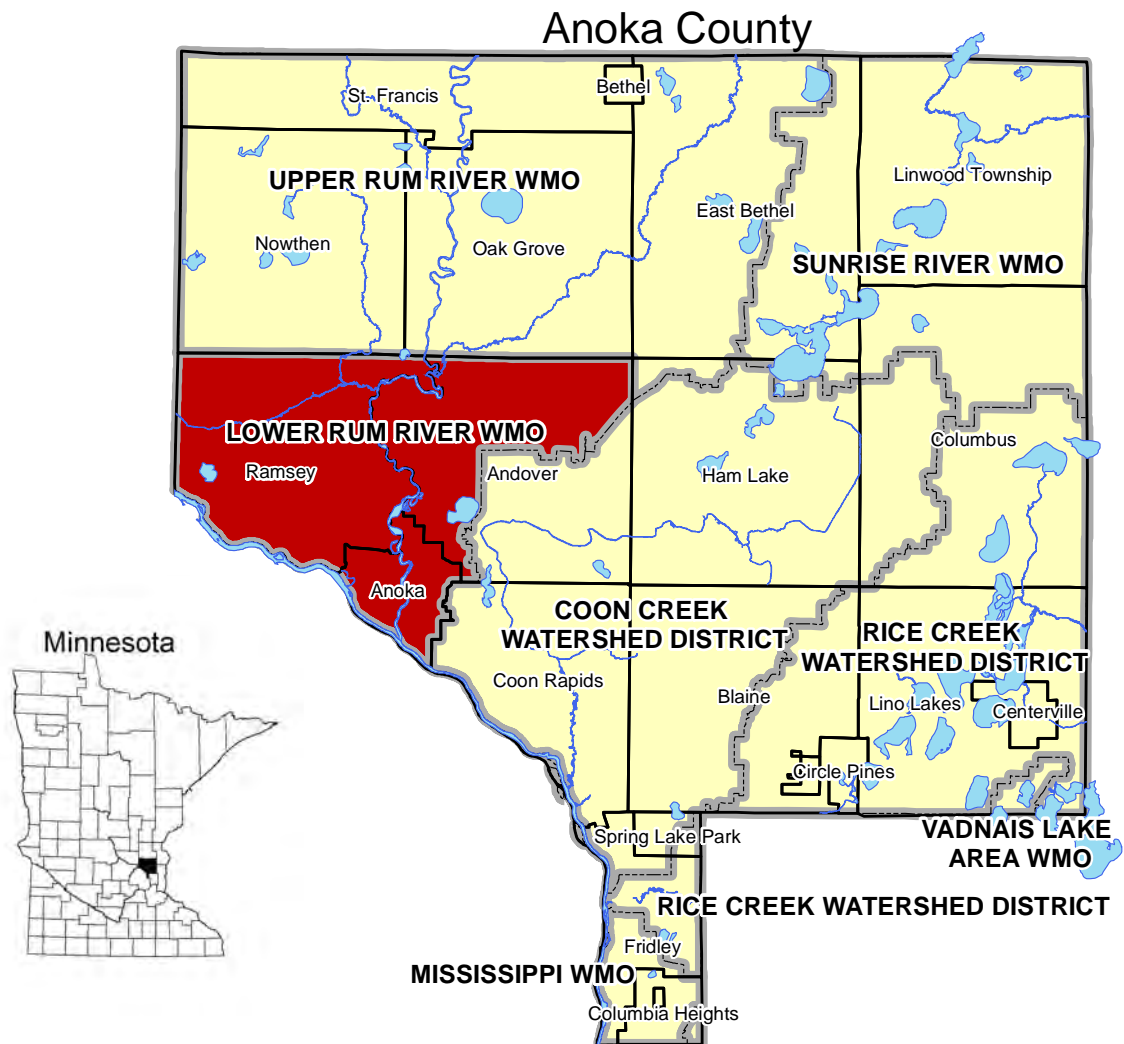


2016 Annual Report

Lower Rum River

Watershed Management Organization

Andover – Anoka – Ramsey



April 26, 2017

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Appendix A: 2016 Financial Report

Appendix B: Implementation of Watershed Management Plan Summary

Appendix C: Newsletter Articles

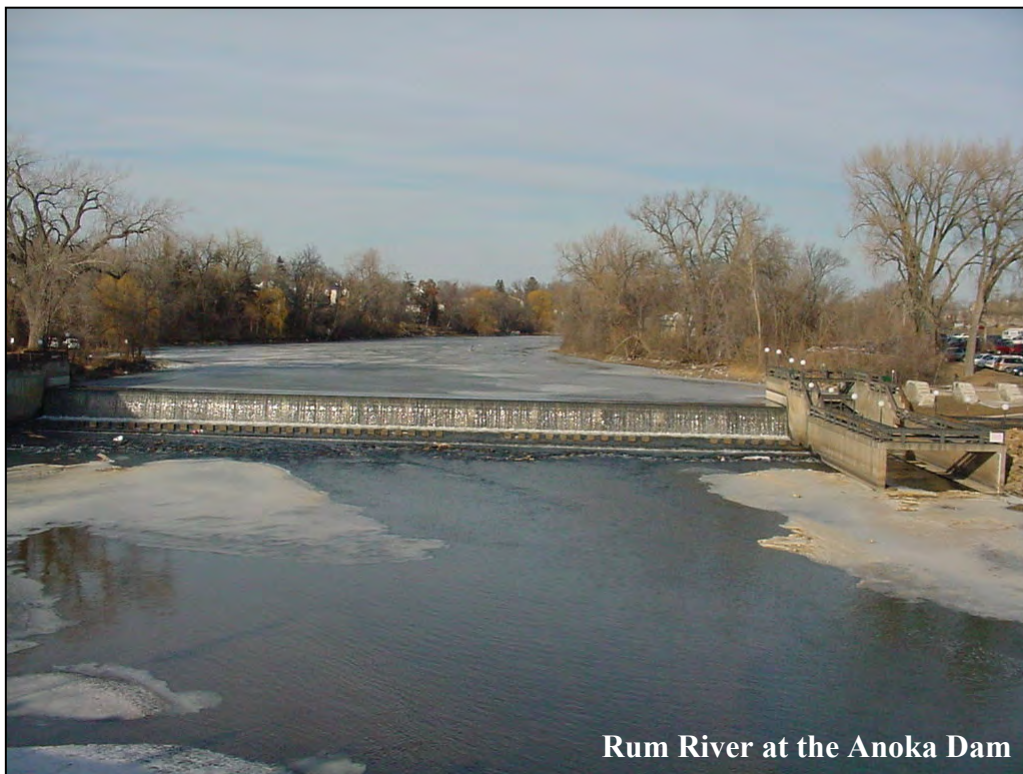
Appendix D: 2016 Work Results

Lower Rum River Watershed Management Organization
2015 First Avenue
Anoka, MN 55303
www.LRRWMO.org

I. Introduction

This report has been prepared to meet the annual watershed management organization reporting requirements of Minnesota Rules 8410.0150. The report is intended to fulfill 2016 reporting requirements.

The Lower Rum River Watershed Management Organization (LRRWMO) is a joint powers organization under Minnesota Statutes, Section 471.59. It is comprised of the cities of Anoka and Ramsey, and portions of Andover. Board members are appointed by the member cities. The organization's direction is laid out in its watershed management plan and the member municipalities' local water plans. The LRRWMO meets every month on the third Thursday at 8:30 am at the Anoka City Hall.



II. Activity Report

a. Current Board Members

CITY OF ANDOVER

Todd Haas (Chair)
1685 Crosstown Blvd NW
Andover, MN 55034
763.755.5100 763.421.9247
t.haas@andovermn.gov cm

Mike Knight (Alternate)
4660 175th Ave NW
Andover, MN 55304

.knight@andovermn.gov

CITY OF ANOKA

Carl Anderson (Treasurer)
2015 1st Ave N 2015
Anoka, MN 55303
763.576.2781 763.421.5522
carl.anderson.eng@comcast.net

Jeff Weaver (Alternate)
1st Ave N
Anoka, MN 55303

angler55303@yahoo.com

CITY OF RAMSEY

Mark Kuzma (Vice Chair)
7550 Sunwood Dr NW
Ramsey, MN 55303
763.576.4366 763.427.1410
mkuzma@ci.ramsey.mn.us

Chris Riley (Alternate)
7550 Sunwood Dr NW
Ramsey, MN 55303

criley@ci.ramsey.mn.us



b. Day to Day Contact

The day to day contact person for the LRRWMO who can answer questions about the organization is:

Todd Haas, Chair
 1685 Crosstown Blvd NW Andover, MN 55034
 phone 763.755.5100 email t.haas@andovermn.gov

c. Employees and Consultants

The LRRWMO does not employ staff, but does utilize consulting services. A description of contracted services is listed below:

Consultant/Partner	Contact	Work Description
Anoka Conservation District	Jamie Schurbon Water Resource Specialist 1318 McKay Dr NW, #300 Ham Lake, MN 55304 763-434-2030 ext. 12 jamie.schurbon@anokaswcd.org	<ul style="list-style-type: none"> • Water quality and hydrological monitoring, and special studies. • Website maintenance. • Administer the WMO's cost share grant program. • Public outreach. • Assistance preparing annual reports to BWSR. • Assistance reviewing local water plans.
Barr Engineering	Bob Obermeyer Senior Water Resources Engineer 4700 West 77 th St Minneapolis, MN 55435-4803 952-832-2857 bobermeyer@barr.com	<ul style="list-style-type: none"> • Permit reviews. • Technical and engineering guidance. • Assistance reviewing local water plans.
City of Anoka Finance Department	Lori Yager, Finance Director 2015 First Ave North Anoka, MN 55303-2270 763-576-2771 lyager@ci.anoka.mn.us	<ul style="list-style-type: none"> • Deputy Treasurer.
Kennedy & Graven	470 Pillsbury Center Minneapolis, MN 55402 612-337-9215	<ul style="list-style-type: none"> • Legal services.
Timesaver Off Site Secretarial Service	Carla Wirth 28601 Hub Dr Madison Lake, MN 56063 612-251-8999 Timesaver02@aol.com	<ul style="list-style-type: none"> • Administrative secretary. • Recording secretary for meetings.

d. Solicitations for Services

Minnesota Statutes 103B.227 require watershed management organizations to solicit bids for professional services at least once every two years. Most recently, in late 2016 the WMO solicited proposals for professional engineering services. Only one proposal was received, from Barr Engineering. The LRRWMO favorably viewed this proposal and Barr's past performance for the LRRWMO, and selected this firm.

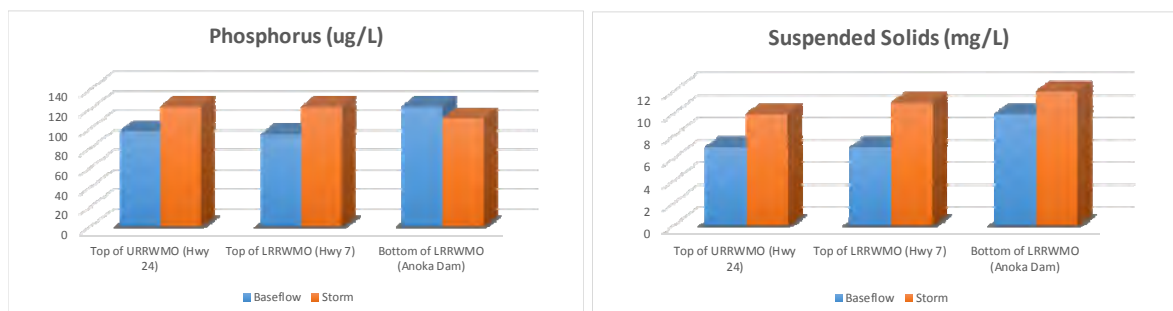
e. Water Quality Trends

The LRRWMO has a long term water quality monitoring program that includes most larger stream and recreational lakes in the watershed. Many waterbodies are monitored every 2-3 years. An important part of evaluating implementation of the watershed management plan is looking at water quality trends. No waterbodies have been noted with statistically significant trends, but it is important to note changes in the Rum River.

While a long term statistical trend for the Rum River has not been found in the LRRWMO's analysis for its reach of the river, there is a general observation of long term water quality improvement for the entire river. An analysis for the Rum River WRAP project, which extends beyond the LRRWMO, found phosphorus concentrations have decreased in the river over time.

The LRRWMO also takes special interest in how the Rum River's water quality changes longitudinally, particularly within its jurisdictional boundary. The Rum River is monitored most years near where it enters and exits the LRRWMO. The figure below provides data for a phosphorus and suspended solids and **Appendix D** provides detailed results for many additional parameters. Phosphorus and suspended solids increase modestly within the LRRWMO. This is encouraging, because this reach includes many developed and developing areas. The LRRWMO will continue efforts to improve water quality in its jurisdiction.

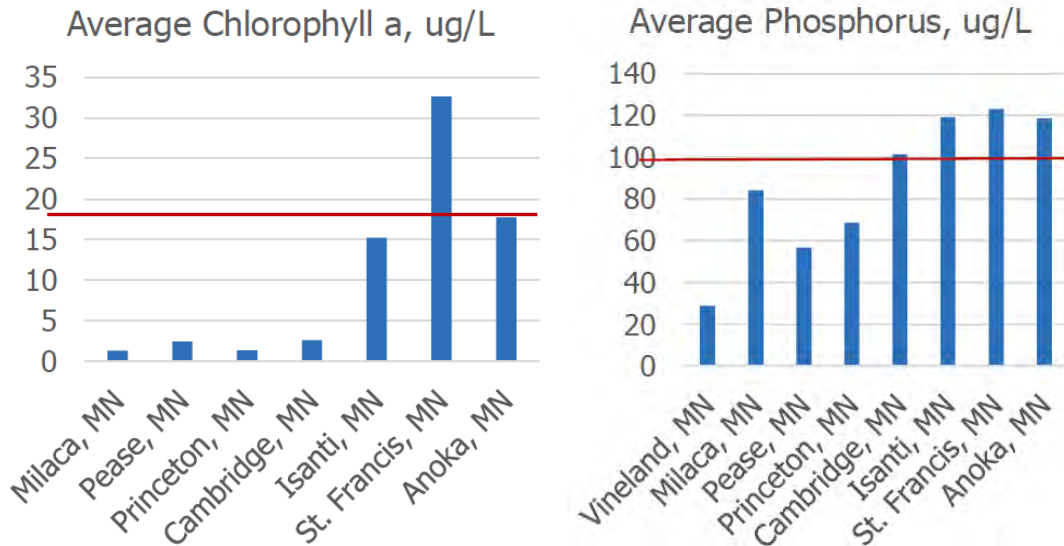
LRRWMO Longitudinal Rum River Water Quality Changes. Orange diamonds are historical data from previous years and black circles are 2015 readings. Box plots show the median (middle line), 25th and 75th percentile (ends of box), and 10th and 90th percentiles (floating outer lines).



Water quality of the river does change in other areas outside the LRRWMO. Water monitoring farther upstream has been sporadic, most recently occurring in 2013-2014. There

are water quality declines that generally occur within the Isanti County reaches of the river, which has the most agriculture and impaired waterbodies draining to the lake (see figure below).

Whole Watershed Longitudinal Rum River Water Quality Changes (graphic from RESPEC for the Rum River WRAP)



In addition to statistical trend tests, it is often useful to examine graphs of water quality data to look for apparent trends that are not yet statistically significant and may or may not be real. These observations, combined with other knowledge about the waterbody (new invasive species, land use changes, etc) can guide management. For this purpose **Appendix D** presents a variety of detailed water monitoring results.

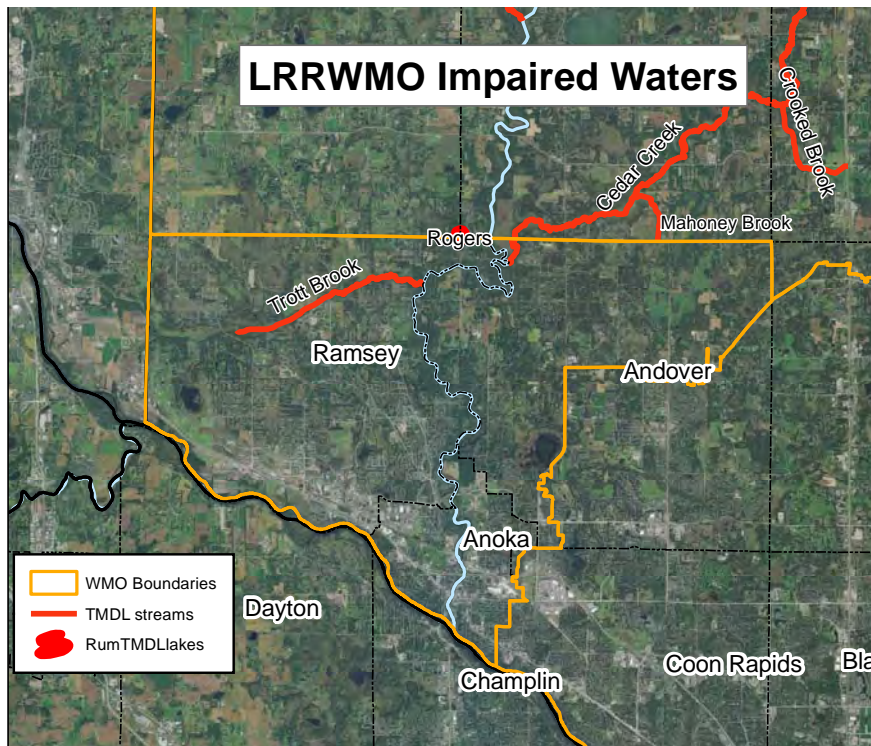
Additional water quality data is available online. Annual watershed monitoring reports are available on the LRRWMO website (www.LRRWMO.org). All water quality data collected by the LRRWMO is on the MN Pollution Control Agency’s EQUIS database, which is accessible through their website.

f. Impaired Waters

Two impaired waters are of relevance to the LRRWMO: Trott Brook and Mahoney Brook. None has an apparent water quality trend. A total maximum daily load (TMDL) study was completed for Trott Brook in 2016 and is expected to be formally approved in 2017. A TMDL was not done for Mahoney Brook at this time.

Impaired Waterbodies

(note: Rogers Lake was removed from the impaired waters list after production of this map in 2016.)



Trott Brook, a tributary to the Rum River, was added to the State impaired waters list in 2015 for an impaired biota (fish and macroinvertebrates) and low dissolved oxygen. A TMDL was done only for the oxygen impairment in 2016. Low oxygen is the likely cause of the biotic impairments. Causes of low oxygen include nutrients (phosphorus), decomposing organic matter (sediment oxygen demand and decomposition in surrounding ditched wetlands) and others. Low oxygen occurs under all flows (low to high), indicating the problem is not runoff-driven. Overall, a 50% reduction of oxygen demand is needed to meet water quality standards. Management strategies may include wetland restorations and nutrient reduction BMPs.

Mahoney Brook was added to the State impaired waters list in 2015 for an impaired biota (fish). The impaired stream reach is not in the LRRWMO, but begins at the LRRWMO boundary and flows north. Presumably, a future TMDL for the impaired reach would include pollutant allocations for the upstream portions of the watershed in the LRRWMO. Draft analysis for the Rum River WRAP project have concluded that low dissolved oxygen, excess phosphorus and habitat are all stressors to the biological community.

Rogers Lake was on the State impaired waters list until 2016. In 2016 it was determined that this waterbody met the definition of a wetland, where lake water quality standards were not appropriate. Rogers lake is half in the LRRWMO and half in the URRWMO. It is small (~42 acres), shallow (< 4ft) and has no public access. Illegal herbicide applications at the lake may have played a role in switching the lake back and forth between turbid open water and clean water with dense macrophytes. The City of Ramsey, where most shoreline homes are located, has taken a lead role in educating landowners about lakes management.

g. Evaluation of Watershed Plan Implementation

The current LRRWMO Watershed Management Plan was approved by the Minnesota Board of Water and Soil Resources (BWSR) in late 2011 and adopted by the LRRWMO on January 19, 2012. Implementation began that same year. The plan contains a detailed schedule of tasks that the LRRWMO should accomplish each year in order to realize its goals.

Appendix B is a table that shows tasks planned for each year in the watershed management plan, as well as responsible parties. It details which tasks were planned and completed.

The LRRWMO deviated from its work plan in 2016 in the following ways:

- Change Removed Trott Brook water quality and hydrology monitoring.
Reason The LRRWMO Watershed Plan’s monitoring schedule states the goal of monitoring Trott Brook is to determine its impairment status and calculate a TMDL. Trott Brook was extensively monitored in 2013-14 as part of the Rum River WRAP and that data is being used for TMDL calculation. MPCA has informed us that additional data would not be used for the TMDL because it is already underway.

- Change Removed Rogers Lake water quality monitoring.
Reason Rogers Lake was monitored by the LRRWMO in the early and mid-2000’s. It was found to be impaired, then removed from the impaired waters list because it does not meet the definition of a lake. The LRRWMO decided to discontinue monitoring of this lake because it has no public access and no outlet (to impact downstream waters).

- Change Added Sunfish Lake water quality monitoring.
Reason Sunfish Lake was being monitored by the Anoka Ramsey Community College, but the college discontinued this work and had not been submitting their data to state databases. The waterbody has a growing importance in the community with the development of a shoreline park and homes.

- Change Did not monitor groundwater levels or trends.
Reason Groundwater monitoring is best done at a regional level. The MN DNR has taken the lead.

h. Status of Ordinances and Local Plan Implementation

All LRRWMO member cities local water plans were required to be updated for consistency with the LRRWMO Watershed Management Plan within two years of WMO plan adoption in January 2012. The status of each is summarized in the table below.

To track member cities’ progress on local plan implementation, the LRRWMO requires a brief annual report from each city and provides a template for this report. In addition to serving as a reporting tool, we hope that the template serves as a “to do” list for our cities. These reports are available upon request, and are summarized in the table below.

Status of city local water plans and some recent accomplishments toward plan implementation.

City of Andover	
Submitted 2016 annual report to LRRWMO?	Yes
Ordinances and Local Water Plan Status	<p>Andover’s Local Water Plan was approved by the LRRWMO May 21, 2015. They had been granted an extension by the LRRWMO to their local water plan deadline because their city is in both the LRRWMO and Coon Creek Watershed District (CCWD), which recently completed updating its watershed plan. The extension allowed the city to perform updates needed for both watershed organizations simultaneously.</p> <p>The city has all of the ordinances required by the LRRWMO.</p>
Some Recent Implementation Accomplishments	<ul style="list-style-type: none"> • Street sweeping completed annually. • Water control structures and stormwater treatment basins are inspected ever five years and maintenance action is taken as needed. • Illicit discharge detection and elimination program. • Purchased open spaces called Martin’s Meadows, Maple View, Dalske and Northwoods Preserve. Efforts underway include prairie establishment, buckthorn control, and scenic overlook site stabilization. • In 2014 reached 3,300 households repeatedly with multiple public education efforts including newsletter articles, brochures available at city hall, website posting, local television announcements about storm water quality, and similar information at the North Suburban Home Show. Topics have included groundwater protection, adopt-a-park, picking up pet waste, wetland protection BMPs, controlling invasive species, water conservation, storm water quality and yard waste management. • During a 2016 street reconstruction additional stormwater treatment was added, including stabilizing a ditch and adding catch basin sumps. • Andover is actively inspecting its outfalls into the Rum River and other public waters. Records are maintained in city GIS software. • Periodic inspections of active developments to ensure adequate erosion and sediment controls are in place. • Habitat improvement projects such as Kelsey Round Lake Park are ongoing and include 15 acres of buckthorn control and establishing a 35 acre native prairie.
City of Anoka	
Submitted 2016 annual report to LRRWMO?	Yes
Ordinances and Local Water Plan Status	<p>The City of Anoka’s local water plan was approved by the LRRWMO May 21, 2015.</p> <p>The city has all of the ordinances required by the LRRWMO, except erosion and sediment control and wetlands standards. Both of these ordinances are in draft format and likely to be approved in 2016-2017.</p>
Some Recent Implementation Accomplishments	<ul style="list-style-type: none"> • Street sweeping. • Inspected water level controls and basins every 5 years. • Illicit discharge detection and elimination program. • Planted 600+ seedlings along the Mississippi River at Kings Island. • Constructed 45 catch basins on city project. • Installed a rain garden on a city project.


	<ul style="list-style-type: none"> • Removed invasive species along the Rum River. • Educational outreach including 2 newsletter article, 1 brochure, 2 website postings, and Arbor Day tree program and use of social media. Topics included controlling invasive species, water conservation, hazardous waste disposal, and yard waste management. The audience was 7,000 residents. • Installation of stormwater treatment associated with stree reconstruction projects annually. • Anoka manages stormwater activities to ensure no net increase in volume, rate sediment or nutrient loading. • Annual outfall inspections and repair as needed. • Planting boulevard trees. • River corridor reforestation and bank stabilization with native seedlings. • Gathering information for establishing a no wake condition to reduce bank erosion.
City of Ramsey	
Submitted 2016 annual report to LRRWMO?	Yes
Local Water Plan Status	The City of Ramsey’s local water plan was approved by the LRRWMO September 17, 2015. Ramsey has all of the ordinances required by the LRRWMO.
Some Recent Implementation Accomplishments	<ul style="list-style-type: none"> • Annual street sweeping. • Implementing a five year plan for inspecting stormwater ponds. • Illicit discharge detection and elimination program. • Reached 9,500 households in 2016 with 4 newsletter articles and posted information on the county’s “Know the Flow” website. Topics of education efforts included wetland protection, controlling invasive species, water conservation, hazardous waste disposal, yard waste management, and pet waste disposal.

i. Public Outreach

The LRRWMO and its member cities do regular public outreach and education projects. These include:

- **WMO website**, including general information about the organization, the watershed management plan, meeting agendas and minutes, water monitoring results, profiles of WMO projects, access to mapping and data access tools, and others.

