

# 2011 Annual Report



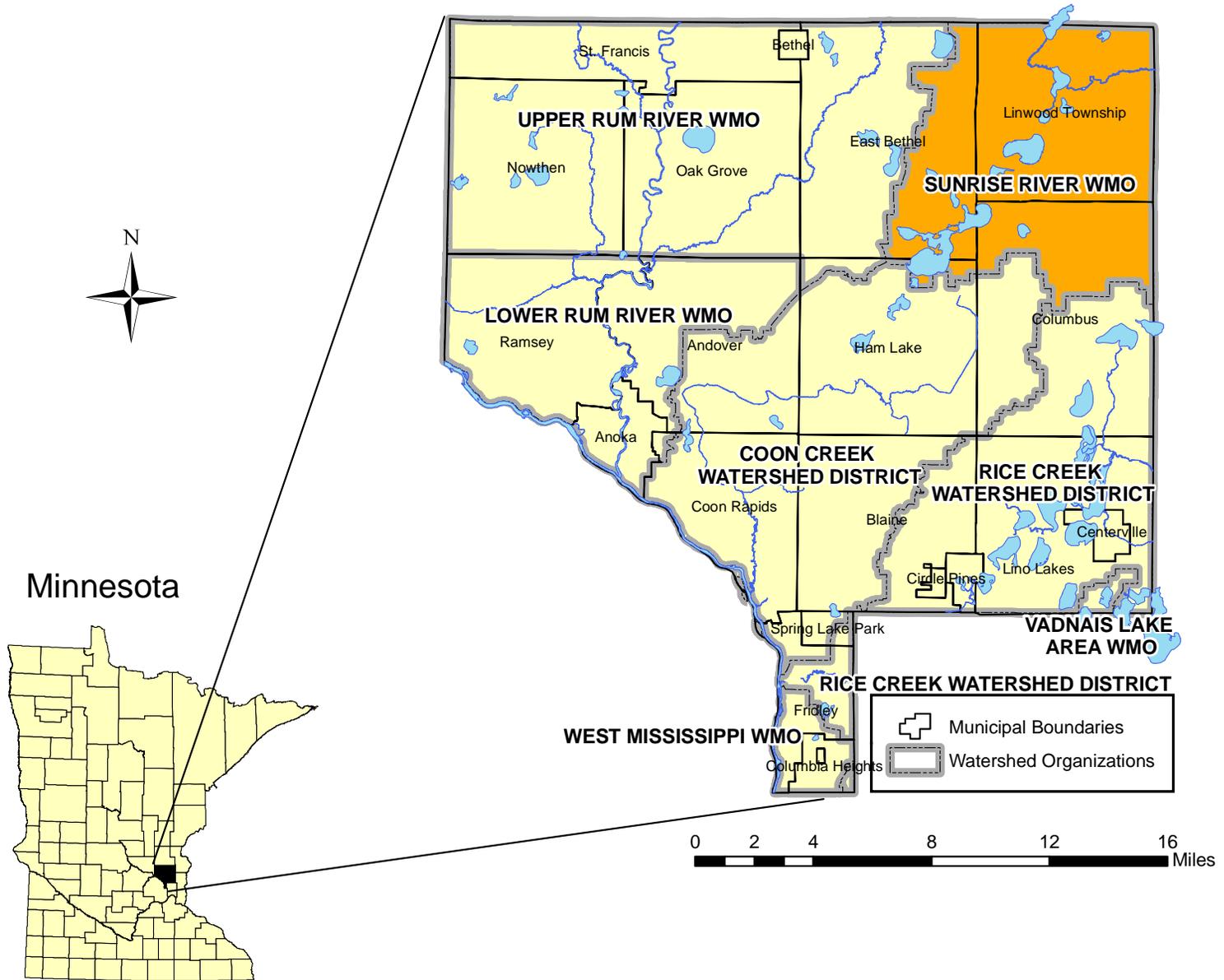
## *Sunrise River Watershed Management Organization*

**East Bethel – Ham Lake – Linwood - Columbus**

**March 28, 2012**

# Sunrise River WMO Location Map

## Anoka County



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## I. Introduction to this Report

This report is intended for local and state oversight agencies, as well as interested citizens. At the local level, it is intended to provide member communities, their elected officials, and staff with an activity update. At the state level, this report meets the annual watershed management organization reporting requirements of Minnesota Rules 8410.0150. The report is intended to fulfill 2011 reporting requirements.