Lower Rum River Watershed Management Organization



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Welcome

The Lower Rum River Watershed Management Organization (LRRWMO) is a joint powers special purpose unit of government including the cities of Ramsey, Anoka, and portions of Coon Rapids and Andover. The WMO Board is made up of representatives from each of these cities. This organization seeks to protect and improve lakes, rivers, streams, groundwater, and other water resources across municipal boundaries. These goals are pursued through

- * water quality and flow monitoring
- * investigative studies of problems
- * coordinating improvement projects
- * education campaigns
- * a permitting process
- * others at the WMO's discretion

All of the WMO's activities are guided by their Watershed Management Plan.




Resources of particular importance to the LRRWMO include the Rum River, Trott Brook, numerous ditches that drain to the Rum River, Round Lake, Lake Itasca, and numerous wetlands. The Mississippi River is also notable, as it borders the southern edge of the WMO's jurisdictional area. Because little of the land area in the LRRWMO drains directly to the Mississippi, but rather to the Rum River, the Mississippi receives protection from the WMO primarily through management of the Rum.

Most projects that may directly or indirectly affect water resources are required to have a permit from the LRRWMO. If you are considering a construction project or projects in or around wetlands, streams, rivers, or lakes, you should further research permit requirements on this website, or contact a LRRWMO representative: 763-767-5131, 2015 First Avenue, Anoka, MN 55303

Meetings: 3rd Thursday 8:30am at the Anoka City Hall

Administrative Support: Carla Wirth, TimeSaver Off Site Secretarial, Inc 2015 First Ave, Anoka, MN 55303, 612-251-8999



- **Web videos** – To bolster the content of the website the LRRWMO creates web videos. They include:
 - 2012 About the LRRWMO
 - 2013-14 Water conservation
 - 2014-15 Wetland regulation, correcting riverbank erosion
- **Newsletter articles** – Articles are prepared by the LRRWMO and printed in member city newsletters. Copies of several of these articles are provided in **Appendix C**.
- **Public officials meetings** – Approximately every 5 years the LRRWMO hosts a dinner meeting for local officials. The purpose is to educate elected officials about the role of the WMO, discuss upcoming projects, and consider the overall direction of the WMO. These meetings were last held in 2008, 2013 and 2017.
- **Bi-annual river float with city officials and staff** – Every other year the WMO Board, along with city staff and officials, float the Rum or Mississippi River. The trip is an opportunity to inspect for violations or problems, as well as share an appreciation of the river with decision-makers. A float was last done in fall 2016.



LRRWMO and city officials toured the Mississippi River in September 2016.

- **A wetland education series** – From 2013 to 2020 the LRRWMO is conducting a six-part education program about wetlands. The purpose is to improve public understanding of wetland values and rules. It includes on-line resources, property owner packets, newsletters, signage near public wetlands, elected officials workshops, and local events exhibits.

In 2013 the LRRWMO produced a map about wetland regulation and mailed it to over 2,000 landowners who own land with or adjacent to wetlands. Each brochure included a custom neighborhood level map.

We also created a one-stop shop of wetland regulatory information website in 2013. This was done on the Anoka Conservation District's website so it could serve parts of our communities that are not in the LRRWMO, as well as surrounding areas.

In 2014 two newsletter articles and one web video were produced.

In 2015 30 wetland interpretive signs of four different designs were produced. In early 2016 the member cities installed the signs along trails and other prominent areas near wetlands or shoreline.

j. Permits, Variances, and Enforcement Actions

Permit Name	Permit #	City	Summary
Northfork Alpine Addition	2015-19	Ramsey	9.6 acre, 4 lot single-family residential subdivision. Two stormwater basins to be constructed to provide volume retention, rate control and water quality management. Structures to have low floors constructed a minimum of 2 feet above the calculated flood elevation of the basins. Project was approved.
Norlex Turf Stockpile	2015-21	Andover	Permit submittal for stockpiling 3,500 cubic yards of topsoil material in an area east of Hansen Boulevard and south of proposed 167 th Avenue. Erosion control is to be installed at the limits of the stockpile area. Project was approved.
Carl Bonnell Fields Site Grading	2016-01	Anoka	Site grading of a 4.8 acre park improvement project located in the southeast quadrant of Jefferson Street and 6 th Avenue in Anoka. Project was approved.
Riverplace Counseling Center	2016-02	Anoka	Construction of a 10,000 square foot counseling center along with 10 townhome units. Two stormwater basins to be constructed for volume retention, rate control and water quality management. Project was approved.
Riverdale Extension Improvements and Mississippi River Trail	2016-04	Ramsey	Construction of approximately 2,100 linear feet of Riverdale Drive between Traprock Street and Ramsey Boulevard and 2.2 miles of trail located south of T.H. 10 between Riverdale Drive and Adams Street S.W. Riverdale Pond is to be expanded and an infiltration basin to be located in the area of Riverdale Drive and Ramsey Boulevard will provide stormwater management. Project was approved.
Brookfield 7th Addition	2016-06	Ramsey	10.4 acres, 27-lot single-family residential addition located west of Nowthen Boulevard, north of 166 th Avenue and southeast of Trott Brook. Two infiltration basins will be constructed and an existing basin located in a previous addition to provide stormwater management. Project was approved.
Timber Trails Park Reconstruction	2016-07	Andover	Improvements of a 5.6 acre park located at 17761 Aztec Street. A volume retention of 3,050 cubic feet is required to comply with the LRRWMO requirements. The project was approved contingent upon a stormwater management plan complying with the LRRWMO stormwater requirements is provided.

The LRRWMO’s 2016 permit activity is summarized in the table below.

Continued on next page...

Permit Name	Permit #	City	Summary
The Station	2016-08	Ramsey	The project is a 77-lot, multi-family residential subdivision located east of Rhinestone Street, west of Peridot Street between East Ramsey Parkway and 146 th Avenue. Because the site is located within a City Drinking Water Supply Management Area, the City of Ramsey will not permit volume retention through infiltration. Ramsey has indicated that the required 11,253 cubic feet of volume retention would be provided on a future City project. Project was approved.
Greenhaven Parkway Site Improvements	2016-09	Anoka	Construction of a 61,000 square foot building addition located at 1 Vista Way. Two stormwater basins will provide required volume retention, rate control and water quality management. Project was approved.
Business Park 95 Regional Stormwater Pond Outlet	2016-10	Ramsey	Construction of a storm sewer outlet for an existing landlocked basin in the Business Park 95 area of Ramsey. Project was approved.
Green Valley Green House Building Addition	2016-11	Ramsey	Construction of a 102,000 square foot building addition. A stormwater basin to be constructed will provide the required rate control and water quality management. Since less than 50% of the project area will be disturbed, the LRRWMO volume retention requirements do not apply. Project was approved.
Anderson Dahlen Building Addition	2016-12	Ramsey	Construction of a 93,000 square foot building addition for Anderson Dahlen located at Ebony Street and 143 rd Avenue. The outlet of an existing regional stormwater basin is to be modified to provide the required rate control and water quality management. Since less than 50% of the project area will be disturbed, the LRRWMO volume retention requirements do not apply. Project was approved.
COR Three North Commons	2016-14	Ramsey	13-lot, single family residential development located in the COR. Because the site is located within a city Drinking Water Supply Management Area, the City of Ramsey will not permit volume retention through infiltration. Ramsey has indicated the required 3,557 cubic feet of volume retention would be provided on a future City project. An existing regional basin will provide rate control and water quality management. Project was approved.

Continued on next page...

Permit Name	Permit #	City	Summary
Central Park Parking Lot Improvements	2016-15	Ramsey	Construction of a drive and 70 stall parking lot within Central Park located at Armstrong Boulevard and 161 st Avenue. An existing stormwater basin is to be expanded to provide stormwater management for the 2.1 acres of new and existing impervious area. Project was approved.
North Street Stormwater Management Study	2016-20	Anoka	Review stormwater management plan for the area along North Street from 7 th Avenue to approximately 470 feet east of 11 th Avenue, and along 11 th Avenue from North Street to Grant Street for compliance with the LRRWMO stormwater management requirements. The study complies with LRRWMO criteria.

k. 2017 Work Plan

Planned 2017 activities are listed in the table below. Most routine administrative tasks are excluded.

Task	Purpose	Description	Locations or Action	Cost
Lake Level Monitoring	To understand lake hydrology, including the impact of climate or other water budget changes. These data are useful for regulatory, building/development, and lake management decisions.	Weekly water level monitoring in lakes by volunteers. All are available on the Minnesota DNR website using the "LakeFinder" feature (www.dnr.mn.us.state/lakefind/index.html).	Itasca Lake Round Lake Sunfish Lake Rogers Lake	\$1,200
Lake Water Quality Monitoring	To detect water quality trends and diagnose the cause of changes.	May through September lake water quality monitoring conducted every two weeks and including total phosphorus, chlorophyll-a and transparency.	Sunfish Lake	\$1,750
Stream Water Quality Monitoring	To detect water quality trends and diagnose the cause of changes. Rum River monitoring is done where the river enters and leaves the WMO.	Eight water samples are taken throughout the open water season. Parameters tested include total phosphorus, total suspended solids, turbidity, conductivity, dissolved oxygen and others. Hydrology data is provided by the USGS station near St. Francis for the Rum River.	Rum River at Anoka Dam Rum River at CR7	\$2,240
Rum River Invertebrate Biomonitoring	To assess overall river health. To provide a hands-on educational experience to high school students.	Facilitated by the ACD, science classes from Anoka High School assess aquatic insect populations. Students will collect macroinvertebrate samples, identify them, and calculate indices of river health. Anoka Conservation District staff provide instruction, oversight, and write a final report. This monitoring has been conducted for more than 10 years.	Rum River at Bunker Lake Blvd	\$825
Reference Wetland Hydrology Monitoring	The ACD maintains a network of 18 reference wetlands throughout the county. These data aid in understanding of water conditions in wetlands, surficial water table changes, and trends. It is useful for regulatory determinations (for example, is a dry area actually a wetland, or are all wetlands dry right now?) and resolving water level disputes. Each reference wetland has been monitored for more than 10 years, providing a long term record.	Install and maintain a WL40 electronic water level monitoring device at the edge of reference wetlands. These devices measure water levels every four hours.	AEC Ref Wtld Rum Central Ref Wtld Lake Itasca Trails Ref Wtld	\$1,950

Task	Purpose	Description	Locations or Action	Cost
LRRWMO Website	To increase awareness of the URRWMO and its programs. The website also provides tools and information that helps users better understand water resources issues in the area. The website serves as the URRWMO's alternative to a state-mandated newsletter.	Maintain and update the WMO website with current information about the organization, and meeting minutes and agendas. Web videos developed by the LRRWMO are also featured on the website.	http://www.lrrwmo.org	\$745
Newsletter articles	To increase public awareness of water resources and the LRRWMO.	In 2016 two newsletter articles will be produced and printed in city newsletters. The topic of at least one of these articles will be the Rum River WRAP.	Watershed-wide	\$1,120
Prepare Annual Report to State Auditor	To provide transparency and accountability of organization operations.	An annual financial report and online reporting of WMO finances though the State Auditor's SAFES website is completed by the WMO's Deputy Treasurer.	Watershed-wide	\$0
Prepare Annual Report to BWSR	To provide transparency and accountability of organization operations.	Produce an annual report of WMO activities and finances that satisfies Minnesota Rules 8410.0150.	Watershed-wide	\$850
Permitting Program	To ensure water quality and hydrology are properly taken into consideration during construction projects.	The LRRWMO permitting program targets land disturbance activities.	Watershed-wide	variable
Cost Share Grants for Water Quality Improvement	To improve water quality in lakes, rivers, and streams.	These grants offer up to 70% cost sharing of the materials needed for a water quality improvement project. Typical projects include erosion correction, lakeshore restoration, and rain gardens. The Anoka Conservation District provides administration.	Offer grants	\$1,000
Rum River Revetments	To stabilize mild or moderately eroding Rum Riverbanks for water quality improvement, habitat enhancement and protection of property.	The LRRWMO contributes to a riverbank stabilization program led by the Anoka Conservation District. 4-10 projects per year are anticipated starting in 2016 and extending 3 years. Partial funding is from the MN DNR Conservation Partners Legacy Grant program.	Multiple \$	0 (\$1,000 in 2016)
Stormwater Retrofits	To improve water quality by better treating stormwater before discharge to the local rivers.	The LRRWMO has secured a grant from the Metropolitan Council for stormwater retrofits. 3 rain gardens are anticipated for construction in 2017. The ACD provides day-to-day project leadership.	1 site in Anoka, 2 in Ramsey	\$50,577 grant \$16,874 ACD match

The LRRWMO deviated from its watershed management plan for 2017 in the following ways:

- Change Reason: Removed Trott Brook stream water quality and hydrology monitoring. The MPCA monitored this site in 2013-14 as part of a WRAP study and TMDL. The issues are understood. The City of Ramsey and others have begun implementing the TMDL.
- Change Reason: Did not monitor groundwater levels or trends. Groundwater monitoring is best done at a regional level. The MN DNR has taken the lead.
- Change Reason: Removed Rogers Lake water quality monitoring. This lake was been declared impaired, but was delisted in 2016 because it meets the definition of a wetland not a lake. This waterbody is a low priority for the LRRWMO because of its small size, limited recreation capacity, lack of public access and because it has no outlets and therefore its water quality does not threaten high priority waterbodies downstream.
- Change Reason: Added stormwater retrofit projects. A Metropolitan Council grant was secured for these projects that, while not specifically planned for 2017 is consistent with the LRRWMO plan's direction.

I. Anoka Dam Ownership and Assessment

One noteworthy completed work item in 2016 pertained to the Anoka Dam. The LRRWMO, working with its cities, clarified that the City of Anoka is the sole owner of the dam. Additionally, the LRRWMO paid the City of Anoka \$6,000 for an assessment of the dam. In this way the LRRWMO fulfilled obligations in their current watershed plan. Related documentation is below:

The image shows three documents side-by-side:

- Left Document:** A letter from the Lower River Watershed Management Organization (LRRWMO) to the City of Anoka, dated December 16, 2016. It discusses the ownership of the Anoka Dam and references a resolution from the City of Anoka Council.
- Middle Document:** A resolution from the City of Anoka, Minnesota, dated September 15, 2016. The resolution acknowledges that the City of Anoka is the sole owner of the Anoka Dam and approves a 2017 Permit Agreement with the LRRWMO.
- Right Document:** A check from US Bank, dated 09/20/16, for \$6,000.00. The check is payable to the City of Anoka and is signed by a representative of the LRRWMO.

III. Financial and Audit Report

a. 2016 Financial Summary

See Appendix A.

b. Fund Balances

See Appendix A.

c. Financial Audit Documentation

A 2016 financial audit has not yet been completed, but will be provided to the State once complete.

d. 2017 Budget

At its January 19, 2017 meeting the LRRWMO Board approved the 2017 budget shown below.

RESOLUTION # 2017-01

**RESOLUTION OF THE LOWER RUM RIVER WATERSHED
MANAGEMENT ORGANIZATION (LRRWMO) FOR ADOPTING
THE BUDGET FOR YEAR 2017**

BE IT RESOLVED by the Board of the Lower Rum River Watershed Management Organization of Minnesota as follows:

1. The budget for the LRRWMO the year 2017 hereby approved and adopted with appropriations for each of the various activities as follows:

REVENUE:

Assessments	
Andover	\$ 11,080
Anoka	\$ 8,920
Ramsey	\$ 20,000
	<u>\$ 40,000</u>
Permits	\$ 30,000
Grants	\$ 500
Interest earnings	\$ 100
TOTAL REVENUES	<u>\$ 70,600</u>

EXPENDITURES:

Engineering	\$ 4,000
Permit Review	\$ 26,700
Legal	\$ 4,000
Financial Services	\$ 2,400
Secretarial Services	\$ 7,300
Postage, Copying, etc.	\$ 1,500
Insurance	\$ 2,200
Web site maintenance	\$ 625
Report to BWSR - Annual Report	\$ 850
Water Quality cost share grant	\$ 1,000
Wetland education (2 city news articles)	\$ 1,120
Lake Level Monitoring	\$ 1,200
Stream Hydrology, water quality & biomonitoring	\$ 4,815
Wetland monitoring	\$ 1,950
Miscellaneous	\$ 10,000
TOTAL	<u>\$ 69,660</u>

NET INCOME \$ 940

Adopted by the Board of Commissioners of the Lower Rum River Water Management Organization of Minnesota this 19th day of January 2017.

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Appendix A: 2016 Financial Report

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LOWER RUM RIVER WATER MANAGEMENT ORGANIZATION

ANNUAL FINANCIAL REPORT

For the Year Ended January 31, 2017

Prepared by the Deputy Treasurer

Lori Yager

With assistance from Pam Richer, Finance Account Clerk

LOWER RUM RIVER WATER MANAGEMENT ORGANIZATION

Annual Financial Report

Year Ended January 31, 2017

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FINANCIAL SECTION

BASIC FINANCIAL STATEMENTS

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Statement of Revenues, Expenses, and Change in Net Position	3
Statement of Cash Flows	4
Notes to Financial Statements	5

Lower Rum River Water Management Organization Board

Appointed Officials

January 31, 2017

Todd Haas, Chair

Mark Kuzma, Vice Chair

Carl Anderson, Secretary and
Treasurer

Administrative

Carla Wirth, Time Savers
Lori Yager, City of Anoka

Administrative Secretary
Deputy Treasurer

LOWER RUM RIVER WATER MANAGEMENT ORGANIZATION
STATEMENT OF NET POSITION
JANUARY 31, 2017

Assets	
Current assets:	
Cash and investments	\$ 231,570
Accounts receivable	4,881
	4,881
Total assets	\$ 236,451
Liabilities	
Current liabilities:	
Accounts payable	\$ 4,535
Deposits	61,709
	61,709
Total current liabilities	66,244
Net Position	
Unrestricted	170,207
Total liabilities and net position	\$ 236,451

See accompanying notes to financial statements.

LOWER RUM RIVER WATER MANAGEMENT ORGANIZATION

STATEMENT OF REVENUES, EXPENSES, AND CHANGE IN NET POSITION - BUDGET AND ACTUAL YEAR ENDED JANUARY 31, 2017

	Original and Final Budget	Actual	Variance From Budget Positive (Negative)
Operating revenues:			
Assessments from participating cities	\$ 74,000	\$ 74,000	\$ -
Permits:			
Service fees	6,000	2,950	(3,050)
Engineering fees	24,000	19,939	(4,061)
Intergovernmental	500	1,425	925
Miscellaneous	-	62	62
Total operating revenues	104,500	98,376	(6,124)
Operating expenses:			
Engineering fees:			
Permits	26,700	17,457	9,243
Administrative	6,000	3,461	2,539
Legal and professional fees	6,400	2,806	3,594
Insurance	2,200	661	1,539
Secretarial services and supplies	8,600	11,631	(3,031)
Projects	28,125	12,945	15,180
Other	24,500	6,070	18,430
Total operating expenses	102,525	55,031	47,494
Operating income	1,975	43,345	41,370
Nonoperating revenues:			
Interest income	100	512	412
Change in net position	\$ 2,075	43,857	\$ 41,782
Net position at beginning of year		126,350	
Net position at end of year		\$ 170,207	

See accompanying notes to financial statements.

LOWER RUM RIVER WATER MANAGEMENT ORGANIZATION

STATEMENT OF CASH FLOWS YEAR ENDED JANUARY 31, 2017

Increase (decrease) in cash and cash investments:	
Cash flows from operating activities:	
Received from member cities	\$ 74,000
Received from customers	27,148
Payments to suppliers for goods and services	<u>(54,214)</u>
Net cash provided by operating activities	<u>46,934</u>
Cash flows from investing activities:	
Investment earnings	<u>512</u>
Net increase in cash and investments	47,446
Cash and investments at beginning of year	<u>184,124</u>
Cash and investments at end of year	<u><u>\$ 231,570</u></u>
Reconciliation of operating income to net cash provided by operating activities:	
Operating income	\$ 43,857
Changes in operating assets and liabilities:	
Accounts receivable	(33)
Due from other governments	(1,425)
Accounts payable	817
Deposits	<u>4,230</u>
Total adjustments	<u>3,589</u>
Net cash provided by operating activities	<u><u>\$ 47,446</u></u>

See accompanying notes to financial statements.

LOWER RUM RIVER WATER MANAGEMENT ORGANIZATION

NOTES TO FINANCIAL STATEMENTS

YEAR ENDED JANUARY 31, 2017

1. NATURE OF THE ORGANIZATION

Lower Rum River Water Management Organization (the "Organization") is a watershed management organization that has been created to fulfill the requirements and purposes of Minnesota Statutes 103B.201 to 103B.251. The purpose of such an organization as defined by Minnesota Statute 103B.201 is to "Protect, preserve and use natural surface and ground water storage and retention systems in order to (a) reduce to the greatest practical extent the public capital expenditures necessary to control excessive volumes and rate of runoff, (b) protect and improve surface and ground water quality, (c) prevent flooding and erosion from surface flows, (d) promote ground water recharge, (e) protect and enhance fish and wildlife habitat and water recreational facilities, and (f) secure the other benefits associated with the proper management of surface and ground water."

The cities of Andover, Anoka, Coon Rapids, and Ramsey formed the Organization by executing a joint powers agreement in accordance with Minnesota Statute 103B.211, dated July 15, 1985. In July 2014 the joint powers agreement was amended removing Coon Rapids. Coon Rapids joined the Coon Creek Watershed District.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The accompanying summary of significant accounting policies is presented to assist the reader in understanding the Organization's financial statements. The financial statements are representations of the Organization's Board, which is responsible for the integrity and objectivity of the financial statements. The following is a summary of the more significant accounting policies:

A. Measurement Focus, Basis of Accounting, and Financial Statement Presentation

The financial statements are reported using the "economic resources" measurement focus and the accrual basis of accounting. Revenues are recorded when earned, and expenses are recorded when a liability is incurred, regardless of the timing of the related cash flows. Grants and similar items are recognized as revenue as soon as all eligibility requirements imposed by the provider have been met.

Operating revenues and expenses generally result from providing services and producing and delivering goods in connection with the principal ongoing operations. The principal operating revenue of the Organization is charges to customers for permits. Operating expenses for the Organization include engineering services, administrative expenses, and related river, stream, and wetland monitoring, conservation, and compliance expenses. All revenues and expenses not meeting this definition are reported as nonoperating revenues and expenses.

LOWER RUM RIVER WATER MANAGEMENT ORGANIZATION

NOTES TO FINANCIAL STATEMENTS

YEAR ENDED JANUARY 31, 2017

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

B. Cash and Cash Equivalents

Cash balances are invested to the maximum extent possible. For the purposes of the statement of cash flows, the Organization considers all highly liquid investments with a maturity of three months or less when purchased to be “cash equivalents.”

C. Investments

Investments are reported at fair value.

D. Income Taxes

As a joint powers watershed management organization, the Organization is exempt from both federal and Minnesota income taxes. Accordingly, no provision for income taxes is included in these financial statements.

E. Receivables and Payables

Receivables represent outstanding reimbursements from permit holders for work already completed and paid for by the Organization and grants for a activity completed but not received as of the end of current fiscal year. Payables are recorded for services completed for the Organization but unpaid as of the end of the current fiscal year. Deposits represent amounts owed to permit holders at year-end for services yet to be done.

F. Budgetary Information

Budgetary information is derived from the annual operating budget and is presented using the accrual basis of accounting, which is the same basis of accounting the Organization uses in preparation of its financial statements. The budgeted amounts presented include any amendments made.

G. Use of Estimates

The preparation of financial statements in accordance with accounting principles generally accepted in the United States requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenditures during the reporting period. Actual results could differ from those estimates.

LOWER RUM RIVER WATER MANAGEMENT ORGANIZATION

NOTES TO FINANCIAL STATEMENTS

YEAR ENDED JANUARY 31, 2017

H. Subsequent Events

Subsequent events have been evaluated through April 19, 2017, which is the date the financial statements were available to be issued.

3. CASH AND INVESTMENTS

The Organization follows state statute guidelines for investment purposes. The state statute allows for investments in United States securities, state and local government general obligation securities rated "A" or better by a national bond rating agency, state and local government revenue securities rated "AA" or better by a national bond rating agency, commercial paper rated in the highest quality category by two national rating agencies and that mature in 270 days or less, certificates of deposit, bankers acceptance, and repurchase agreements.

The Organization is invested in the Minnesota Municipal Money Market Fund (4M Fund). The 4M Fund is an external investment pool not registered with the Securities and Exchange Commission (SEC) that follows the same regulatory rules of the SEC under rule 2a7. The City's investment in the 4M Fund is measured at the net asset value per share provided by the pool, which is based on amortized cost method that approximates fair value.

(a) Interest Rate Risk

Interest rate risk is the risk that the fair value of investments will be adversely affected by a change in interest rates. The Organization does not have a formal investment policy related to interest rate risk. As of January 31, 2017, the Organization had the following investments and maturities:

Investment type:	<u>Fair Value</u>	<u>Less Than One Year</u>
External investment pool	\$ 231,905	\$231,905

(b) Credit Risk

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. Credit risk is measured using credit quality ratings of investments in debt securities as described by nationally recognized rating agencies such as Standard & Poor's and Moody's.

The following table lists the credit quality ratings, per Moody's and/or Standard & Poor's, of the Organization's investments as of January 31, 2017:

LOWER RUM RIVER WATER MANAGEMENT ORGANIZATION

NOTES TO FINANCIAL STATEMENTS

YEAR ENDED JANUARY 31, 2017

3. CASH AND INVESTMENTS

(b) Credit Risk (Continued)

Investment type:	<u>Fair Value</u>	<u>Unrated</u>
External investment pool	\$ 231,905	\$231,905

(c) Custodial Credit Risk

Custodial credit risk is the risk that, in the event of the failure of a counterparty, the Organization will not be able to recover the value of the investments, collateral securities, or deposits that are in the possession of the counterparty. The Organization does not have a formal policy related to custodial credit risk of investments or deposits. At January 31, 2017, all of the Organization's investments are insured and registered and are held by the counterparty's agent in the Organization's name.

4. REVENUES

Assessments From Participating Cities:

Member cities are assessed on an annual basis for estimated Organization costs by motion of the Organization's governing board. Administrative and planning costs are apportioned by a formula, taking into account both valuation and gross area equally. Projects and improvement costs are charged to the benefiting properties by a formula adopted by the Organization's governing board. Member city assessments for administrative and planning costs were as follows:

Year Ended January 31, 2017

Andover	\$20,585
Anoka	16,279
Ramsey	<u>37,136</u>
	<u>\$74,000</u>

Permits:

The Organization issues permits for construction to cover the costs associated with the review of grading, drainage, and erosion control plans of the projects to improve overall water quality. The Organization earns \$100 for administrative costs for each permit it processes. A deposit is received upon application of the permit. The deposit is used to cover the administration costs and all professional services incurred to complete the permit process. Any remaining deposit excess is refunded upon issuance of the permit.

LOWER RUM RIVER WATER MANAGEMENT ORGANIZATION

NOTES TO FINANCIAL STATEMENTS

YEAR ENDED JANUARY 31, 2017

5. RISK MANAGEMENT

The Organization participates in a public entity risk pool to mitigate its exposure to these risks. Liability coverages are provided through a pooled self-insurance plan with other cities. The Organization has a \$250 deductible per occurrence for its coverage.

Appendix B:
Implementation of Watershed
Management Plan Summary

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Lower Rum River Watershed Management Organization Task Checklist

Key to Symbols

X = Task completed Empty box = task planned but not yet completed Black box = Task not planned for that entity or at that time.

EDUCATION	2013						2014						2015						2016						2017						2018						2019						2020						2021					
	ACD	Andover	Anoka	Coon Rapids	LRRWMO	Ramsey	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other						
Task																																																						
a. Newsletter - Distribution of education material biannually, fostering water quality management practices in Community newsletters, specifically addressing wetland regulation from time to time.	WMO hires ACD to write newsltr articles that cities print																																																					
“X” when completed -- April	X	X	X	X	X	X	X	X	X	X		X	X	X	X			X	X	X	X																																	
“X” when completed -- August	X	X	X	X	X	X	X	X	X	X		X	X	X	X			X	X	X	X																																	
b. Website - Maintain and expand the WMO website for water resource management. In 2013 add wetland regulatory info. The WMO website will be linked to the Cities’ websites.	Website overhauled.						Addition of wtld regulatory info on website																																															
“X” when completed	X	X	X	X	X	X				X		X				X		X				X																																
c. Volunteer Monitoring - Solicit volunteers for water quality monitoring – Citizen Assisted Monitoring Program (CAMP)	Done- comm. College monitoring Sunfish Lk																																																					
“X” when completed	X				X		X			X		n	a			n	a	n	a			n	a	n	a			n	a																									
d. City Local Water Plan Education Program - Member communities shall develop a public education program as part of their local plan development. May include newsltrs, door hangers, catch basin stenciling, cable TV, etc																																																						
“X” when completed		X	X			X		X	X	X			X	X	X				X	X	X																																	
e. Wetland Education - Develop a general information packet and neighborhood specific information regarding water resource management, including wetlands.	Completed by ACD for WMO																																																					
“X” when completed	X				X		X			X																																												
e. Continued Wetland Education - Continue the distribution of the information packet to new property owners through the Cities’ new resident packet information																																																						
“X” when completed												X				X		X				X																																

Lower Rum River Watershed Management Organization Task Checklist

EDUCATION	2013						2014						2015						2016						2017						2018						2019						2020						2021																																			
	ACD	Andover	Anoka	Coon Rapids	LRRWMO	Ramsey	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other																														
Task																																																																																				
f. Wetland Ed Signage - Design up to 30 wetland interpretive signs to educate the general public about the function and value of wetlands. WMO makes signs, cities post them in public areas adjacent to wetlands, preferably along trails.																																																																																				
"X" when completed													X	X	X	X	X	X	X																																																																	
g. Local Officials Workshop - Conduct local official workshops for elected and appointed officials. Should specifically include info about wetland regulation.	Spring LRRWMO dinner mtg																								Spring LRRWMO dinner mtg																																																											
"X" when completed																															X																																																					
h.i. Local Events Exhibit - design - Design and develop informational materials or display for local events exhibit to educate the public about function and values of wetlands, wetland regulations.																																																																																				
"X" when completed																																																																																				
h.ii Local Events Exhibit - display - Display the information created in the task above at local events such as home shows, city environmental events, etc																																																																																				
"X" when completed																																																																																				

Lower Rum River Watershed Management Organization Task Checklist

Task	2013						2014					2015					2016					2017					2018					2019					2020					2021						
	ACD	Andover	Anoka	Coon Rapids	LRRWMO	Ramsey	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other
	a. City Reports to WMO - Member communities shall submit an annual status report by January 1 that describes the status of local plans and implementation of LRRWMO policies																																															
"X" when completed	X	X	X		X		X	X	X			X	X	X				X	X	X																												
b. Annual Reporting to State. Submit annual reports to BWSR and the State Auditor.	ACD was hired to prepare reports for WMO																																															
"X" when completed	X				X		X			X		X			X			X			X																											
c. LRRWMO Plan Update – 4 th Generation Plan																																																
"X" when completed																																																
d. City Local Water Plans - Member communities shall update their local water resource management plans to be consistent with the WMO plan. WMO must review and approve local plans.	CR left WMO. Andover given extension, Ramsey underway																																															
"X" when completed								X	X	X																																						
e. WMO Plan Review - LRRWMO will annually review its Watershed Management Plan to ensure it reflects current goals																																																
"X" when completed					X					X						X																																
f. JPA - Update LRRWMO Joint Powers Agreement, which expires 1/1/2015							Completed 9/2014					Done																																				
"X" when completed							X	X	X	X		X	X	X	X																																	
g. Solicit Bids - LRRWMO will solicit bids for professional services <small>(solicit proposals for work to occur in the following year)</small>							11 and 12 2014 selected engineer and attorney					Reviewed bids and selected providers at 11-17-16 mtg																																				
"X" when completed										X						X																																

Lower Rum River Watershed Management Organization Task Checklist

WATER MONITORING AND IMPROVEMENT	2013						2014						2015						2016						2017						2018						2019						2020						2021																
	ACD	Andover	Anoka	Coon Rapids	LRRWMO	Ramsey	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other											
Task																																																																	
a. Volunteer Monitoring - Solicit volunteers for water quality monitoring – Citizen Assisted Monitoring Program (CAMP)	Done- comm. College monitoring Sunfish Lk																																																																
“X” when completed	X			X			X			X		n a				n a		n a				n a		n a				n a																																					
b. Professional Water Monitoring - LRRWMO will work with the ACD with water quantity and quality programs. See separate sheet of planned LRRWMO monitoring and/or table 9 in watershed plan.	On track with monitoring plan.						On track with monitoring plan. Deleted some sites being monitored by MPCA.																																																										
“X” when completed	X			X			X			X		X			X		X			X		X			X																																								
c. Anoka Dam - LRRWMO will work with member cities in the maintenance and control of the Rum River Dam																		Passed resolution clarifying Anoka owns and maintains, and LR pd Anoka \$6,000 for dam assessment.																																															
“X” when completed		X	X		X	X																																																											
d. Groundwater - LRRWMO will develop and implement a plan to track groundwater levels	Task is better done by regional entities. No WMO action.						DNR is doing this task.						DNR is doing this task.						DNR is doing this task. City staff assisting w Co Hydro geo atlas review																																														
“X” when completed					X					n a	X				n a	X				n a	X				N a	X																																							
e. Grant Matching Fund - LRRWMO will develop/build a fund to match future grants for projects																																																																	
“X” when completed				X						X					X					X					X																																								

Lower Rum River Watershed Management Organization Task Checklist

REGULATION	2013						2014						2015						2016						2017						2018						2019						2020						2021											
	ACD	Andover	Anoka	Coon Rapids	LRRWMO	Ramsey	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other	ACD	Andover	Anoka	Ramsey	LRRWMO	Other						
Task																																																												
a. City Wetland Protection BMPs - Member communities shall develop and implement wetland protection BMPs included in local Water Resource Plan. Should be consistent with WMO wetland standards. Cities are expected to adopt an ordinance.												Underway in each community via local water planning. Ordinance adoption comes after plan approval.						Ramsey adopted wetland ordinance 5/2016																																										
"X" when completed							X										X																																											
b. City Erosion Ordinance -Member communities shall adopt an erosion control ordinance												Local water planning underway. Ordinance updates come after plan approval.																Anoka's erosion control ord is in their land disturbance ord																																
"X" when completed			X				X										X																																											
c. City Floodplain Ordinance - Member communities shall adopt, at a minimum, floodplain ordinances conforming to MN Rules 6120.5000												Cities are awaiting local water plan completion and FEMA map updates																																																
"X" when completed			X				X	X																																																				

LAST UPDATED: 4/5/2016

Appendix C: Newsletter Articles

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WATER RESTRICTIONS

The City has in place watering restrictions that will allow everyone to water their grass and shrubs and maintain an adequate water system. These restrictions start every year on May 1st and run through August 31st. The City allows watering or sprinkling of lawns at homes with even addresses on even days, and homes with addresses that have odd numbers on odd days, but only outside the total afternoon ban time. Vegetable gardens may be watered any day, outside the full afternoon ban time. Bushes and flowers may be watered with a handheld hose as needed. New sod is exempt for the first two weeks from day, but not hour, restrictions. The restricted hours are from noon to 6:00 p.m. every day. Stiff fines are assessed for violations. For more information about the restrictions, please checkout the City web site at www.andovermn.gov - Summer Water Restriction Information - City of Andover Code 10-1-13 Deficiency of Water or call City Hall at (763) 755-5100.



POLLINATOR PARTY AND GARDEN TOUR!

Andover Pollinator Awareness Project (APAP) to host 2 fun events in July

Are you interested in giving back to our natural resources? The APAP work group is hosting a Pollinator Party on Thursday, July 21st from 6:00 p.m.-9:00 p.m. at the YMCA Community Center and a Pollinator-friendly garden tour on Saturday, July 23rd from 9:00 a.m.-3:00 p.m. All the details for these events can be found on the City's website: www.andovermn.gov "Your Government" "Natural Resources" "Andover Pollinator Awareness Project".

POLLINATOR PARTY: This fun event will showcase exhibitors, displays, fun games for kids, experts to help you with pollinator-friendly landscaping, food and drink, etc.

GARDEN TOUR: Take a tour around the City and see various types of landscapes that are "pollinator-friendly" and are a great example of ways we can give back to our natural resources.

These events are just a couple examples of APAP's mission to improve our environment to benefit pollinators, such as bees and butterflies and all species of wildlife. For additional information about APAP and its activities, contact APAP Chairperson Cheryl Seeman at (763) 427-2470 or cherylseeman50@comcast.net or Andover Natural Resources Technician Kameron Kytonen at (763) 767-5137 or k.kytonen@andovermn.gov.



RUM RIVER WATERSHED GETS CHECKUP; NEW MANAGEMENT PLAN

The Rum River runs from Lake Mille Laacs to Anoka. It is one of only seven State Scenic and Recreational Waterways and part of the State's water trails system. Soil and water conservation districts and watershed organizations recently joined with the Minnesota Pollution Control Agency (MPCA) to test the health of the river and the surrounding watershed. They are developing a new management plan for the river, streams and lakes.

The results of a recent water quality check-up was mixed with some areas being in good shape and others not so good. Within Anoka County, Rogers Lake (partially in Ramsey, Oak Grove and Nowthen) had excessive nutrients that cause algae blooms. Trott Brook (City of Ramsey) and Crooked Brook (City of East Bethel) had too little

oxygen for fish. High E.coli bacteria was found in Cedar Creek and Seelye Brook. Mahoney Brook (City of Oak Grove) had a fish community indicative of poor conditions. There are studies underway to gather more information on these impaired waterbodies to determine the amount of nutrient reductions needed and strategies.

The Rum River and other lakes and streams are in good shape. Still, researchers noted reason for continued vigilance. For example, the Rum River in Isanti and Anoka County is approaching state standards for nutrients and Lake George in Oak Grove has a declining water quality trend, which is being further investigated.

The findings of these studies are being compiled into a new management plan for

the watershed, set to be finalized in late 2016. The Lower Rum River Watershed Management Organization (LRRWMO; www.LRRWMO.org), a joint powers board formed by the Cities of Ramsey, Anoka and Andover, is representing local points of view in the development of these plans. They will also be a key player in putting the management plan into action.

The public is invited to participate in the discussion about managing these waterbodies. Throughout summer and fall 2016 draft management plans will be posted to www.AnokaSWCD.org. Residents may also contact Jamie Schurbon, Water Resource Specialist at (763) 434-2030 ext. 12 or jamie.schurbon@anokaswcd.org or their representative on the LRRWMO.

ANDOVER WINS NATIONAL CONSERVATION CONTEST

Andover residents procured a win in a national contest! With over 4,100 cities in 39 states participating, the percentage of our residents who took the simple on-line pledge to reduce water and save resources, put Andover in first place for cities with population between 30,000 and 99,000. Names will be drawn from amongst those who took the water pledge for prizes valued at over \$50,000, including a Prius, donated by corporate sponsor, Toyota.

Andover High School students, Aisha Sow and Kina Msuya, met with Mayor Julie Trude early this year to request Andover enroll in the month-long National Mayor's Water Challenge held during April each year. Each worked on promoting the contest. The students chose the water contest as a community impact project for the Chick-fil-A Leader Academy with the goal of informing students and residents about water conservation to encourage a more sustainable future.

A plaque was awarded to Andover as a Winning City by the Wyland Foundation, a conservation focused non-profit. The Andover Council recognized the students for their role and awarded them plaques from the City acknowledging their successful project.

www.andovermn.gov

Residents pledged to reduce water consumption by over 24 million gallons, in the community and in the nation through adoption of more environmentally-friendly practices, as water is used in production of food, energy, consumer products and more.



Rum River Watershed Gets Checkup; New Management Plan

The Rum River runs from Lake Mille Lacs to Anoka. It is one of only seven State Scenic and Recreational Waterways, and part of the State's water trails system. Soil and water conservation districts and watershed organizations recently joined with the Minnesota Pollution Control Agency (MPCA) to test the health of the river and the surrounding watershed. They are developing a new management plan for the river, streams and lakes.

The results of a recent water quality check-up was mixed with some areas being in good shape and others not so good. Within Anoka County, Rogers Lake (partially in Ramsey, Oak Grove and Nowthen) had excessive nutrients that cause algae blooms. Trott Brook (City of Ramsey) and Crooked Brook (City of East Bethel) had too little oxygen for fish. High E.coli bacteria was found in Cedar Creek and Seeyle Brook. Mahoney Brook (City of Oak Grove) had a fish community indicative of poor conditions. There are studies underway to gather more information on these impaired waterbodies to determine the amount of nutrient reductions needed and strategies.

The Rum River and other lakes and streams are in good shape. Still, researchers noted reason for continued vigilance. For example, the Rum River in Isanti and Anoka County is approaching state standards for nutrients and Lake George in Oak Grove has a declining water quality trend, which is being further investigated.

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Seasonal Watering and Water Report



Watering Restrictions

The City of Anoka has odd/even watering restrictions when using city-supplied water from June 1 to September 1 each year. Properties having odd-numbered mailing addresses may only water on odd-numbered days, and properties having even-numbered addresses may only water on even-numbered days. In addition, no watering is allowed from 10 a.m.–7 p.m., regardless of mailing address. Thank you for your cooperation.

City Watering Ordinance

The City needs to produce an adequate water supply for everyday use in homes, businesses, and for fire protection. During high demand periods water supply can diminish to low levels.

The City's watering policy recognizes environmental issues and an increased desire to conserve natural resources. In addition to the odd/even policy, the City restricts watering between 10 a.m. – 7 p.m. This is the period of time which creates the most evaporation and provides the least amount of benefit for the lawns and gardens. Evaporation rates during this period can be between 30 and 40 percent on summer days. Some studies have indicated that daytime watering may be damaging to the grass blades and plant leaves because the water droplets can act as small magnifying glasses causing them to burn.

All residents should be responsible to comply with these restrictions. Upon any violation, the City may issue written warnings and administrative fines. Find information at www.ci.anoka.mn.us, City Code, Chapter 66, Article IV, Section 66-131, or call the Public Services Department at 763-576-2980.

2015 Drinking Water Report

The City of Anoka issues results of monitoring done on its drinking water. For the most recent report, visit www.ci.anoka.mn.us and click on the Drinking Water Report tab on the right-hand column of the site.

Rum River Watershed Checkup; New Management Plan

The Rum River runs from Lake Mille Lacs to Anoka. It is one of only seven State Scenic and Recreational Waterways, and part of

the State's water trails system. Soil and water conservation districts and watershed organizations recently joined with the Minnesota Pollution Control Agency (MPCA) to test the health of the river and the surrounding watershed. They are developing a new management plan for the river, streams and lakes.

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BE PREPARED—Sanitary Sewer Backup Information

Are you prepared AND insured against a sewer backup?

- ALWAYS call the City of Anoka FIRST if you are experiencing a sewer backup affecting all of your home's drains or if you do not have water. During business hours, call 763-576-2923 or 763-576-2980. After hours, call 763-576-2860.
- Get Insurance for a Sewer Backup – If you have concerns regarding the damage a sewer backup could do to your property, contact your insurance carrier and review your coverage.
- DO NOT dispose of any inappropriate items into the sewer system (diapers, sanitary napkins, "flushable" wipes, garbage, hazardous waste, yard waste, syringes, etc.)

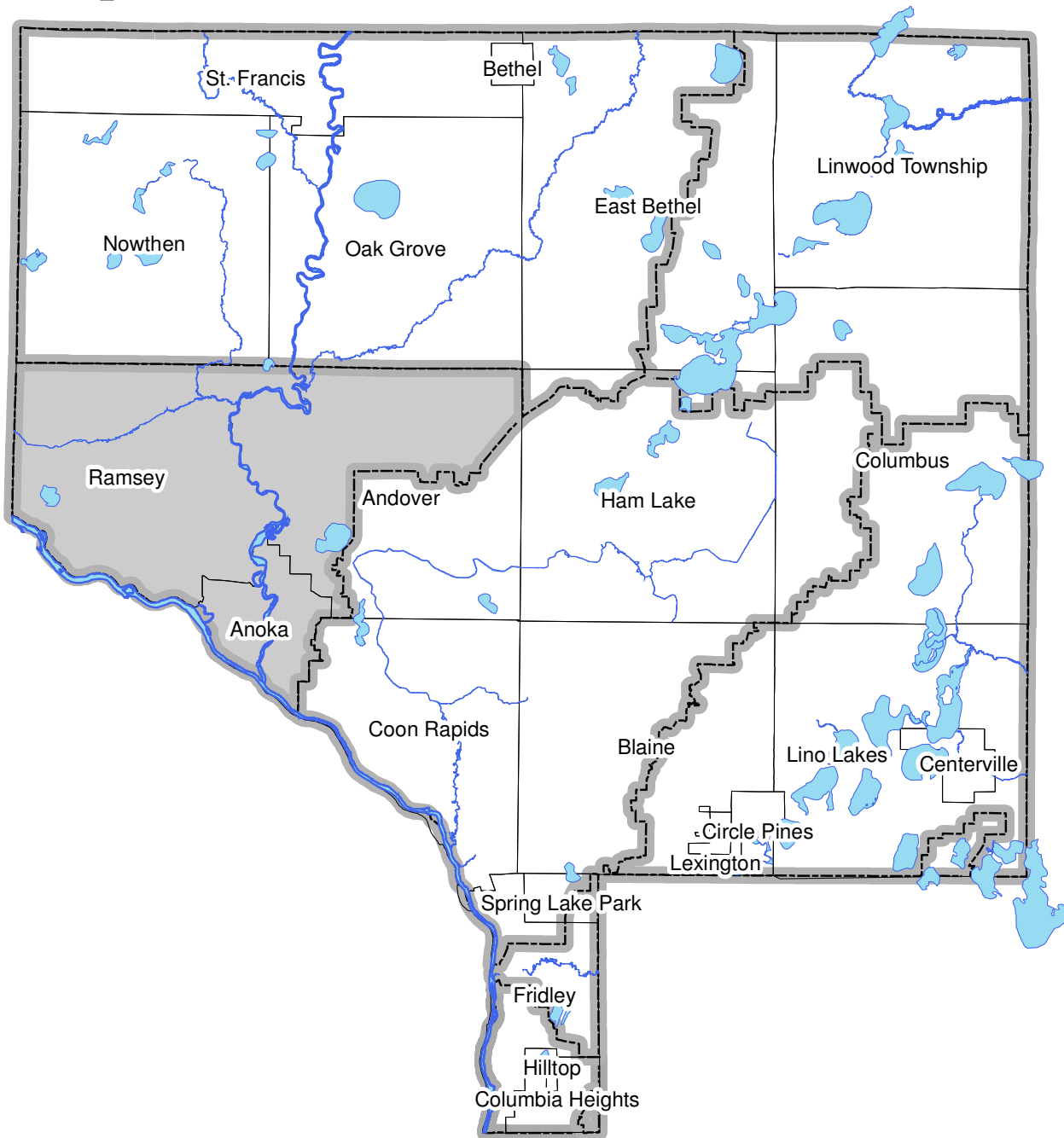
Visit www.ci.anoka.mn.us for more sanitary sewer information.

Appendix D: 2016 Work Results

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Excerpt from the 2016 Anoka Water Almanac

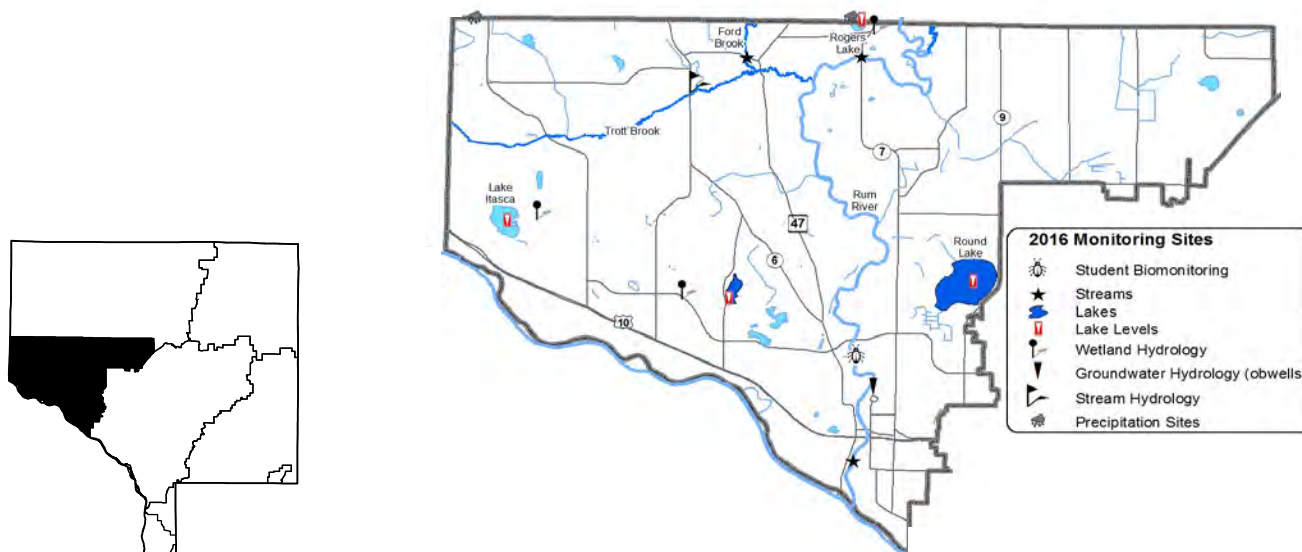
Chapter 4: Lower Rum River Watershed



CHAPTER 4: LOWER RUM RIVER WATERSHED

Task	Partners	Page
Lake Levels	LRRWMO, ACD, volunteers, MN DNR	4-124
Lake Water Quality	MPCA, ACD, volunteers	4-126
Stream Water Quality – Chemical	MPCA, ACD	4-132
Stream Water Quality – Biological	LRRWMO, ACD, ACAP, Anoka High School	4-140
Wetland Hydrology	LRRWMO, ACD	4-143
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Precipitation	ACD, volunteers	Chapter 1

ACAP = Anoka County Ag Preserves, ACD = Anoka Conservation District, LRRWMO = Lower Rum River Watershed Mgmt. Org, MC = Metropolitan Council, MNDNR = MN Dept. of Natural Resources, LSOHC = Lessard-Sams Outdoor Heritage Council



Lake Level Monitoring

Description: Weekly water level monitoring in lakes. The past five and twenty five years of data are illustrated below, and all historical data are available on the Minnesota DNR website using the "LakeFinder" feature (www.dnr.mn.us.state/lakefind/index.html).

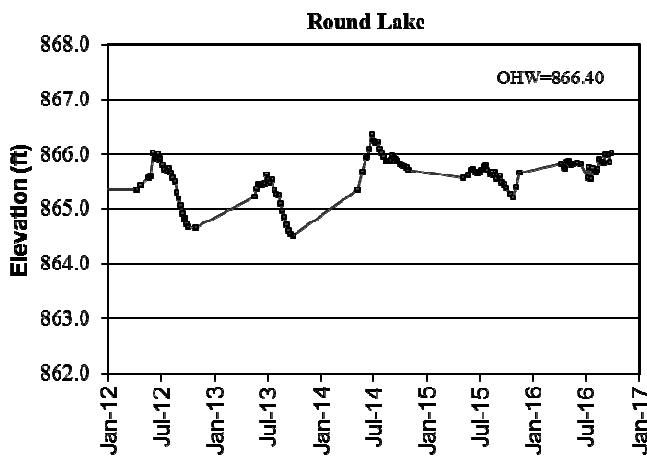
Purpose: To understand lake hydrology, including the impacts of climate or other water budget changes. These data are useful for regulatory, building/development, and lake management decisions.

Locations: Round, Rogers, Itasca, and Sunfish/Grass Lakes

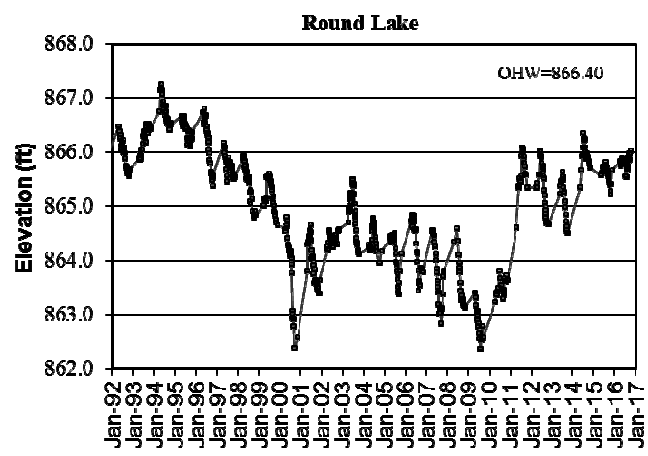
Results: Lake levels were measured by volunteers throughout the 2016 open water season. Lake gauges were installed and surveyed by the Anoka Conservation District and MN DNR. 2016 was an especially wet year, and lake levels increased or were maintained throughout the growing season and into late fall/ Average lake levels were similar or slightly higher than 2015.

All lake level data can be downloaded from the MN DNR website's Lakefinder feature. Ordinary High Water Level (OHW), the elevation below which a DNR permit is needed to perform work, is listed for each lake on the corresponding graphs below.

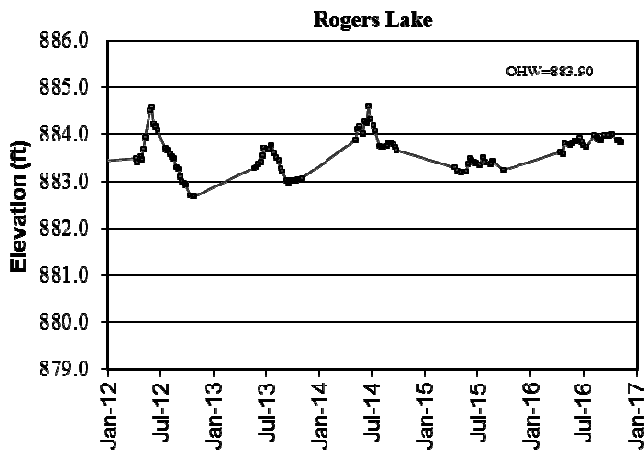
Round Lake Levels – last 5 years



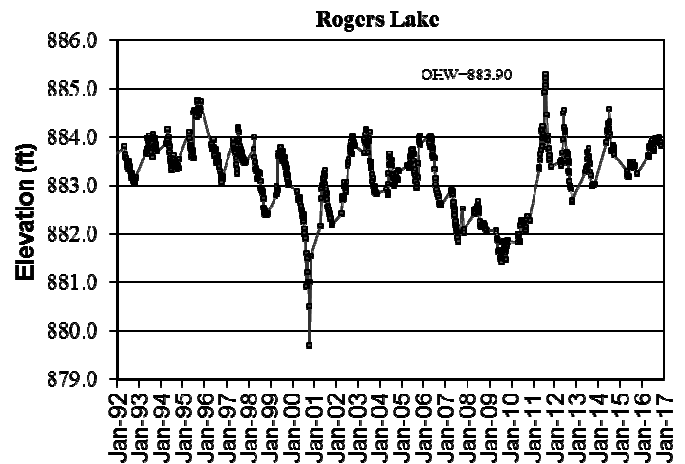
Round Lake Levels – last 25 years



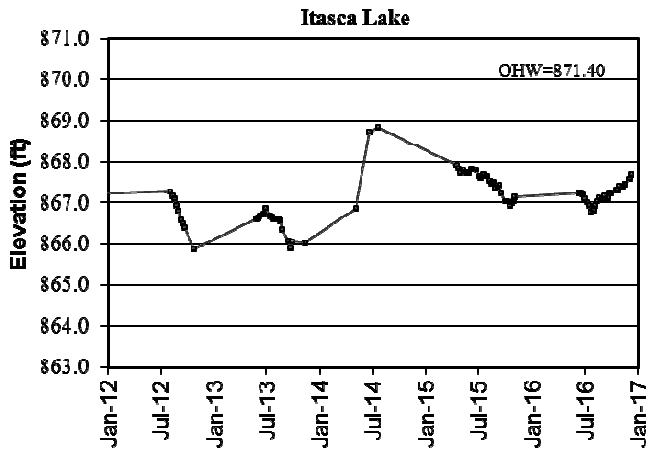
Rogers Lake Levels – last 5 years



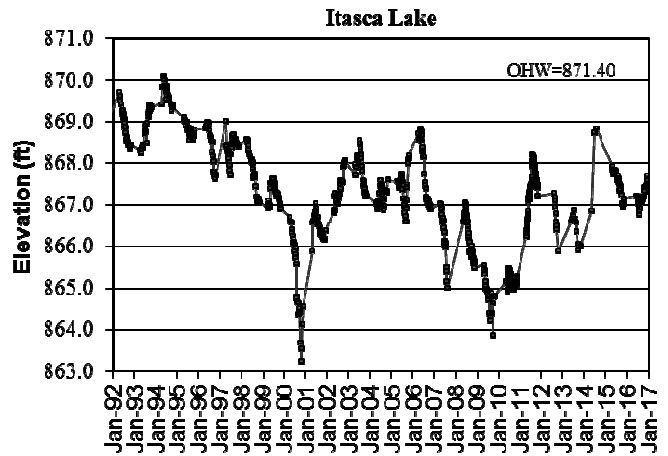
Rogers Lake Levels – last 25 years



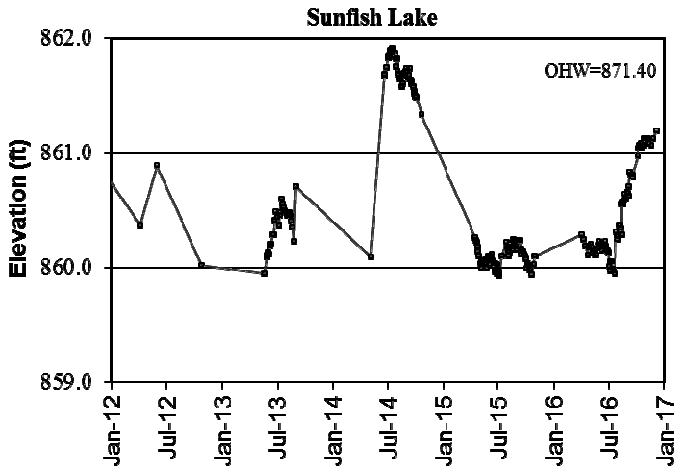
Itasca Lake Levels – last 5 years



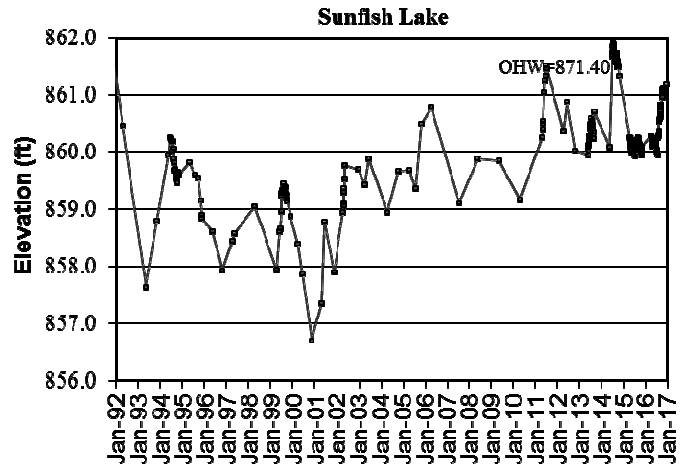
Itasca Lake Levels – last 25 years



Sunfish/Grass Lake Levels – last 5 years



Sunfish/Grass Lake Levels – last 25 years



Lake Water Quality

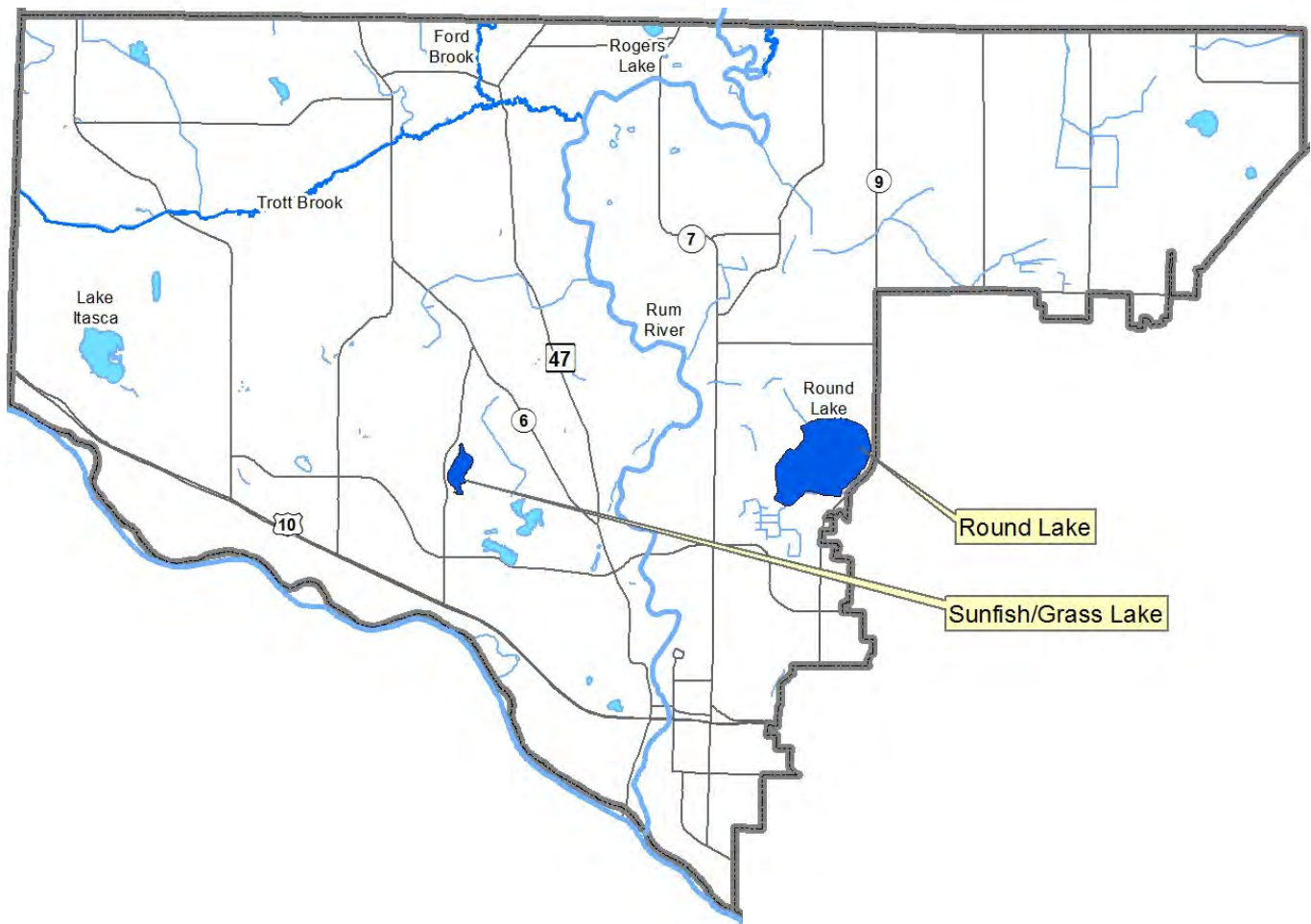
Description: May through September, every-other-week, monitoring is conducted for the following parameters: total phosphorus, chlorophyll-a, Secchi transparency, dissolved oxygen, turbidity, temperature, conductivity, pH, and salinity.

Purpose: To detect water quality trends and diagnose the cause of changes.

Locations: Round Lake
Sunfish/Grass Lake

Results: Detailed data for each lake are provided on the following pages, including summaries of historical conditions and trend analysis. Previous years' data are available from the ACD. Refer to Chapter 1 for additional information on lake dynamics and interpreting the data.

LRRWMO Lake Water Quality Monitoring Sites



Round Lake

City of Andover, Lake ID # 02-0089

Background

Round Lake is located in southwest Anoka County. It has a surface area of 220 acres and maximum depth of 19 feet, though the majority of the lake is less than 4 feet deep. The lake is surrounded by cattails and has submerged vegetation interspersed throughout the basin. This lake has a small watershed, with a watershed to surface area ratio of less than 10:1. Public access is from a dirt ramp on the lake's southeast side. Almost no boating occurs with mostly wintertime fishing on the lake. Wildlife, especially waterfowl, usage of the lake is relatively high.

2016 Results

In 2016 Round Lake's water quality was very good compared with other lakes in this region (NCHF Ecoregion) receiving an overall A letter grade. The average of both total phosphorus (17.0 ug/L) and chlorophyll-a (2.2 ug/L) were the second lowest on record, beat out only by 2015 results. Secchi transparency was 10.9 feet, the third best ever observed. It is important to note that the true Secchi transparency average was deeper than 10.9 feet because one reading was not used in the average calculation since clarity exceeded the water depth at the sampling point on that day. Phosphorus and algae were fairly consistent without indication of any seasonal fluctuation.

Trend Analysis

Eleven years of water quality monitoring has been conducted by the Anoka Conservation District (1998-2000, 2003, 2005, 2007, and 2009-2010, 2012, 2014, 2016), which is a marginal number of years for a powerful statistical test of trend analysis. In 2010, the results of the analysis indicated a significant trend of declining water quality across the years studied to that point (repeated measures MANOVA with response variables TP, Cl-a, and Secchi depth, $F_{2,5} = 9.6065$, $p = 0.0194$). When the analysis is run on all data to date, including the exceptional water quality observed since 2012, no significant water quality changes are apparent ($F_{2,8} = 0.41$, $p = 0.49$).

Discussion

2016 was the third consecutive monitoring year in which exceptional water quality was observed in Round Lake, earning an A letter grade each year. There was growing concern about a trend toward poorer water quality before 2010. Phosphorus and chlorophyll-a had increased substantially in each of four monitored years from 2005-2009. These were years of low lake levels. There was speculation that in-lake sources of nutrients, driven by sediment mixing, were a source of phosphorus. During low water conditions, there is more wind mixing due to shallow water depths, and in these years, there was also a conspicuous reduction of chara (a plant-like algae) carpeting the bottom. Since 2012, water levels have recovered substantially and water quality has dramatically improved. It does seem that low water levels in Round Lake lead to poorer water quality. Additional monitoring in the future can help verify this.

Since at least the 1980s, there have been complaints about low water levels in Round Lake. The lake has few surface water in-flows, so groundwater is important to lake hydrology. There have been concerns that local surficial groundwater levels, and hence the lake, are negatively impacted by a variety of causes including irrigation, residential groundwater use, stormwater management, road embankments, and others. Groups including the MN DNR, the Anoka Conservation District, watershed organizations, and cities have studied each potential cause. None has been found to cause lower-than-expected lake levels. There is evidence that Round Lake levels do behave differently from other nearby lakes. Moreover, studies by the Metropolitan Council and others have found regional surficial water tables are being drawn down by groundwater pumping in some area of the metro metro. Several lakes, including Round and Bunker Lakes, are potentially affected by this groundwater overuse. Conservation of groundwater must become a regional and local priority.

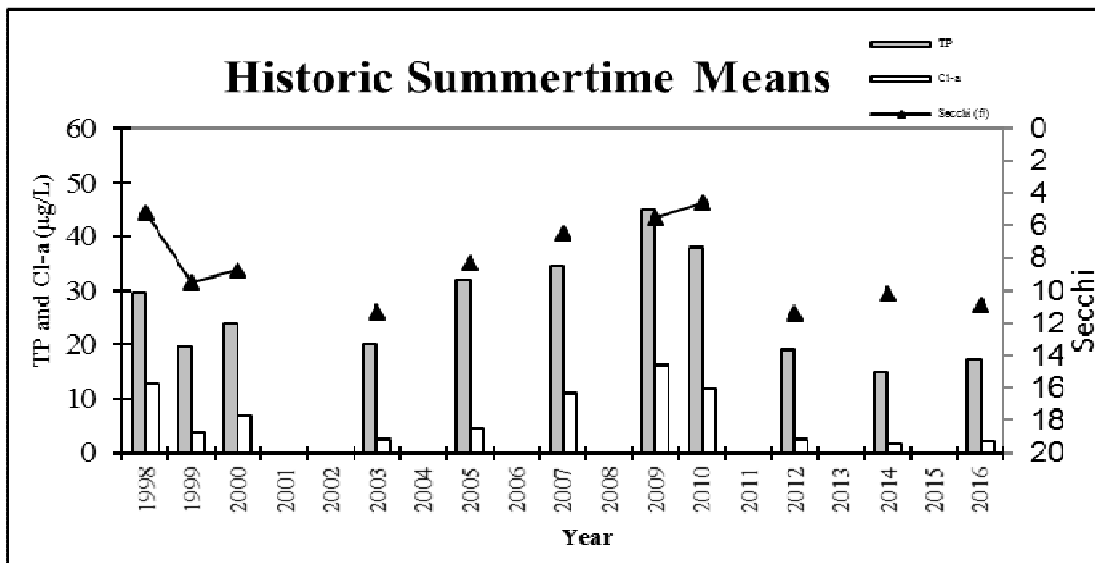
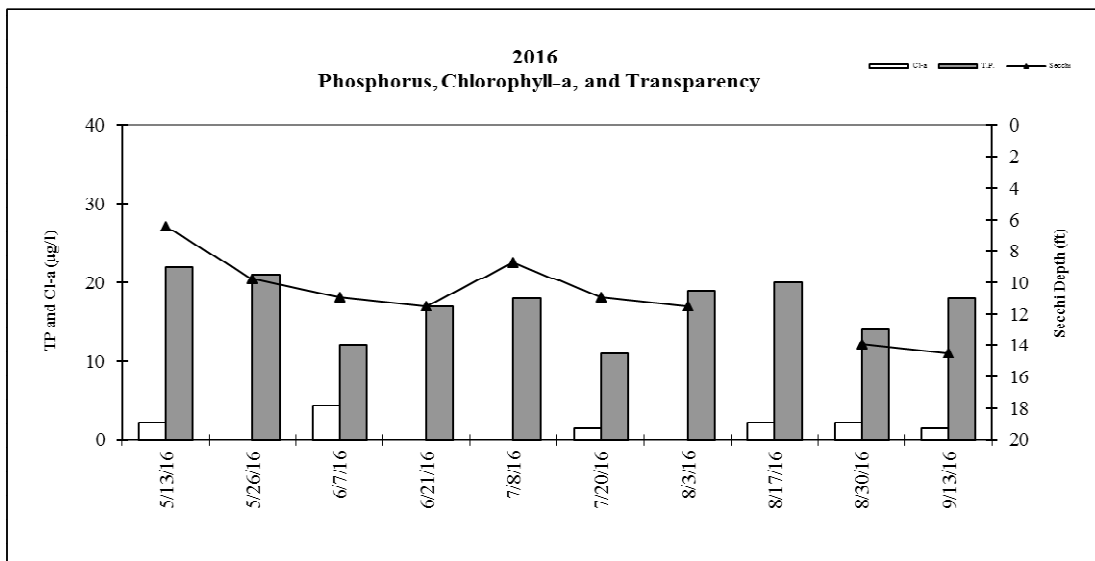
2016 Round Lake Water Quality Data

Round Lake
2016 Water Quality Data

Date: 5/13/2016 5/26/2016 6/7/2016 6/21/2016 7/8/2016 7/20/2016 8/3/2016 8/17/2016 8/30/2016 9/13/2016
Time: 11:45 9:45 12:30 10:50 10:25 10:05 11:45 9:45 11:00 9:45

	Units	R.L.*	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Average	Min	Max
pH		0.1	8.55	8.60	8.81	9.04	8.83	9.41	9.32	8.83	8.32	8.20	8.79	8.20	9.41
Conductivity	mS/cm	0.01	0.378	0.369	0.364	0.292	0.299	0.298	0.291	0.321	0.313	0.289	0.321	0.289	0.378
Turbidity	FNRU	1	9.50	2.20	4.80	3.40	13.80		0.00	4.80	2.80	3.30	5	0	14
D.O.	mg/l	0.01	10.18	9.85	10.20	9.26	7.92	10.30	11.01	7.78	8.31	8.41	9.32	7.78	11.01
D.O.	%	1	100%	116%	115%	115%	100%	128%	143%	96%	101%	94%	111%	94%	143%
Temp.	°C	0.1	14.0	21.9	20.2	24.8	24.8	26.6	27.8	24.9	23.6	20.4	22.9	14.0	27.8
Temp.	°F	0.1	57.1	71.3	68.3	76.7	76.7	80.0	82.1	76.8	74.4	68.6	73.2	57.1	82.1
Salinity	%	0.01	0.18	0.18	0.17	0.14	0.14	0.14	0.14	0.15	0.15	0.14	0.15	0.14	0.18
Chl-a	ug/L	0.5	2.1	<1	4.3	<1	<1	1.4	<1	2.1	2.1	1.4	2.2	1.4	4.3
T.P.	mg/l	0.010	0.022	0.021	0.012	0.017	0.018	0.011	0.019	0.020	0.014	0.018	0.017	0.011	0.022
T.P.	ug/l	10	22	21	12	17	18	11	19	20	14	18	17.2	11	22
Secchi	ft		6.4	9.8	10.9	11.5	8.8	10.9	11.5		13.9	14.5	10.9	6.4	14.5
Secchi	m		2.0	3.0	3.3	3.5	2.7	3.3	3.5	0.0	4.2	4.4	3.3	2.0	4.4
Field Observations			Fairly clear	Light brown	Clear		Fairly clear	Clear, light g	Very clear	Very clear	Clear				
Physical			2	2.0	1.0	2.0	2.0	2.0	1.0	1.0	1.0	1.0	1.5	1.0	2.0
Recreational			1.5	2.0	1.0	2.0	2.0	2.0	2.0	2.0	1.0	1.0	1.7	1.0	2.0

*reporting limit



Round Lake Historic Summertime Mean Values

Agency	ACD	ACD	ACD	ACD	ACD	ACD	ACD	ACD	ACD	ACD	ACD
Year	1998	1999	2000	2003	2005	2007	2009	2010	2012	2014	2016
TP	29.8	19.6	24.1	20.0	32.0	34.7	45.0	38.0	19.0	15.0	17
Cl-a	12.8	3.7	6.9	2.4	4.6	10.9	16.2	11.8	2.5	1.8	2.2
Secchi (m)	1.60	2.90	2.67	3.40	2.50	2.00	1.70	1.40	3.50	3.10	3.3
Secchi (ft)	5.2	9.5	8.8	11.3	8.3	6.5	5.5	4.6	11.4	10.2	10.9

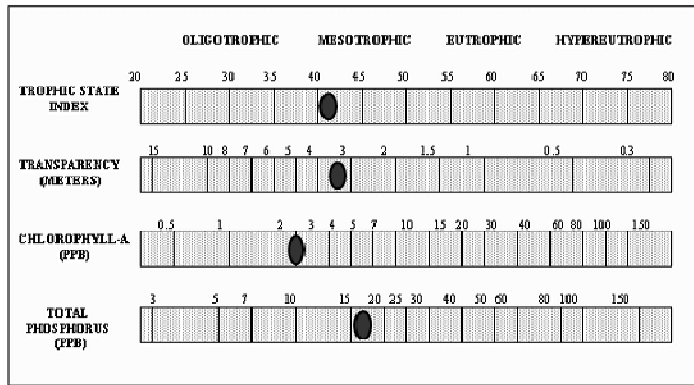
Carlsons Trophic state indices

TSIP	53	47	50	47	54	55	59	57	47	43	45
TSIC	56	44	49	39	46	54	58	55	40	36	38
TSIS	53	45	46	42	47	50	52	55	42	44	43
TSI	54	45	48	43	49	53	56	56	43	41	42

Round Lake Water Quality Report Card

Year	1998	1999	2000	2003	2005	2007	2009	2010	2012	2014	2016
TP	B	A	B	A	B	C	C	C	A	A	A
Cl-a	B	A	A	A	A	B+	B	B	A	A	A
Secchi	C	B	B	A	B	C	C	C	A-	A	A
Overall	B	A	B	A	B	C	C	C	A	A	A

Carlson's Trophic State Index



Sunfish/Grass Lake
 City of Ramsey, Lake ID #02-0113

Background

Grass Lake is located in the City of Ramsey in southwestern Anoka County. It is a rather small lake with a surface area of 35 acres. The lake does not have a public boat landing, but can be accessed through Sunfish Lake Park on the west side of the lake. The park has a fishing pier and kayaks, which can both be used by the public. The lake is quite shallow with floating leaf, emergent and submergent aquatic vegetation throughout. A v portion of the shoreline is developed with most of the lake being surrounded by park or wooded land.

2016 Results

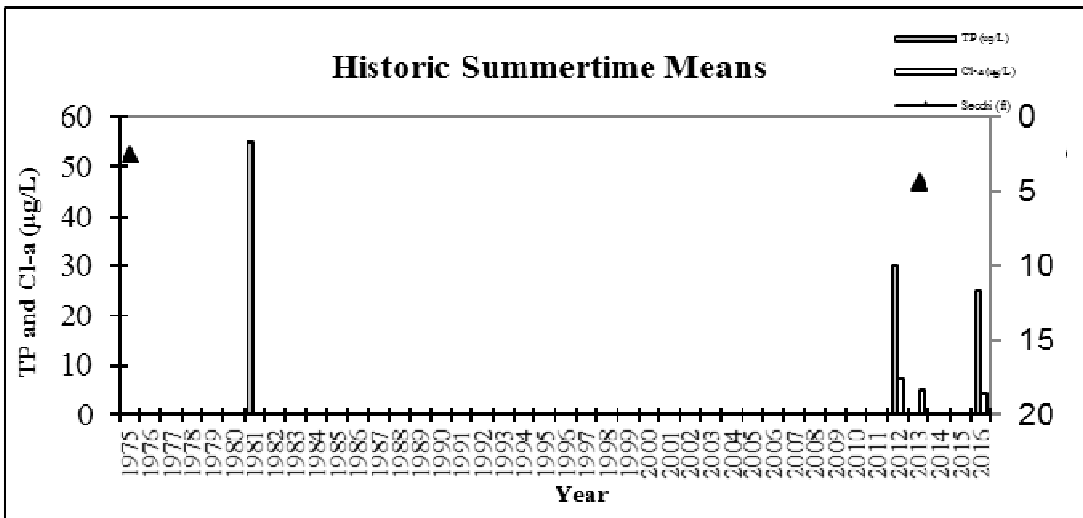
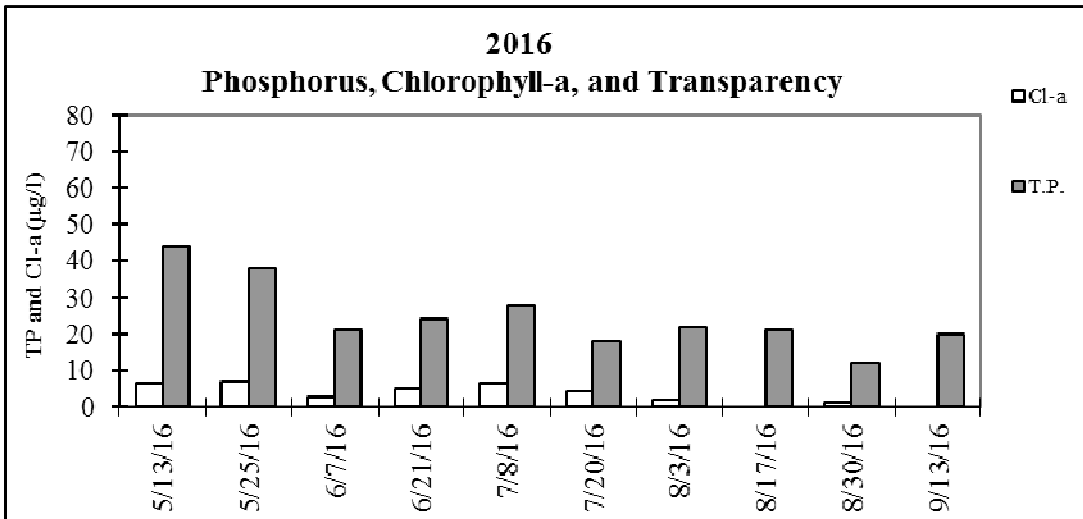
2016 was the first year in which the Anoka Conservation District (ACD) monitored Sunfish/Grass Lake as part of the regular lake sampling efforts. The lake has been monitored two other years through the MPCA Citizen Monitoring Program (CLMP). In 2016 Sunfish Lake’s water quality was neither exceptionally good nor especially bad compared with other lakes in this region (NCHF Ecoregion), receiving an overall B letter grade. The average total phosphorus (25 ug/L) was at a typical level for this ecoregion, and was acceptably low compared to the state water quality standard of 60 ug/L for shallow lakes in the NCHF Ecoregion. The average concentration of chlorophyll-a (4.4 ug/L) was the lowest in the three years of data and was acceptably low compared to the state standard of 20 ug/L. On many sampling occasions, the secchi transparency exceeded the lake’s depth. .

Discussion

Grass Lake looks to be in good health, receiving an overall B letter grade in each of the three years monitored since 2012. This letter grade would likely be even higher in 2016 if Secchi readings were not limited by the depth of the lake. There is not enough data for a trend analysis. Secchi transparency and chlorophyll-a have improved in each year monitored, but no true trend may exist.

Sunfish Lake 2016 Water Quality Data			5/13/2016	5/25/2016	6/7/2016	6/21/2016	7/8/2016	7/20/2016	8/3/2016	8/17/2016	8/30/2016	9/13/2016	Average Min Max		
			11:00	9:45	11:40	10:05	9:45	9:15	11:00	9:00	10:15	9:10			
	Units	R.L.*	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results			
pH		0.1	8.61	8.75	8.72	8.71	8.44	9.11	9.36	9.04	8.59	8.17	8.75	8.17	9.36
Conductivity	mS/cm	0.01	0.417	0.417	0.401	0.344	0.364	0.357	0.331	0.357	0.350	0.339	0.368	0.331	0.417
Turbidity	NTU	1	25.9	3.9	12	10	22		0	14	2	10	11	0	26
D.O.	mg/L	0.01	10.99	12.10	11.45	9.37	8.37	10.48	12.80	9.61	9.97	8.94	10.41	8.37	12.80
D.O.	%	1	112	141	132	119	106	136	167	121	121	99	125	99	167
Temp.	°C	0.1	14.9	22.1	21.0	25.7	24.6	26.7	28.1	25.4	24.1	20.4	23.3	14.9	28.1
Temp.	°F	0.1	58.7	71.8	69.7	78.3	76.4	80.1	82.7	77.8	75.4	68.7	74.0	58.7	82.7
Salinity	%	0.01	0.20	0.20	0.19	0.17	0.18	0.17	0.16	0.18	0.17	0.16	0.18	0.16	0.20
Cl-a	ug/L	0.5	6.4	7.1	2.8	5.0	6.4	4.3	2.1	<1	1.4	<1	4.4	1.4	7.1
T.P.	mg/L	0.010	0.044	0.038	0.021	0.024	0.028	0.018	0.022	0.021	0.012	0.020	0.025	0.012	0.044
T.P.	ug/L	10	44	38	21	24	28	18	22	21	12	20	25	12	44
Secchi	ft	0.1	3.6	4.0	4.8	>5.0	3.3	>5.08	>4.83	>4.83	>5.5	5.5	4.2	3.3	5.5
Secchi	m	0.1	1.1	1.2	1.4	>1.52	1.0	>1.55	>1.47	>1.47	>1.68	1.7	1.3	1.0	1.7
Physical			3	3	3	3	3	2	1	1	1	1	2.1	1.0	3.0
Recreational			3	3	3	3	3	2	2	3	2	1	2.5	1.0	3.0

*reporting limit



Sunfish Lake Historical Summertime Mean Values

Agency	CLMP	CLMP	ACD
Year	2012	2013	2015
TP (µg/L)	30.0		25.0
Cl-a (µg/L)	7.1	5.0	4.4
Secchi (m)	1.2	1.3	na
Secchi (ft)	3.9	4.4	na

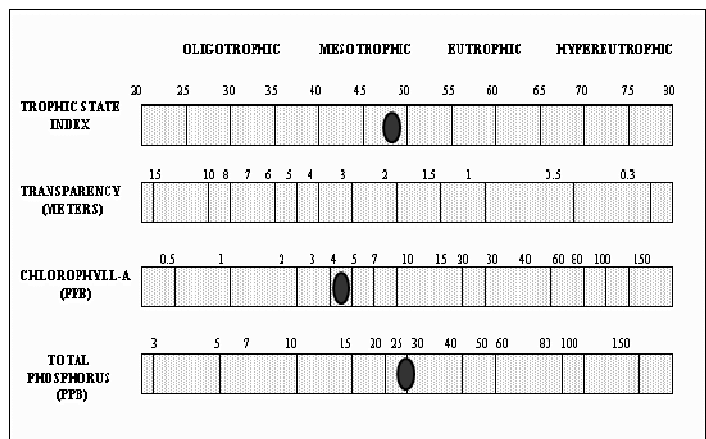
Carlson's Trophic State Index

TSIP	53		51
TSIC	50	46	45
TSIS	57	56	na
TSI	53	51	48

Sunfish Lake Water Quality Report Card

Year	2012	2013	2015	2016
TP (µg/L)	B			C
Cl-a (µg/L)	A	A		A
Secchi (m)	C	C		na
Overall	B	B		B

Carlson's Trophic State Index



Stream Water Quality - Chemical Monitoring

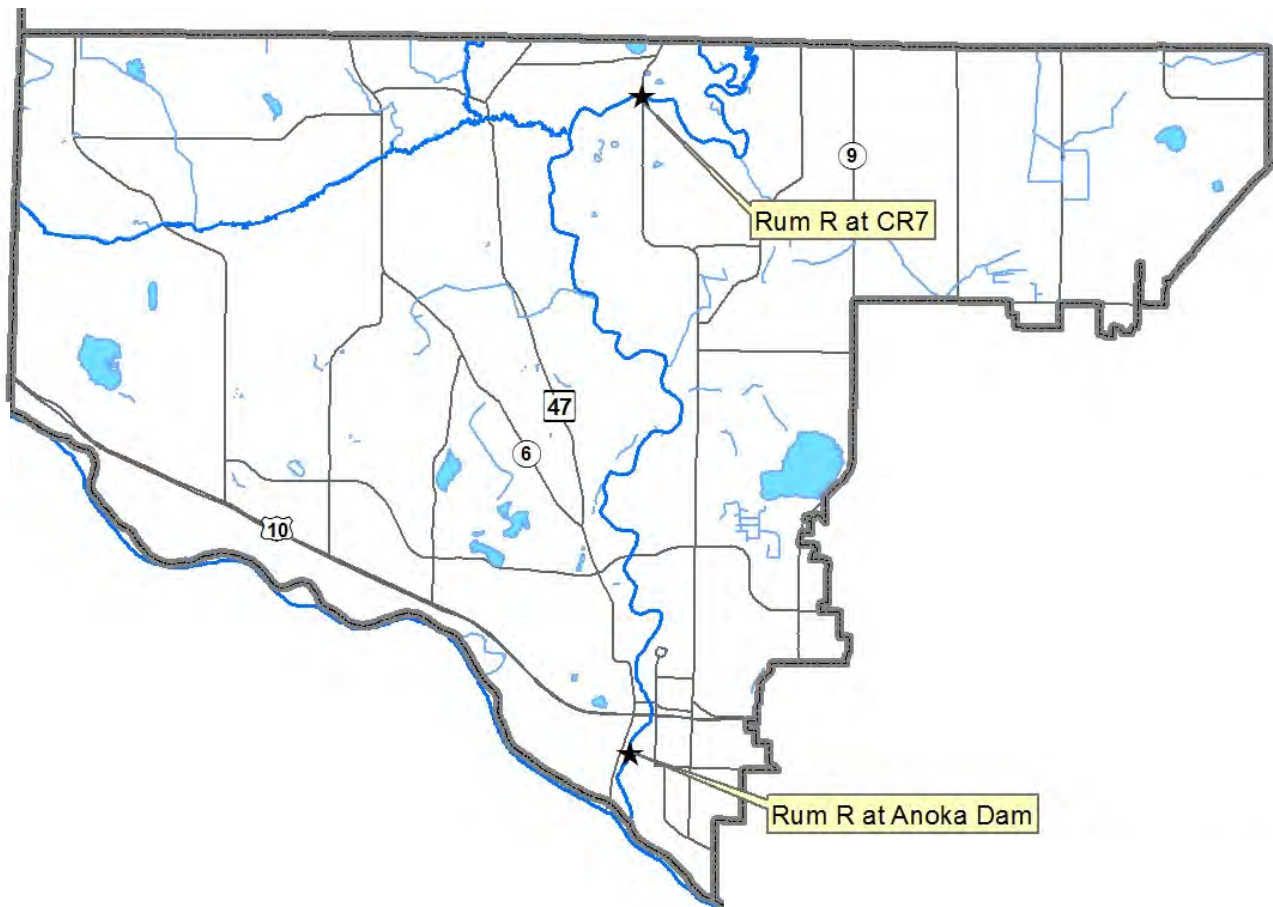
Description: In 2016, monitoring events were scheduled May through September for each of the following parameters: total suspended solids, total phosphorus, Secchi tube transparency, dissolved oxygen, turbidity, temperature, conductivity, pH, and salinity.

Purpose: To provide an assessment of water quality to be used in the completion of the Rum River Watershed Restoration and Protection Plan (WRAPP).

Locations: Rum River at County Road 7
Rum River at Anoka Dam

Results: Results are presented on the following pages.

2016 Lower Rum River Monitoring Sites



Stream Water Quality Monitoring

RUM RIVER

Rum River at Co. Rd. 24 (Bridge St), St. Francis*	STORET SiteID = S000-066
Rum River at Co. Rd. 7 (Roanoke St), Ramsey	STORET SiteID = S004-026
Rum River at Anoka Dam, Anoka	STORET SiteID = S003-183

*Located in and contracted by the URRWMO, but reported with all Rum River data for a more complete analysis of the river.

Years Monitored

At Co. Rd. 24 – 2004, 2009, 2010, 2011, 2014, 2015, 2016

At Co. Rd. 7 – 2004, 2009, 2010, 2011, 2014, 2015, 2016

At Anoka Dam – 1996-2011(MC WOMP), 2015, 2016

Background

The Rum River is regarded as one of Anoka County's highest quality and most valuable water resources. It is designated as a state scenic and recreational river throughout Anoka County, except south of the county fairgrounds in Anoka. It is used for boating, tubing, and fishing. Much of western Anoka County drains to the Rum River. Subwatersheds that drain to the Rum include Seelye, Trott, and Ford Brooks, and Cedar Creek.

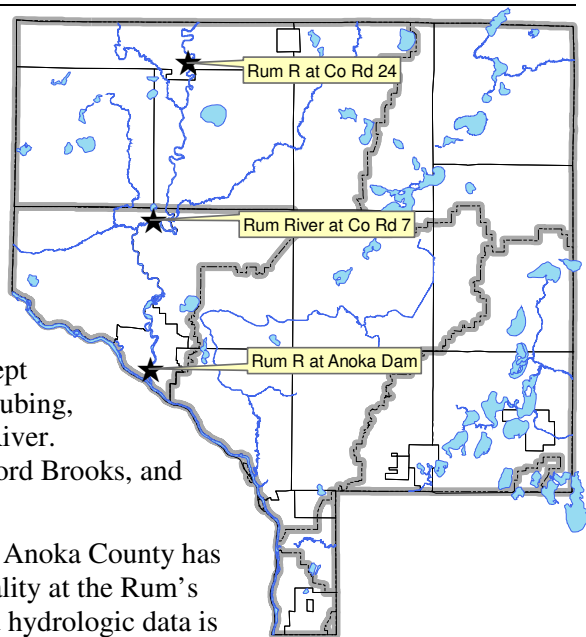
The extent to which water quality improves or is degraded within Anoka County has been unclear. The Metropolitan Council has monitored water quality at the Rum's outlet to the Mississippi River since 1996. This water quality and hydrologic data is well suited for evaluating the river's water quality just before it joins the Mississippi River. Monitoring elsewhere has occurred only in more recent years. Water quality changes might be expected from upstream to downstream because land use changes dramatically from rural residential in the upstream areas of Anoka County to suburban in the downstream areas.

Methods

In 2004, 2009- 2011 and 2014-2016 monitoring was conducted to determine if Rum River water quality changes in Anoka County, and if so, generally where changes occur. The data is reported together for a more comprehensive analysis of the river from upstream to downstream.

In 2016 the river was monitored during both storm and baseflow conditions by grab samples. At the two downstream locations, eight water quality samples were taken; half during baseflow and half following storms. At the upstream site, only four samples were taken due to lower funding levels. Storms were generally defined as one-inch or more of rainfall in 24 hours or a significant snowmelt event combined with rainfall. In some years, particularly the drought year of 2009, smaller storms were sampled because of a lack of larger storms. All storms sampled were significant runoff events. Parameters tested with portable meters included pH, conductivity, turbidity, temperature, salinity, and dissolved oxygen. Parameters tested by water samples sent to a state-certified lab included total phosphorus and total suspended solids. During every sampling event, the water level (stage) was recorded. The monitoring station at the Anoka Dam includes automated equipment that continuously tracks water levels and calculates flows. Water level and flow data for other sites was obtained from the US Geological Survey, who maintains a hydrological monitoring site at Viking Boulevard.

The purpose of this report is to make an upstream to downstream comparison of Rum River water quality. It includes only parameters tested in 2016. It does not include additional parameters tested at the Anoka Dam or additional monitoring events at that site. For that information, see Metropolitan Council reports at



<http://www.metrocouncil.org/Environment/RiversLakes>. All other raw data can be obtained from the Anoka Conservation District, and is also available through the Minnesota Pollution Control Agency's EQUIS database, which is available through their website.

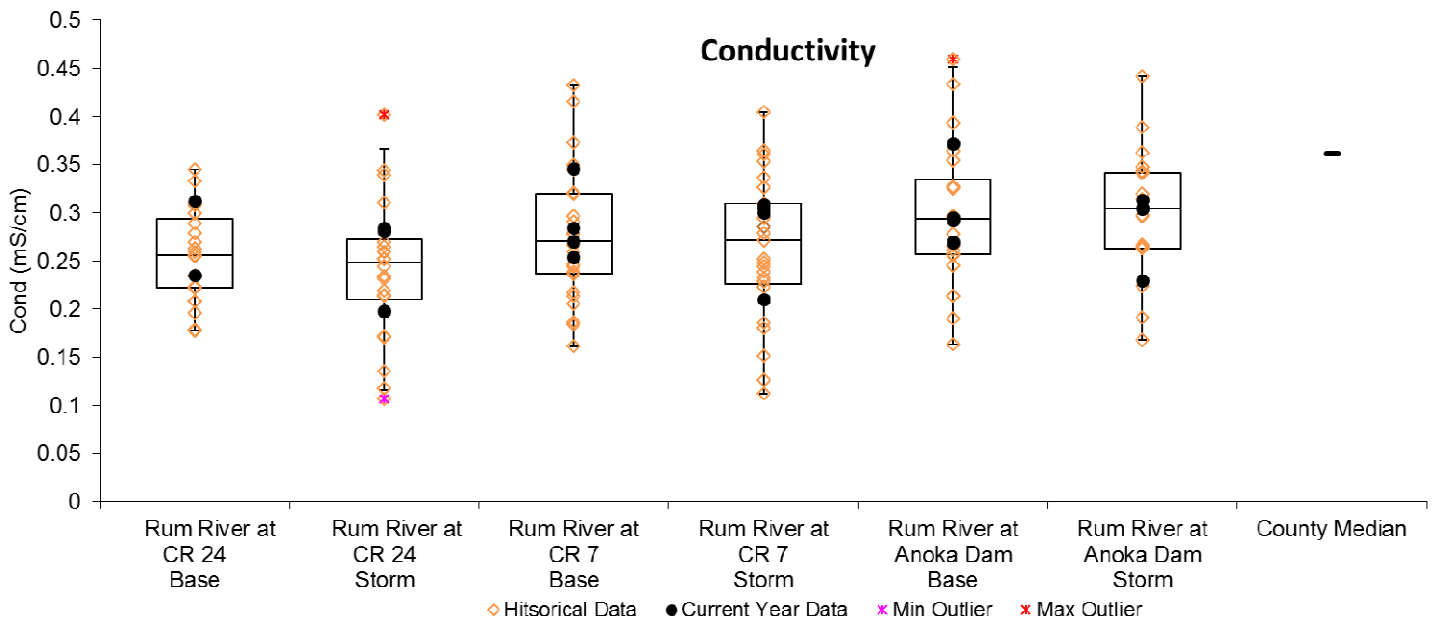
Results and Discussion

On the following pages data are presented and discussed for each parameter. Management recommendations will be included at the conclusion of this report. The Rum River is an exceptional waterbody, and its protection and improvement should be a high priority.

Conductivity

Conductivity and chlorides are measures of dissolved pollutants. Dissolved pollutant sources include road runoff and industrial chemicals, among many others. Metals, hydrocarbons, road salts, and others are often of concern in a suburban environment. Conductivity is the broadest measure of dissolved pollutants we used. It measures electrical conductivity of the water; pure water with no dissolved constituents has zero conductivity. Chlorides are the measure of chloride salts, the most common of which are road de-icing chemicals. Chlorides can also be present in other pollutant types, such as wastewater. These pollutants are of greatest concern because of the effect they can have on the stream's biological community. They can also be of concern because the Rum River is upstream from the Twin Cities drinking water intakes on the Mississippi River.

Conductivity during baseflow and storm conditions Orange diamonds are historical data from previous years and black circles are 2016 readings. Box plots show the median (middle line), 25th and 75th percentile (ends of box), and 10th and 90th percentiles (floating outer lines).



Conductivity is acceptably low in the Rum River, but increases downstream (see figures above) and is usually higher during baseflow. Median conductivity from upstream to downstream of the sites monitored in 2016 (all conditions) was 0.281 mS/cm, 0.293 and 0.300 mS/cm, respectively. All three sites are lower than the median for 34 Anoka County streams of 0.362 mS/cm. The 2016 maximum observed conductivity in the Rum River was 0.37 mS/cm which is the close to the median for all other Anoka County streams, and levels in general were far lower than in 2015.

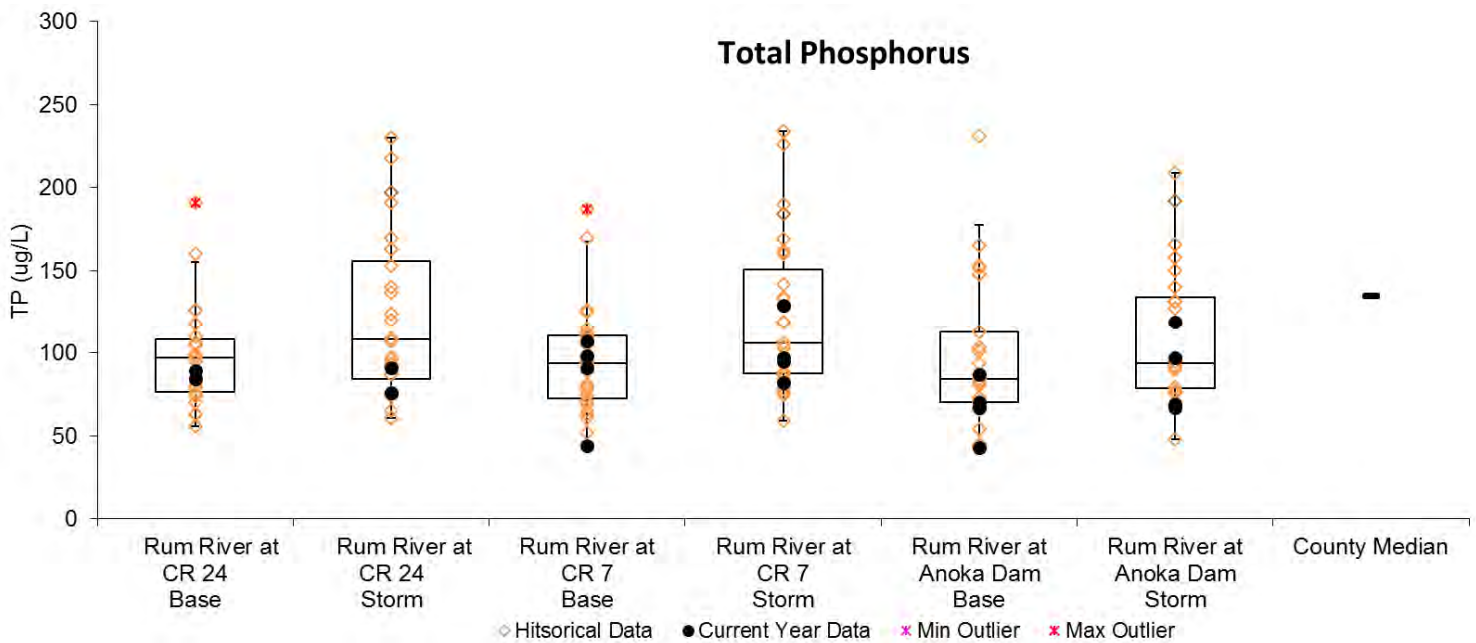
Conductivity was lowest at most sites during storms, suggesting that stormwater runoff contains fewer dissolved pollutants than the surficial water table that feeds the river during baseflow. High baseflow conductivity has been observed in most other nearby streams as well. This occurrence has been studied extensively, and the largest cause has been found to be road salts that have infiltrated into the shallow aquifer. Geologic materials also contribute, but to a lesser degree.

Conductivity increased from upstream to downstream. During baseflow, this increase from upstream to downstream reflects greater road densities and deicing salt application. During storms, the higher conductivity downstream is reflective of greater stormwater runoff and pollutants associated with the more densely developed lower watershed.

Total Phosphorus

Total phosphorus in the Rum River is acceptably low and is lower than the median for all other monitored 34 Anoka County streams (see figure below). 2016 readings averaged lower than 2015 results, which had a marked decrease from 2014 results. This nutrient is one of the most common pollutants in our region, and can be associated with urban runoff, agricultural runoff, wastewater, and many other sources. The median phosphorus concentration in 2016 at the three monitored sites (all conditions) was 84, 96 and 87 ug/L. These upstream-to-downstream differences are negligible and there is no trend of increasing phosphorus downstream. All sites in 2016 had phosphorus concentrations lower than the median for Anoka County streams of 135 ug/L. In 2015 the highest observed total phosphorus reading was during one particular storm event, with a maximum of 132. In all, phosphorus in the Rum River is below the state standard of 100 ug/L, but should continue to be an area of pollution control effort as the area continues to be developed.

Total phosphorus during baseflow and storm conditions Orange diamonds are historical data from previous years and black circles are 2016 readings. Box plots show the median (middle line), 25th and 75th percentile (ends of box), and 10th and 90th percentiles (floating outer lines).



Turbidity and Total Suspended Solids (TSS)

Turbidity and total suspended solids (TSS) are two different measurements of solid material suspended in the water. Turbidity is measured by the refraction of a light beam passed through a water sample. It is most sensitive to large particles. Total suspended solids is measured by filtering solids from a water sample and weighing the filtered material. The amount of suspended material is important because it affects transparency and aquatic life, and because many other pollutants are attached to particles. Many stormwater treatment practices such as street sweeping, sumps, and stormwater settling ponds target sediment and attached pollutants. In 2016, suspended solids in the Rum River were acceptably low.

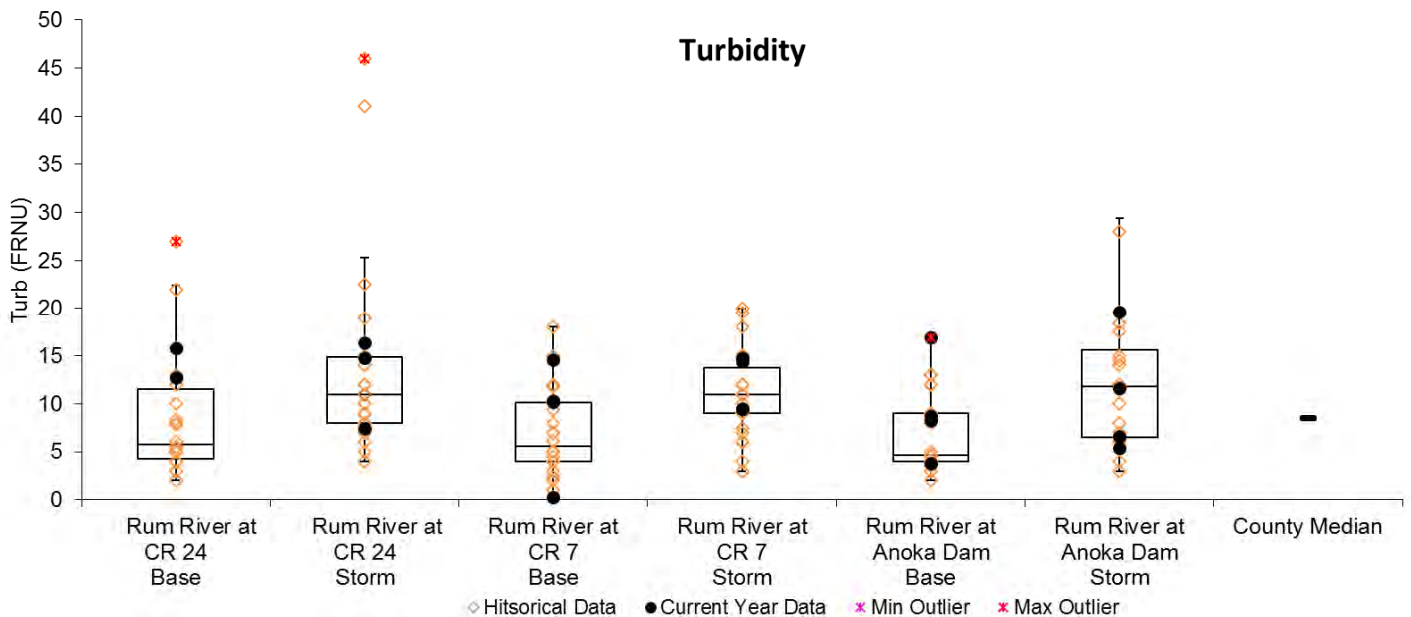
It is important to note the suspended solids can come from sources within and outside of the river channel. Sources on land include soil erosion, road sanding, and others. Riverbank erosion and movement of the river bottom also contributes to suspended solids. A moderate amount of this “bed load” is natural and expected.

In the Rum River, turbidity was low with increases during storms and a slight decrease at downstream monitoring sites (see figure below). The median turbidity, in 2016 (all conditions) was 14.8, 10.3 and 8.5 NTU (upstream to downstream), which is somewhat higher than the median for Anoka County streams of 8.5 NTU. Turbidity was elevated on a few occasions, especially during storms. In 2016 the maximum observed was 19.6 NTU during a mid-season monitoring event.

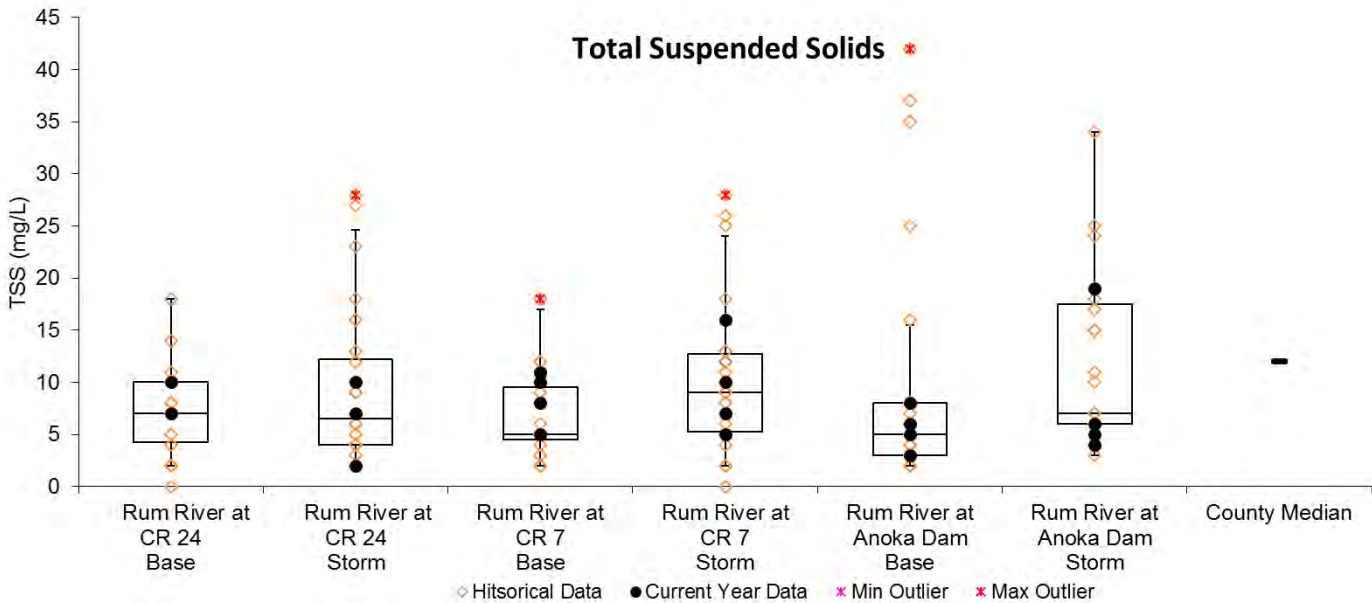
TSS in 2016 was similar to 2015 results. The median TSS, in 2016 (all conditions) was 7, 9 and 5.5 (upstream to downstream). These are all lower than the Anoka County stream median for TSS of 12.

Rigorous stormwater treatment should occur as the Rum River watershed continues to be developed, or the collective pollution caused by many small developments could seriously impact the river. Bringing stormwater treatment up to date in older developments is also important.

Turbidity during baseflow and storm conditions Orange diamonds are historical data from previous years and black circles are 2016 readings. Box plots show the median (middle line), 25th and 75th percentile (ends of box), and 10th and 90th percentiles (floating outer lines).



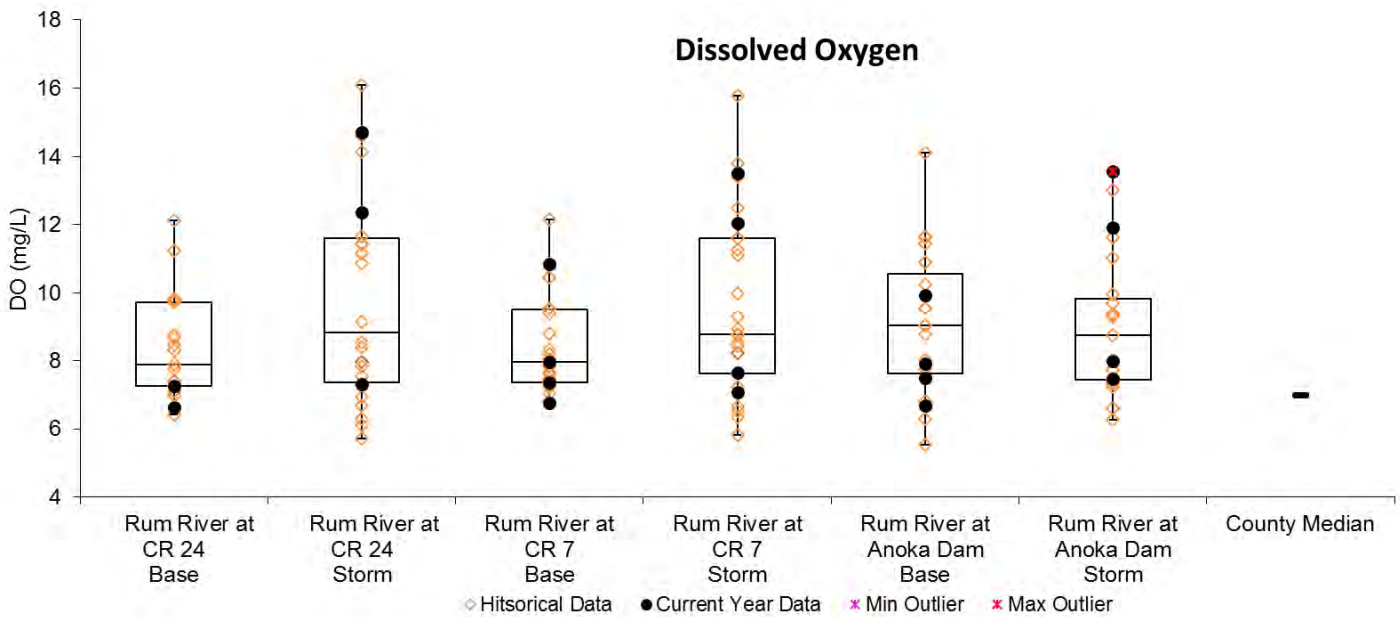
Total suspended solids during baseflow and storm conditions Orange diamonds are historical data from previous years and black circles are 2016 readings Box plots show the median (middle line), 25th and 75th percentile (ends of box), and 10th and 90th percentiles (floating outer lines).



Dissolved Oxygen

Dissolved oxygen is necessary for aquatic life, including fish. Organic pollution causes oxygen to be consumed when it decomposes. If oxygen levels fall below the state water quality standard of 5 mg/L, aquatic life begins to suffer. A stream is considered impaired if 10% of observations are below this level in the last 10 years. Dissolved oxygen levels are typically lowest in the early morning because of decomposition consuming oxygen at night without offsetting oxygen production by photosynthesis. In the Rum River, dissolved oxygen was always above 5 mg/L at all monitoring sites, with 6.62 mg/L being the lowest level recorded in 2016.

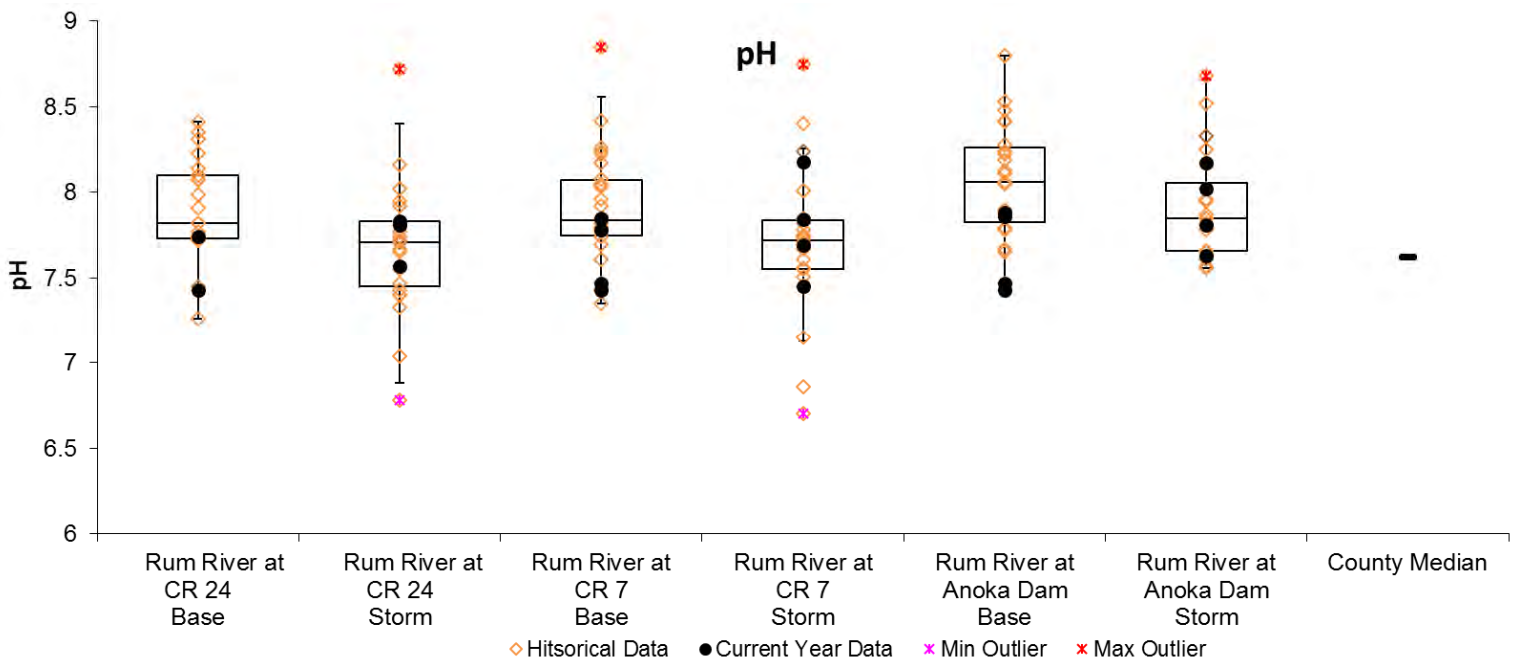
Dissolved oxygen during baseflow and storm conditions Orange diamonds are historical data from previous years and black circles are 2016 readings Box plots show the median (middle line), 25th and 75th percentile (ends of box), and 10th and 90th percentiles (floating outer lines).



pH

pH refers to the acidity of the water. The Minnesota Pollution Control Agency's water quality standard is for pH to be between 6.5 and 8.5. The Rum River is generally within this range and easily remained so in 2016 (see figure below).

pH during baseflow and storm conditions Orange diamonds are historical data from previous years and black circles are 2016 readings. Box plots show the median (middle line), 25th and 75th percentile (ends of box), and 10th and 90th percentiles (floating outer lines).



Summary and Recommendations

The Rum River's water quality is good. It does show a slight increase in conductivity downstream. Phosphorus levels are near, but slightly below, state water quality standards. Protection of the Rum River should be a high priority for local officials. Large population increases are expected for the Rum River's watershed within Anoka County, and this continued development has the potential to degrade water quality unless carefully planned and managed with the river in mind. Development pressure is likely to be especially high near the river because of its scenic and natural qualities.

Stream Water Quality – Biological Monitoring

Description: This program combines environmental education and stream monitoring. Under the supervision of the ACD staff, high school science classes collect aquatic macroinvertebrates from a stream, identify their catch to the family level, and use the resulting numbers to gauge water and habitat quality. These methods are based upon the knowledge that different families of macroinvertebrates have different water and habitat quality requirements. The families collectively known as EPT (Ephemeroptera, or mayflies; Plecoptera, or stoneflies; and Trichoptera, or caddisflies) are generally pollution intolerant. Other families can thrive in low quality water. Therefore, a census of stream macroinvertebrates yields information about stream health.

Purpose: To assess stream quality, both independently as well as by supplementing chemical data. To provide an environmental education service to the community.

Location: Rum River behind Anoka High School, south side of Bunker Lake Blvd, Anoka

Results: Results for each site are detailed on the following pages.

Tips for Data Interpretation

Consider all biological indices of water quality together rather than looking at each alone, because each gives only a partial picture of stream condition. Compare the numbers to county-wide averages. This gives some sense of what might be expected for streams in a similar landscape, but does not necessarily reflect what might be expected of a minimally impacted stream. Some key numbers to look for include:

Families Number of invertebrate families. Higher values indicate better quality.

EPT Number of families of the generally pollution-intolerant orders Ephemeroptera (mayflies), Plecoptera (stoneflies), Trichoptera (caddisflies). Higher numbers indicate better stream quality.

Family Biotic Index (FBI) An index that utilizes known pollution tolerances for each family. Lower numbers indicate better stream quality.

FBI	Stream Quality Evaluation
0.00-3.75	Excellent
3.76-4.25	Very Good
4.26-5.00	Good
5.01-5.75	Fair
5.76-6.50	Fairly Poor
6.51-7.25	Poor
7.26-10.00	Very Poor

% Dominant Family High numbers indicates an uneven community, and likely poorer stream health.

Biomonitoring

RUM RIVER

behind Anoka High School, Anoka
 STORET SiteID = S003-189

Last Monitored

By Anoka High School in 2016

Monitored Since

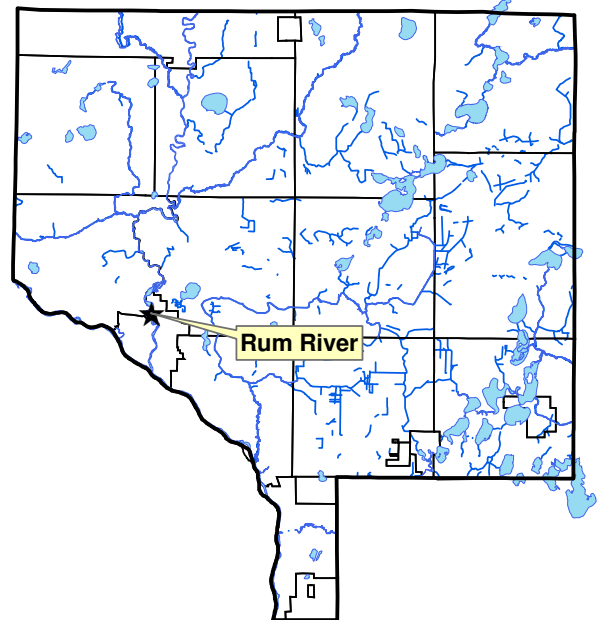
2001

Student Involvement

About 150 students in 2016, over 1,000 total since 2001

Background

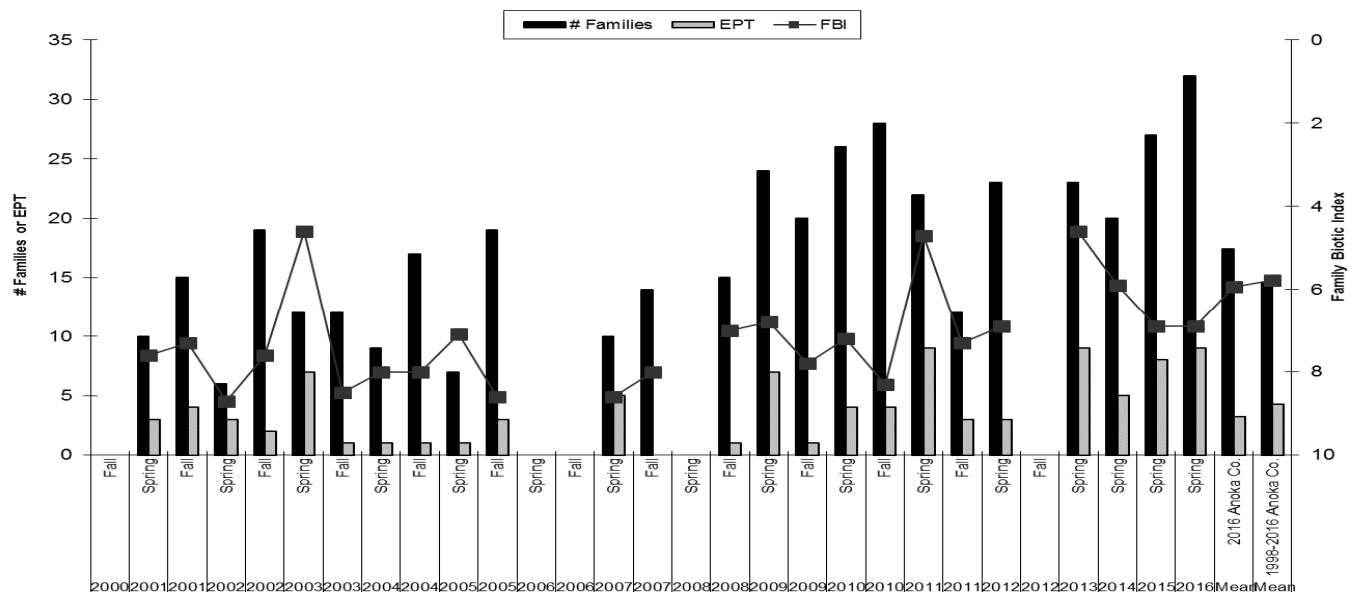
The Rum River originates from Lake Mille Lacs, and flows south through western Anoka County where it joins the Mississippi River in the City of Anoka. In Anoka County the river has both rocky riffles (northern part of county) as well as pools and runs with sandy bottoms. The river's condition is generally regarded as excellent. Most of the Rum River in Anoka County has a state "scenic and recreational" designation. The sampling site is near the Bunker Lake Boulevard bridge behind Anoka High School. Most sampling has been conducted in a backwater rather than the main channel.



Results

Anoka High school classes monitored the Rum River in spring of 2016 with Anoka Conservation District (ACD) oversight. The results for spring 2016 were better than previous years. More families, 32 in total, were found here than in any other Anoka County stream. This was also the highest family total ever collected at this site. The number of sensitive EPT families (9) ties the most ever at this site, and the FBI score (6.9) was the best in Anoka County.

Summarized Biomonitoring Results for Rum River behind Anoka High School



Biomonitoring Data for the Rum River behind Anoka High School

Data presented from the most recent five years. Contact the ACD to request archived data.

Year	2011	2011	2012	2013	2014	2015	2016	Mean	Mean
Season	Spring	Fall	Spring	Spring	Spring	Spring	Spring	2016 Anoka Co.	1998-2016 Anoka Co.
FBI	4.70	7.30	6.90	4.60	5.90	6.90	6.90	5.9	5.8
# Families	22	12	23	23	20	27	32	17.4	14.6
EPT	9	3	3	9	5	8	9	3.2	4.3
Date	10-Jun	5-Oct	8-May	14-May	20-May	11-May	17-May		
sampling by	ACD	ACD	AHS	AHS	AHS	AHS	AHS		
sampling method	MH	MH	MH	MH	MH	MH	MH		
Mean # individuals	604	188	502	357	350	767	3363		
# replicates	1	1	2	4	4	2	1		
Dominant Family	baetidae	hyaellidae	silphonuridae	Perlodidae	Siphonuridae	Siphonuridae	Siphonuridae		
% Dominant Family	57.5	63.3	37.8	42.1	33.4	69.3	74.9		
% Ephemeroptera	59.3	11.2	44.9	19.4	57.8	78.9	78.7		
% Trichoptera	1	0	1.2	0.2	0.1	1.4	0		
% Plecoptera	3.8	0.5	0	42.6	0.5	0	0.4		

Supplemental Stream Chemistry Readings

Data presented from the most recent five years. Contact the ACD to request archived data.

Parameter	5/18/2010	10/7/2010	6/10/2011	10/5/2011	5/8/2012	5/13/2013	5/20/2014
pH	7.24	7.22	7.84	7.98	8.10	7.69	8
Conductivity (mS/cm)	0.207	0.399	0.296	0.296	0.205	0.181	0.237
Turbidity (NTU)	7	7	18	10	7	5	14.2
Dissolved Oxygen (mg/L)	6.93	na	6.85	7.91	7.87	10.00	13.05
Salinity (%)	0	0.01	0.01	0.01	0.00	0.00	0.11
Temperature (°C)	14.8	12.2	20.7	15.3	15.7	13.0	13.5

Discussion

Both chemical and biological monitoring indicate the good quality of this river. Habitat is ideal for a variety of stream life, and includes a variety of substrates, plenty of woody snags, riffles, and pools. Water chemistry monitoring done at various locations on the Rum River throughout Anoka County found that water quality is also good. Both habitat and water quality decline, but are still good, in the downstream reaches of the Rum River where development is more intense and the Anoka Dam creates a slow moving pool.

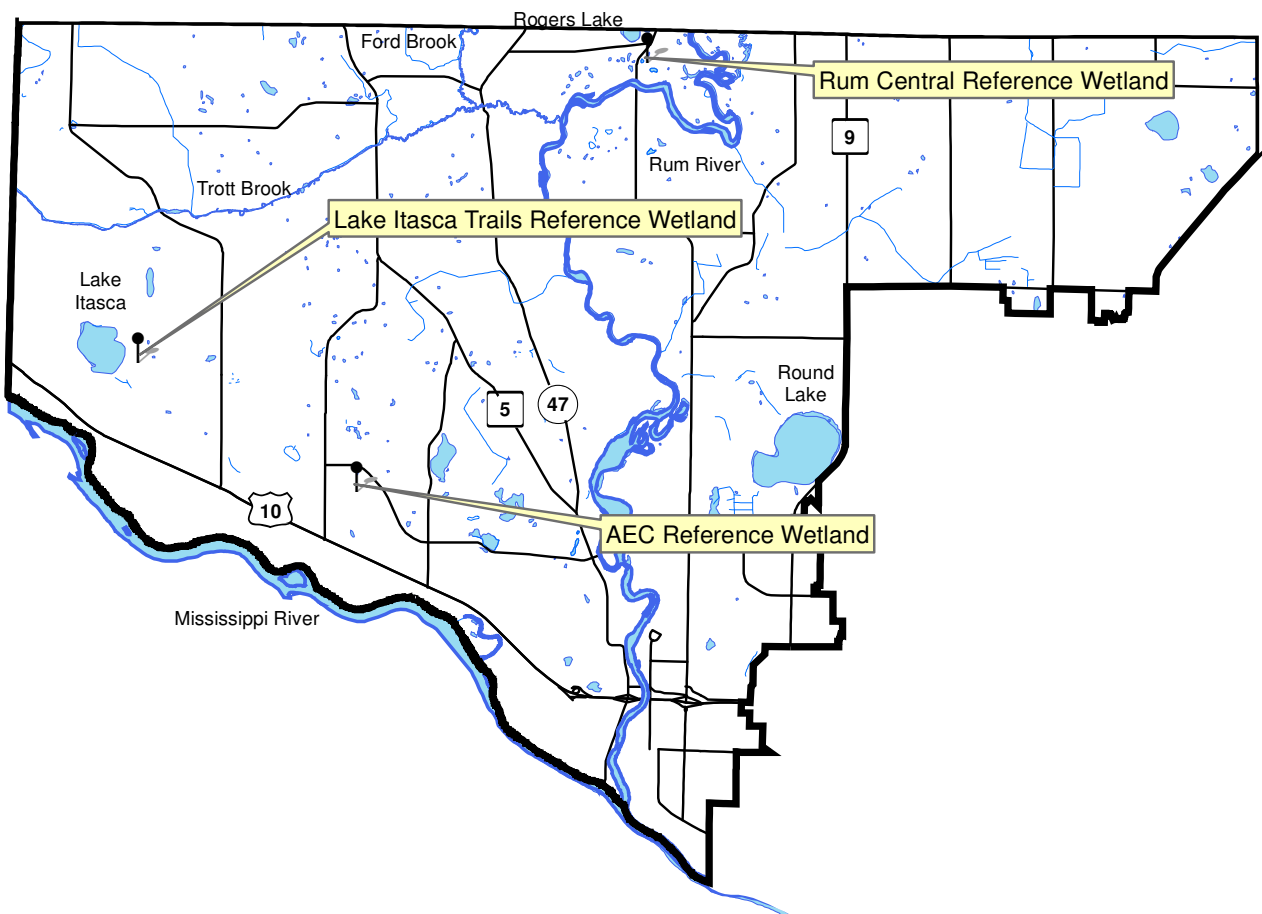
Historically, biomonitoring near Anoka was conducted mostly in a backwater area that during periods of low water level has a mucky bottom and does not receive good flow. During those conditions the area was unlikely to be occupied by families which are pollution intolerant. Recent monitoring has included sampling the main channel during an extremely low water level condition, followed by multiple years of very high water levels. The main channel and higher water levels offer opportunities for a more diverse habitat. These changes in sampling likely explain the apparent improvement in the invertebrate community in recent years.



Wetland Hydrology

- Description:** Continuous groundwater level monitoring at a wetland boundary. Countywide, the ACD maintains a network of 23 wetland hydrology monitoring stations.
- Purpose:** To provide understanding of wetland hydrology, including the impacts of climate and land use. These data aid in delineation of nearby wetlands by documenting hydrologic trends including the timing, frequency, and duration of saturation.
- Locations:** AEC Reference Wetland, Connexus Energy Property on Bunker Lake Blvd, Ramsey
Rum River Central Reference Wetland, Rum River Central Park, Ramsey
Lake Itasca Trail Reference Wetland, Lake Itasca Park, Ramsey
- Results:** See the following pages.

Lower Rum River Watershed Wetland Hydrology Monitoring Sites



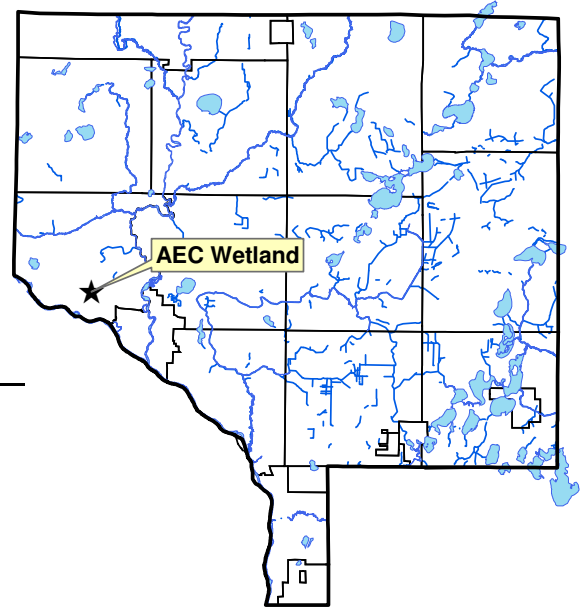
Wetland Hydrology Monitoring

AEC REFERENCE WETLAND

Cottonwood Park, adjacent to Connexus Energy Offices (formerly Anoka Electric Coop), Ramsey

Site Information

Monitored Since: 1999
Wetland Type: 3
Wetland Size: ~18 acres
Isolated Basin? No, probably receives storm water
Connected to a Ditch? No



Soils at Well Location:

Horizon	Depth	Color	Texture	Redox
A	0-15	10yr2/1	Sandy Loam	-
Bw	15-40	10yr3/2	Gravelly Sandy loam	-

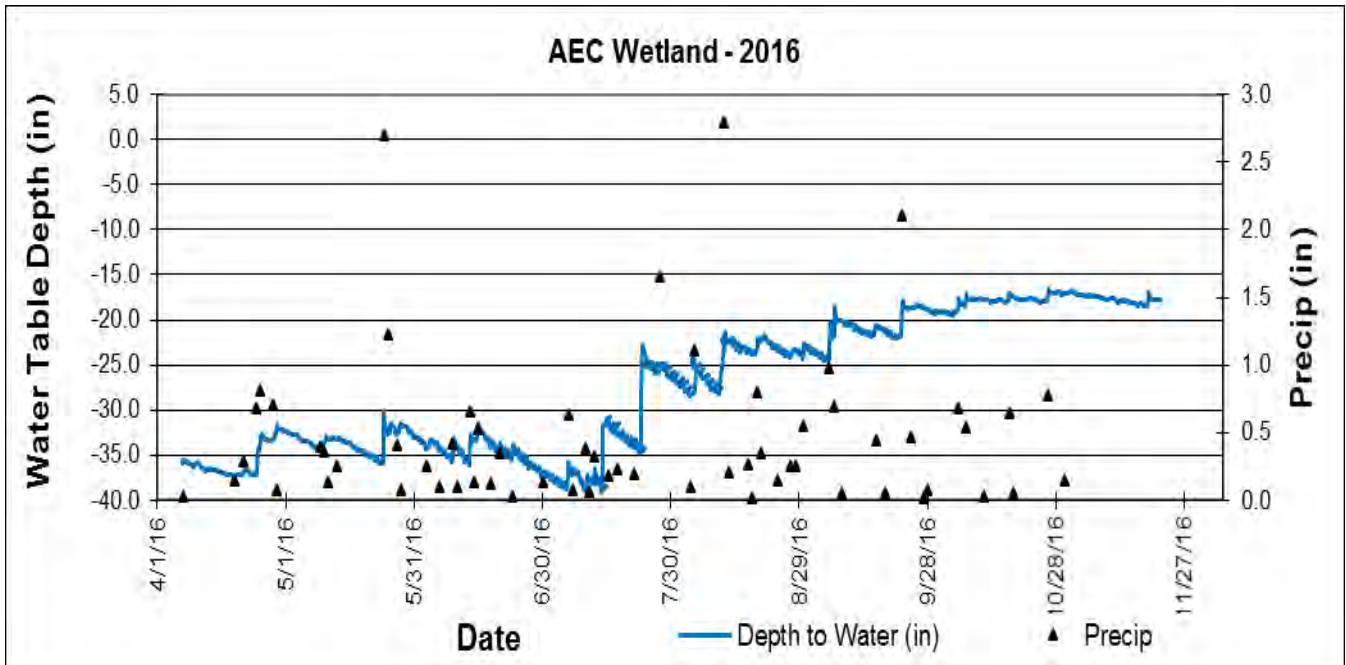
Surrounding Soils: Hubbard coarse sand

Vegetation at Well Location:

Scientific	Common	% Coverage
Populus tremuloides	Quaking Aspen	30
Salix bebbiana	Bebb Willow	30
Carex Spp	Sedge undiff.	30
Solidago canadensis	Canada Goldenrod	20

Other Notes: Well is located at the wetland boundary.

2016 Hydrograph



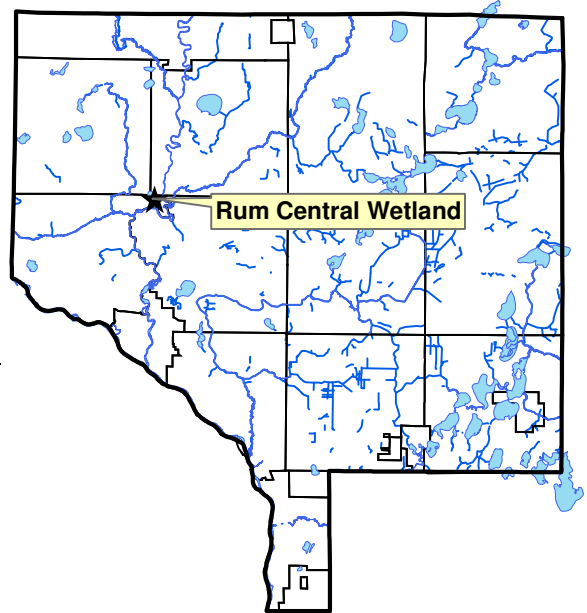
Wetland Hydrology Monitoring

RUM RIVER CENTRAL REFERENCE WETLAND

Rum River Central Regional Park, Ramsey

Site Information

Monitored Since: 1997
Wetland Type: 6
Wetland Size: ~0.8 acres
Isolated Basin?: Yes
Connected to a Ditch?: No



Soils at Well Location:

Horizon	Depth	Color	Texture	Redox
A	0-12	10yr2/1	Sandy Loam	-
Bg1	12-26	10ry5/6	Sandy Loam	-
Bg2	26-40	10yr5/2	Loamy Sand	-

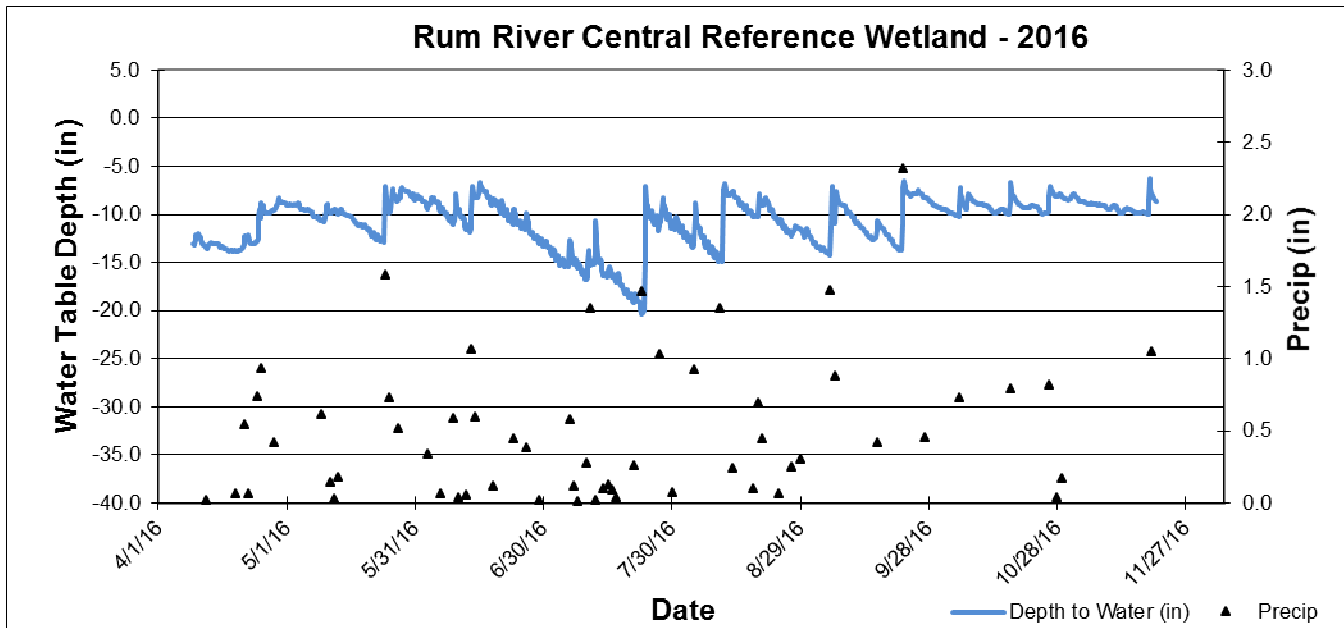
Surrounding Soils: Zimmerman fine sand

Vegetation at Well Location:

Scientific	Common	% Coverage
Phalaris arundinacea	Reed Canary Grass	40
Corylus americanum	American Hazelnut	40
Onoclea sensibilis	Sensitive Fern	30
Rubus strigosus	Raspberry	30
Quercus rubra	Red Oak	20

Other Notes: Well is located at the wetland boundary.

2016 Hydrograph



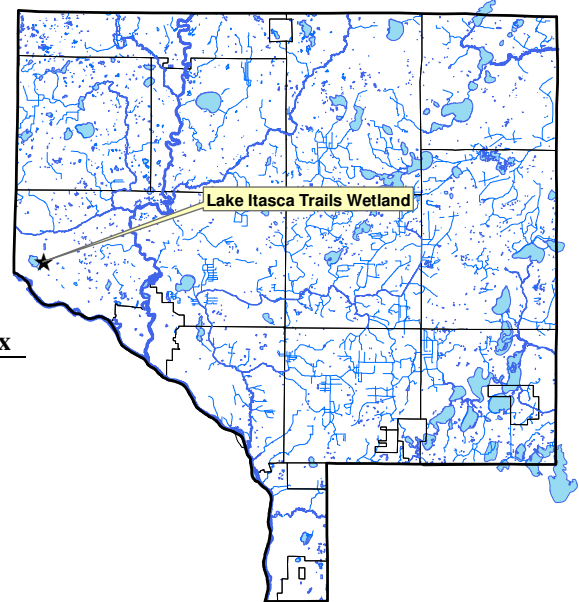
Wetland Hydrology Monitoring

LAKE ITASCA TRAILS REFERENCE WETLAND

Lake Itasca Trails Park, Ramsey

Site Information

Monitored Since: 2013
Wetland Type: 2/6
Wetland Size: ~10 acres
Isolated Basin? Yes
Connected to a Ditch? No



Soils at Well Location:

Horizon	Depth	Color	Texture	Redox
A1	0-12	10yr2/0	Mucky sand	-
A2	12-20	10ry2/1	Sand	-
B1	20-36	10yr4/1	Sand and fine gravel	-
B2	36-48	10yr6/1	Sand and fine gravel	-

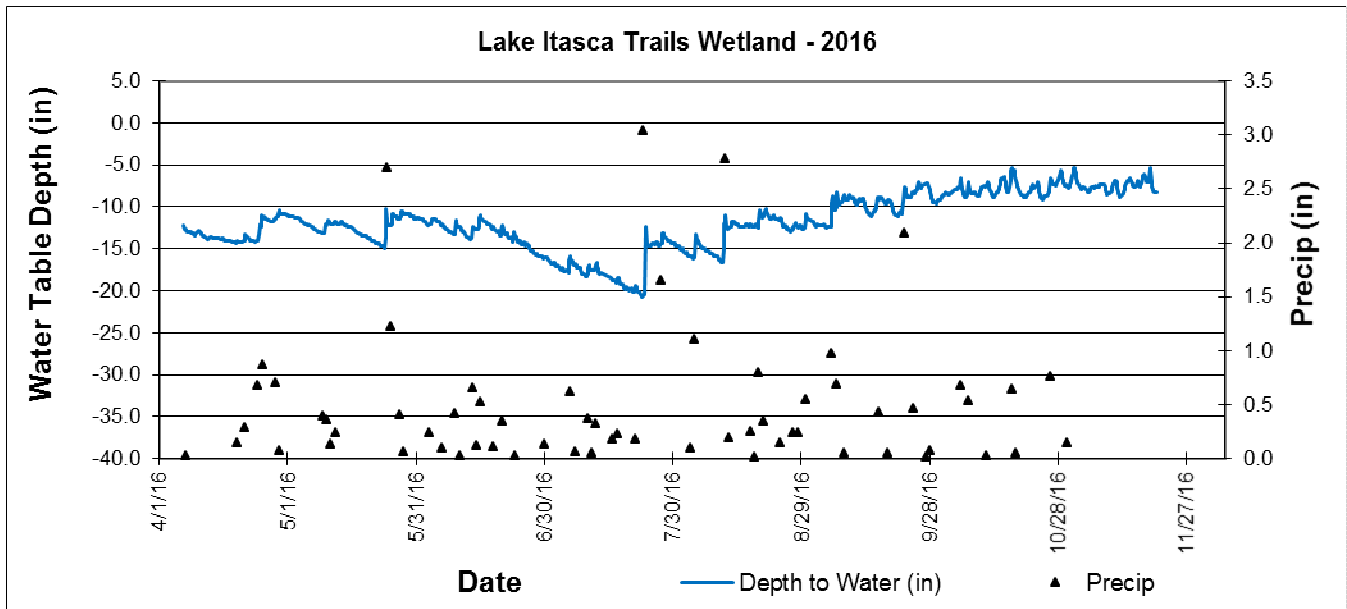
Surrounding Soils: Hubbard coarse sand

Vegetation at Well Location:

Scientific	Common	% Coverage
Carex stricta	Hummock Sedge	80
Phalaris arundinacea	Reed Canary Grass	20
Salix sp.	Willow	20
Rubus sp.	Bristle-berry	5

Other Notes: Well is located about 10 feet east and about 6 inches downslope of the wetland boundary. DNR Public Water Wetland 2-339.

2016 Hydrograph



Water Quality Grant Fund

Description: The LRRWMO provides cost share for projects on either public or private property that will improve water quality, such as repairing streambank erosion, restoring native shoreline vegetation, or rain gardens. This funding is administered by the Anoka Conservation District, which works with landowners on conservation projects. Projects affecting the Rum River are given the highest priority because it is viewed as an especially valuable resource.

Purpose: To improve water quality in lakes, streams and rivers by correcting erosion problems and providing buffers or other structures that filter runoff before it reaches the water bodies.

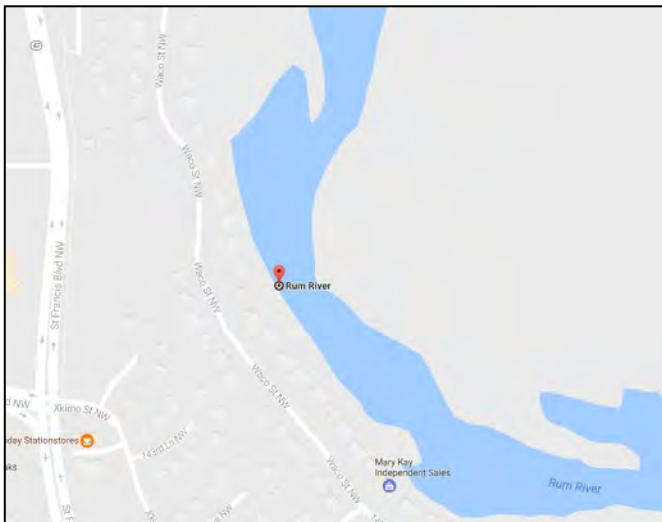
Results: Projects reported in the year they are installed. One riverbank stabilization project was installed in 2016 with LRRWMO cost share.

LRRWMO Cost Share Fund Summary

2006 LRRWMO Contribution	+	\$1,000.00
2008 Expense – Herralá Rum Riverbank stabilization	-	\$ 150.91
2008 Expense – Rusin Rum Riverbank stabilization	-	\$ 225.46
2009 LRRWMO Contribution	+	\$1,000.00
2009 Expense – Rusin Rum Riverbank bluff stabilization	-	\$ 52.05
2010 LRRWMO Contribution	+	\$ 0
2010 LRRWMO Expenses	-	\$ 0
2011 LRRWMO Contribution	+	\$ 0
2011 Expense - Blackburn Rum riverbank	-	\$ 543.46
2012 LRRWMO Contribution	+	\$1,000.00
2012 Expense – Smith Rum Riverbank	-	\$1,596.92
2013 LRRWMO Contribution	+	\$1,000.00
2013 Expense – Geldacker Mississippi Riverbank	-	\$1,431.20
2014 LRRWMO Contribution	+	\$2,050.00
2015 LRRWMO Contribution	+	\$1,000.00
2015 Expense – Smith Rum Riverbank	-	\$ 533.65
2016 Expense – Brauer Rum Riverbank	-	\$ 1,150.00
Fund Balance		\$1,366.35

2016 funded project – Brauer Rum Riverbank, City of Ramsey

Approximately 90 feet of undercut, eroding riverbank was stabilized using a cedar tree revetment. This project was funded with direct landowner contributions, LRRWMO cost share dollars, as well as a Conservation Corps of MN crew labor grant. Installation was done by the Minnesota Conservation Corps with oversight from the Anoka Conservation District in the fall of 2016.



MISSISSIPPI RIVER BANK STABILIZATION

Description: The City of Ramsey contracted the Anoka Conservation District to complete an inventory of riverbank condition along the 5.8 miles of city that border the Mississippi River in 2015. This inventory led to a grant application and acquisition of \$236k from BWSR’s Clean Water Fund in 2016. This money, along with a 25% match from individual property owners, will be utilized to implement \$295k worth of bio-engineered bank stabilization projects along 500 feet of Mississippi River bank.

Location: City of Ramsey


Purpose: To use a bioengineering approach to stabilize previously identified high-priority areas of severe erosion along the Mississippi River within the City of Ramsey

Results: The inventory led to the successful acquisition of \$236k in state grant funding for the ACD to complete bio-engineered bank stabilization projects along the Mississippi River bank in Ramsey. The original inventory report is available from the ACD.

Grant Application Image



Targeted Mississippi River Bank Stabilization with a Focus on Bioengineering



PROJECT BACKGROUND


- The Mississippi River is impaired for TSS and turbidity.
- A full inventory of shoreline conditions was completed by ACD in 2016 along a 5.8-mile stretch of the Mississippi River in the City of Ramsey that identified 27 private properties with severely to very severely eroding riverbanks.
- Numerous landowners have contacted ACD to request technical and financial assistance for riverbank stabilization.

PROJECT BENEFITS

- For this grant request of \$236,000 with \$59,000 in local match, up to five riverbanks will be stabilized delivering reductions of up to 2,500,000 lbs. TSS and 1,700 lbs. TP over the 10 year expected lifespan of the project.
- Riverbank stabilization is highly cost-effective with a 100% pollutant delivery ratio and removal costs/lb. for TSS of \$0.12 and for TP of \$236 over the project life.



Examples of ACD Bioengineered Riverbank Stabilization Projects



Before: Failing Riverbank



After: Regraded, revegetated, minimal rip-rap at toe



Before: Failing Riverbank



After: Cedar Tree Revetment

2016 Inventory Site Profile Example



Site Information		Erosion Length (ft)	Height (ft)	Depth (ft)	Slope (H:V)	Soil Loss (tons/yr)
Ownership	Private	589	8 - 22	12 - 33	1.5 - 1.9	653.5



Picture (698).JPG



Picture (670).JPG

4-148

Rum River Stabilizations

Description: Six riverbank stabilization projects were installed on the Rum River in 2016. At these sites, cedar tree revetments and willow stakes were used to stabilize eroding banks. The projects were installed in partnership with the Conservation Corps Minnesota (CCM). Funding for four of the projects was received from the Lessard-Sams Outdoor Heritage Council, a Clean Water Fund CCM crew labor grant and landowner contribution. Funding for one project was provided by Lower Rum River WMO cost-share, a Clean Water Fund CCM crew labor grant and landowner contribution. Funding for the final project came from the Anoka County Parks Department.

Location: Rum River Central Regional Park, three residential properties in Ramsey and two residential properties in Andover.

Purpose: To stabilize areas of riverbank with mild to moderate erosion, in order to reduce sediment loading in the Rum River, as well as to reduce the likelihood of a much larger and more expensive corrective project in the future.

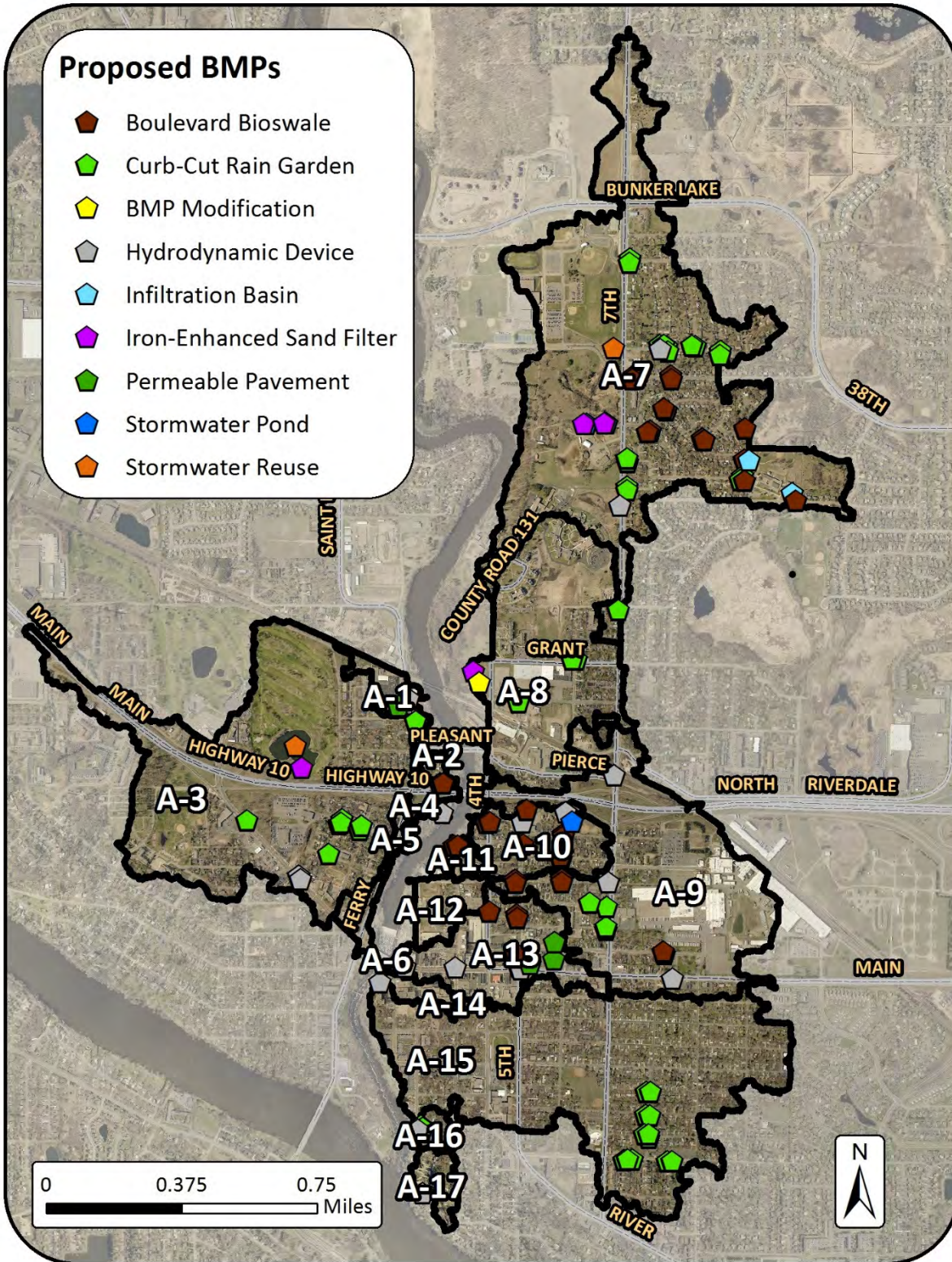
Results: Stabilized 1,316 linear feet of riverbank on the Rum River.



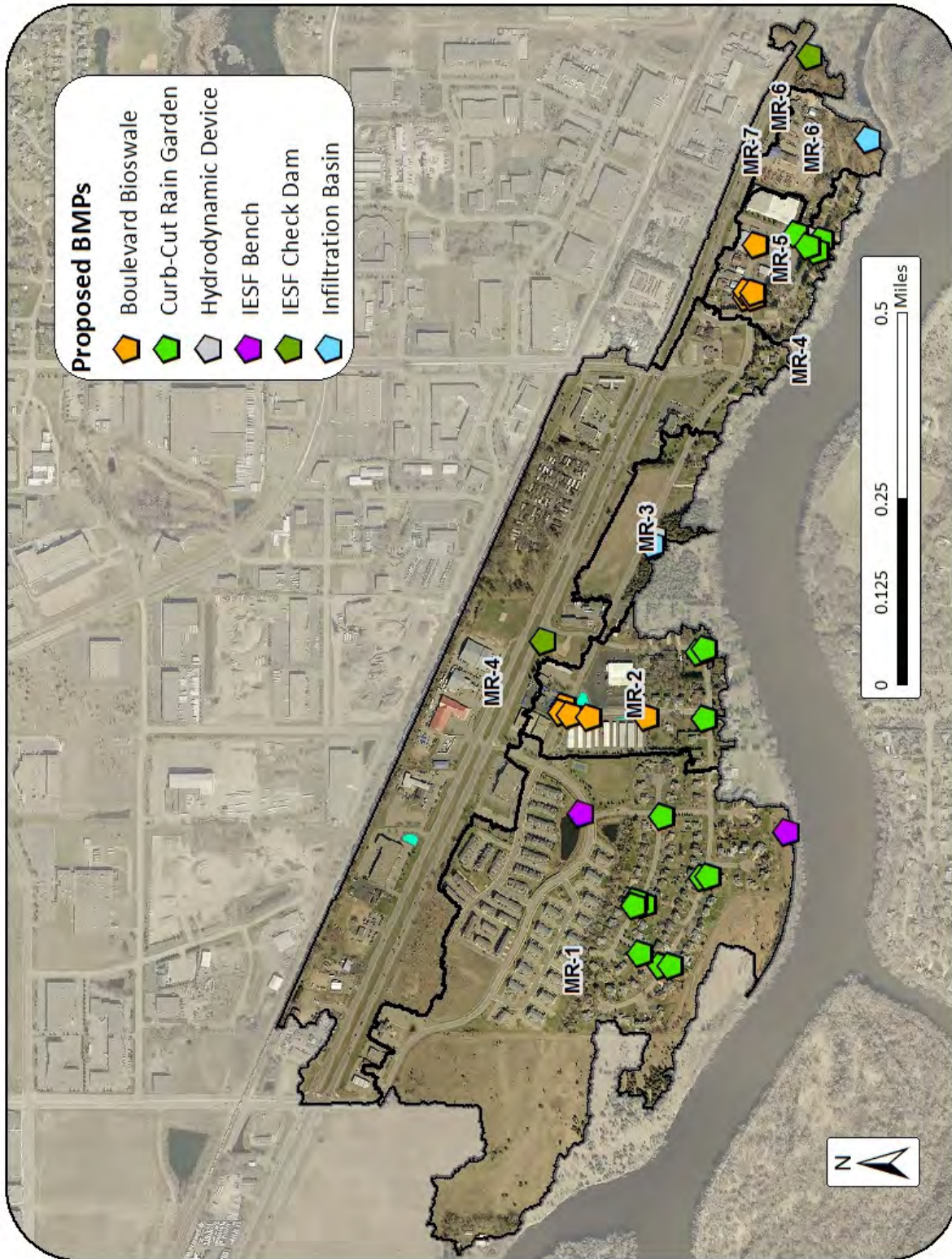
Anoka and Ramsey Stormwater Retrofit Analyses

- Description:** Identified new stormwater treatment opportunities in older, built-out neighborhoods identified by the cities and ranked projects by cost effectiveness (amount of pollutant kept out of area rivers per dollar spent). Water quality benefits associated with the installation of each identified project were individually modeled using the Source Loading and Management Model for Windows (WinSLAMM). WinSLAMM estimates volume and pollutant loading based on acreage, land use, and soils information. The costs associated with project design, administration, promotion, land acquisition, opportunity costs, construction oversight, installation, and maintenance were estimated. The total costs over the assumed effective life of each project were then divided by the modeled benefits over the same time period to enable ranking by cost-effectiveness. It is recommended that projects be installed in order of cost effectiveness (pounds of pollution reduced per dollar spent). Other factors, including a project's educational value/visibility, construction timing, total cost, or non-target pollutant reduction also affect project installation decisions and need to be weighed by resource managers when selecting projects to pursue.
- Location:** Selected areas in the Cities of Ramsey and Anoka.
- Purpose:** To improve water quality in the Rum and Mississippi Rivers.
- Results:** Work began in 2015 and was completed in 2016. A variety of stormwater retrofit approaches were identified. They include bio-retention, hydrodynamic devices, permeable pavement, iron enhanced sand filter pond benches, existing stormwater pond modifications, new stormwater ponds, and water reuse. The studies provide sufficient detail to pursue installation funds. The LRRWMO and ACD have since partnered to secure a \$50,577 Metropolitan Council grant for installations in 2017-18. Maps showing proposed BMPs are on the following pages.
-

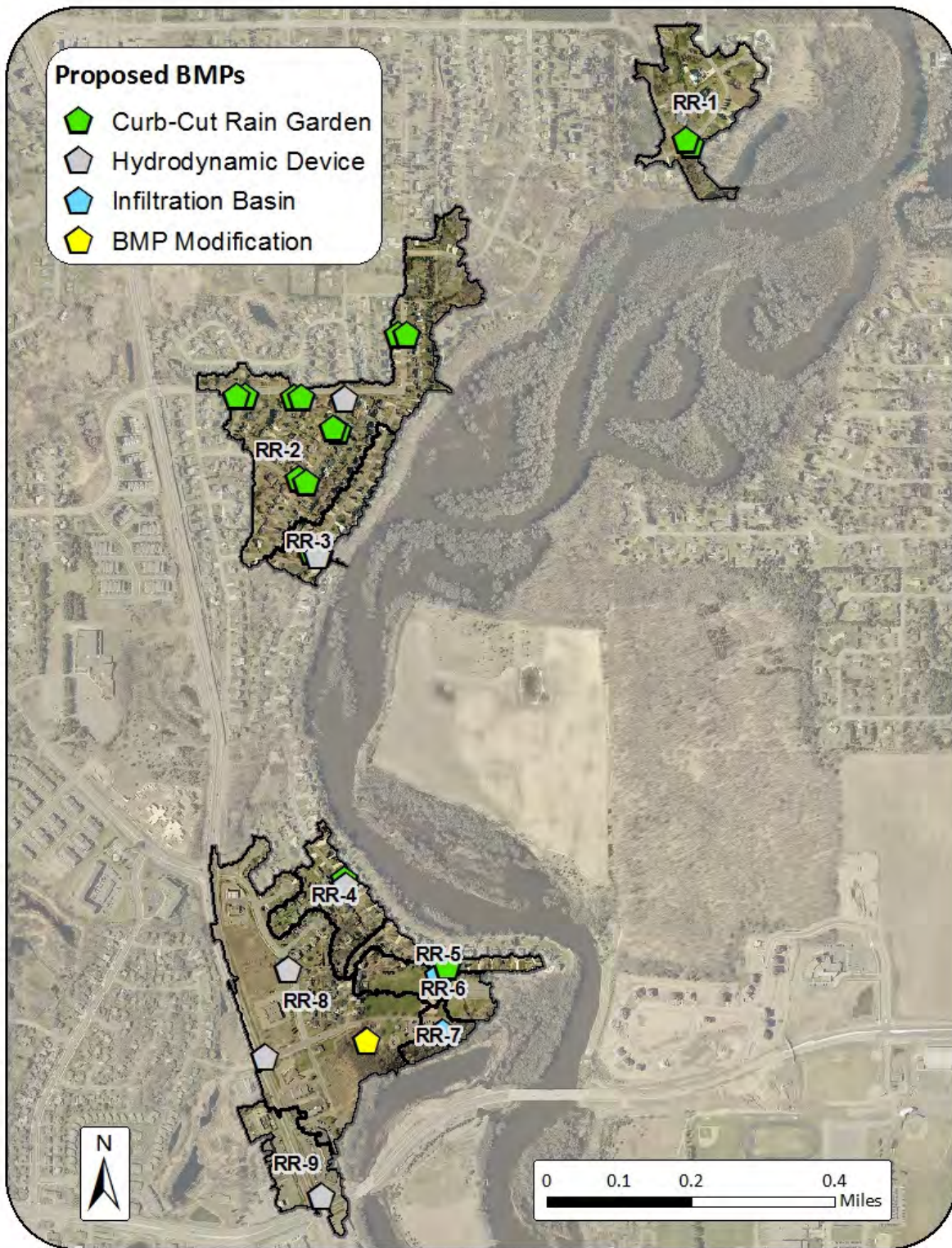
City of Anoka Proposed BMPs



City of Ramsey Proposed BMPs in Mississippi River Network



City of Ramsey Proposed BMPs in Rum River Network



Newsletters

- Description:** The Lower Rum River Watershed Management Organization (LRRWMO) contracted the Anoka Conservation District (ACD) to create a series of public education newsletter articles. The LRRWMO is required to publish an annual newsletter under State Rules.
- Purpose:** To improve public understanding of the LRRWMO, its functions, and accomplishments.
- Location:** Watershed-wide
- Results:** In 2016, the Anoka Conservation District (ACD) drafted two newsletter articles and sent them to cities for inclusion in their newsletters.
- The First newsletter article announced grant funding available to landowners in the LRRWMO interested in having a revetment installed on their riverbank. The other focused on the findings of a watershed-wide study into the health of the Rum River and its watershed.

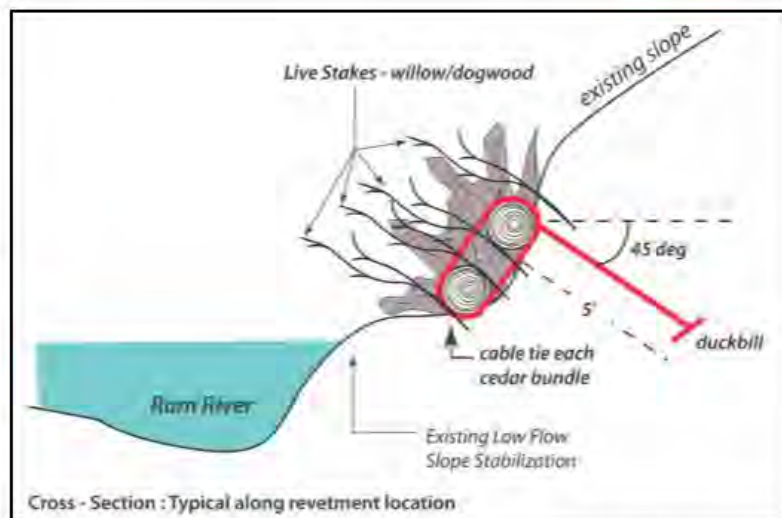
2016 Newsletter Articles

Revetments on the Rum River - Grants Available to Landowners

Landowners on the Rum River will soon have access to funding to address riverbank erosion with a unique method – cedar tree revetments. The Anoka Conservation District, with partners including the Lower Rum River Watershed Management Organization (LRRWMO), has secured a \$97,000 grant from the State's Outdoor Heritage Fund which is funded by the Clean Water Land and Legacy Amendment. They plan to install 10-20 projects addressing Rum riverbank erosion, beginning in fall 2016.



Cedar tree revetments are a low cost, but effective, means to address minor bank erosion before it gets worse. It's not appropriate for major bank erosion, such as on outside bends of the river. The technique involves cable-anchoring cut cedar trees alongside the bank. Their dense branches and naturally rot-resistant wood provide many years of bank armoring. In doing so, they protect property, help improve the river's water quality and provide fish habitat.



Residents interested in having their riverbank evaluated for a cedar tree revetment should contact Jamie Schurbon at the Anoka Conservation District (763-434-2030 ext. 12; jamie.schurbon@anokaswd.org). Most projects cost \$5,000-\$10,000. Landowners must provide 10% of that amount; the remainder is grant-funded.

Rum River Watershed Gets Checkup; New Management Plan

The Rum River runs from Lake Mille Lacs to Anoka. It is one of only seven State Scenic and Recreational Waterways, and part of the State's water trails system. Soil and water conservation districts and watershed organizations recently joined with the Minnesota Pollution Control Agency (MPCA) to test the health of the river and the surrounding watershed. They are developing a new management plan for the river, streams and lakes.

The results of a recent water quality check-up was mixed with some areas being in good shape and others not so good. Within Anoka County, Rogers Lake (partially in Ramsey, Oak Grove and Nowthen) had excessive nutrients that cause algae blooms. Trott Brook (City of Ramsey) and Crooked Brook (City of East Bethel) had too little oxygen for fish. High E.coli bacteria was found in Cedar Creek and Seeyle Brook. Mahoney Brook (City of Oak Grove) had a fish community indicative of poor conditions. There are studies underway to gather more information on these impaired waterbodies to determine the amount of nutrient reductions needed and strategies.

The Rum River and other lakes and streams are in good shape. Still, researchers noted reason for continued vigilance. For example, the Rum River in Isanti and Anoka County is approaching state standards for nutrients and Lake George in Oak Grove has a declining water quality trend, which is being further investigated.

The findings of these studies are being compiled into a new management plan for the watershed, set to be finalized in late 2016. The Lower Rum River Watershed Management Organization (LRRWMO; www.LRRWMO.org), a joint powers board formed by the Cities of Ramsey, Anoka and Andover, is representing local points of view in the development of these plans. They will also be a key player in putting the management plan into action.

The public is invited to participate in the discussion about managing these waterbodies. Throughout summer and fall 2016, draft management plans will be posted to www.AnokaSWCD.org. Residents may also contact Jamie Schurbon, Water Resource Specialist at 763-434-2030 ext. 12 or jamie.schurbon@anokaswcd.org or their representative on the LRRWMO.



Advertisement
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LRRWMO Website

- Description:** The Lower Rum River Watershed Management Organization (LRRWMO) contracted the Anoka Conservation District (ACD) to design and maintain a website about the LRRWMO and the Lower Rum River watershed. The website has been in operation since 2003.
- Purpose:** To increase awareness of the LRRWMO and its programs. The website also provides tools and information that helps users better understand water resources issues in the area.
- Location:** LRRWMO.org
- Results:** Regular website updates occurred throughout the year. The LRRWMO website contains information about both the LRRWMO and about natural resources in the area. Information about the LRRWMO includes:
- a directory of board members,
 - meeting minutes and agendas,
 - watershed management plan and annual reports,
 - descriptions of work that the organization is directing,
 - highlighted projects.

LRRWMO Website Homepage

Lower Rum River Watershed Management Organization

Main Menu

- Home
- Board Members
- Minutes & Agendas
- Cost Share Grants
- Monitoring
- Permits & Contacts
- Plans & Reports
- Projects
- Videos
- Wetlands Information

Other Watershed Organizations

- Coon Creek Watershed District
- Rice Creek Watershed District
- Sunrise River WMO
- Upper Rum River WMO
- Vadnais Lake Area Water Management WMO

Welcome
News and Announcements

League of Women Voters Meeting Video about Water and the Rum River

Public Information Meetings - Mississippi River Corridor Critical Area (MRCCA)

The Lower Rum River Watershed Management Organization (LRRWMO) is a joint powers special purpose unit of government including the cities of Ramsey, Anoka, and portions of Andover. The WMO Board is made up of representatives from each of these cities. This organization seeks to protect and improve lakes, rivers, streams, groundwater, and other water resources across municipal boundaries. These goals are pursued through

- water quality and flow monitoring
- investigative studies of problems
- coordinating improvement projects
- education campaigns
- a permitting process
- others at the WMO's discretion

All of the WMO's activities are guided by their Watershed Management Plan.

Resources of particular importance to the LRRWMO include the Rum River, Trott Brook, numerous ditches that drain to the Rum River, Round Lake, Lake Itasca, and numerous wetlands. The Mississippi River is also notable, as it borders the southern edge of the WMO's jurisdictional area. Because little of the land area in the LRRWMO drains directly to the Mississippi, but rather to the Rum River, the Mississippi receives protection from the WMO primarily through management of the Rum.

Most projects that may directly or indirectly affect water resources are required to have a permit from the LRRWMO. If you are considering a construction project or projects in or around wetlands, streams, rivers, or lakes, you should further research permit requirements on this website, or contact a **LRRWMO representative**: 763-767-5131, 2015 First Avenue, Anoka, MN 55303

Meetings: 3rd Thursday 8:30am at the Anoka City Hall

Administrative Support: Carla Wirth, Time Saver Off Site Secretarial, Inc 2015 First Ave., Anoka, MN 55303, 612-251-8999

Financial Summary

The ACD accounting is organized by program and not by customer. This allows us to track all of the labor, materials and overhead expenses for a program. We do not, however, know specifically which expenses are attributed to monitoring which sites. To enable reporting of expenses for monitoring

conducted in a specific watershed, we divide the total program cost by the number of sites monitored to determine an annual cost per site. We then multiply the cost per site by the number of sites monitored for a customer.

Lower Rum River Watershed Financial Summary

Lower Rum River Watershed	WMO Asst (no charge)	Reference Wetlands	Ob Well	Lake Level	Lake WQ	Stream WQ	WOMP	Student Blommon	LRRWMO Admin	WMO Annual Rpts to State	LRRWMO Outreach/Promo	WMO Website Maint	Anoka Nat. Pres. Restoration	Revetments on the Rum	Rum River Stabilization	Rum River 1W1P	Rum River WRAPP	City of Anoka SRA	City of Ramsey SRA	City of Ramsey Riverbank Inventory	Total
Revenues																					
LRRWMO	0	1725	0	1000	3350	2450	0	825	0	850	1120	625	0	1150	0	0	0	1102	898	0	15095
State	0	0	120	0	0	0	0	0	0	0	0	0	0	8316	0	0	86431	6534	6844	0	108245
Anoka Co. General Services	390	32	117	601	121	0	214	407	0	0	518	50	4449	1325	0	98	0	58	0	836	9217
Anoka Conservation District	0	69	0	0	0	0	0	0	0	0	2034	0	0	0	0	0	0	0	0	0	2103
County Ag Preserves/Projects	0	0	0	0	0	0	0	475	0	0	0	0	0	0	7304	0	0	0	0	0	7779
Service Fees	0	0	0	0	0	0	0	0	0	0	0	0	0	1465	0	0	0	0	0	0	1465
Regional/Local	0	48	0	0	278	0	800	0	0	0	0	0	0	0	0	0	0	5656	3441	2005	12229
BWSR Cons Delivery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BWSR Capacity Funds	0	1834	0	0	0	0	0	0	0	0	2811	0	0	560	243	576	0	0	0	0	6023
BWSR Cost Share TA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1636	0	0	0	0	0	1636
Metro ETA & AWQCP	0	0	0	0	0	0	0	0	0	0	0	0	0	4667	2689	0	0	0	0	0	7356
Local Water Planning	0	911	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	911
TOTAL	390	4619	237	1601	3749	2450	1014	1707	0	850	6483	675	4449	17484	11871	674	86431	13350	11183	2841	172059
Expenses-																					
Capital Outlay/Equip	5	24	3	19	29	11	12	19	3	5	52	5	46	718	117	8	182	164	122	33	1575
Personnel Salaries/Benefits	339	1771	206	1393	2185	801	883	1432	211	366	3865	352	3448	11766	8746	586	13535	12212	9131	2472	75701
Overhead	25	130	15	102	161	59	65	105	16	27	284	26	254	865	643	43	996	898	672	182	5568
Employee Training	2	10	1	8	12	5	5	8	1	2	22	2	19	66	49	3	76	69	51	14	426
Vehicle/Mileage	7	37	4	29	46	17	19	30	4	8	82	7	73	249	185	12	286	258	193	52	1600
Rent	12	63	7	50	78	29	32	51	8	13	138	13	123	420	313	21	484	436	326	88	2705
Program Participants	0	0	0	0	0	0	0	0	0	0	0	0	0	0	441	0	0	0	0	0	441
Program Supplies	0	2411	0	0	889	423	0	61	0	0	2040	191	486	2824	1377	0	65890	0	0	0	76591
TOTAL	390	4447	237	1601	3400	1344	1014	1707	243	421	6483	596	4449	16909	11871	674	81448	14037	10495	2841	164608

Recommendations

- **Install projects identified in the stormwater retrofitting studies for the Cities of Anoka and Ramsey.** This project has identified and ranked projects that would improve stormwater runoff before it is discharged to the Rum or Mississippi Rivers. A Metropolitan Council grant for construction has been secured for 2017-18.
- **Implement the MPCA Rum River WRAPP (Watershed Restoration and Protection Plan).** This WRAPP was an assessment of the entire Rum River watershed. It outlines regional priorities and management strategies, and attempts to coordinate them across jurisdictions.
- **Engage in the Upper Rum River WMO's watershed plan update process.** The draft 10-year Watershed Management Plan was completed in late 2016 and will undergo comment and review stages in early 2017.
- **Implement water conservation measures** throughout the watershed and promote it metro-wide. Depletion of surficial water is a concern.
- **Continue lake level monitoring, especially on Round Lake** where residents have expressed concerns with levels. Other nearby lakes should be monitored for comparison and problems.