## II. About the Sunrise River WMO

The Sunrise River Watershed Management Organization (SRWMO) is a special purpose unit of government that operates as a joint powers organization under Minnesota Statutes, Section 471.59. It is comprised of Linwood Township and portions of the Cities of Columbus, Ham Lake, and East Bethel. Board members are appointed by the member communities. Financing is from member communities. The SRWMO's direction is laid out in its watershed management plan and the member municipalities' local water plans.

The SRWMO area is rich in water and natural resources. Approximately 50% of the area is water and wetlands, including 19 lakes. Five are major recreational lakes (Coon, Fawn, Linwood, Martin, and Typo). 19% of the SRWMO area is high quality natural communities that have undergone little human disturbance since pre-settlement times. Many of these areas have been designated by the State as sites of biodiversity significance or regionally significant ecological areas. 27 plant and animal species that are state endangered, threatened, special concern, or rare are known to occur in the SRWMO. These water and natural resources are at the heart of the character of these north Twin Cities metro communities.

Despite the overwhelming good quality of the natural resources, there are some areas of concern. Martin, Typo, and Linwood Lakes have been designated as "impaired" by the Minnesota Pollution Control Agency for excess nutrients. Several segments of the Sunrise River in Linwood Township are impaired for pH, turbidity, and the fish community. Coon



Lake is infested with two aquatic invasive species: curly leaf pondweed and Eurasian Water Milfoil. There are questions about the effects that improperly maintained septic systems may be having on water quality. Many of these problems flow across community boundaries and cannot be effectively addressed by any one community alone. This is the reason for this joint powers watershed management organization.

In 2010 the SRWMO began implementing a new 10-year watershed management plan. It was developed with input from member communities, other agencies, and the public. Priority topics in the new SRWMO plan are, in order of priority:

1. Water quality
2. Septic system compliance
3. Education
4. Aquatic plants, including invasives
5. Funding
6. Sanitary Sewers (same priority as funding)
7. Lakeshore restorations

### **New SRWMO Watershed Management Plan, JPA**

In 2010 the SRWMO began implementing our new 10-year watershed management plan. The new plan can be found on the SRWMO website ([www.AnokaNaturalResources.com/SRWMO](http://www.AnokaNaturalResources.com/SRWMO)).

The Sunrise River WMO Board of Managers considers its responsibilities to be overseeing the management of water resources in the watershed. The WMO serves the community by:

- Providing a forum to consider inter-community water problems.
- Setting minimum standards for member community ordinances that consider local water resources issues.
- Educating the public about water resources.
- Facilitating water quality improvement projects, which are often cooperative endeavors with others.
- Collecting data and conducting resource monitoring on a watershed basis.
- Providing a linkage between natural resources and land use planning decisions.
- Coordinating water management activities within the WMO among governmental agencies, communities and residents.
- Maintaining a general awareness of existing water problems and the WMO's responsibilities for water management.
- Ensuring expenditures result in corresponding benefits to the public.
- Avoiding duplication among government agencies and communities.

The SRWMO operates under the following philosophies:

- Water-related problems are community problems and not individual problems.
- Water resource management is a vital matter that cannot be effectively addressed by individual communities because watersheds cover multiple communities.
- Water resources should be managed on a watershed basis. The WMO is uniquely positioned to address water resource issues across community boundaries.
- Aquatic and terrestrial areas are integrally linked and cannot be effectively managed separately.

### III. Activity Report

#### a. Current Board Members

##### CITY OF COLUMBUS

Reinette Labernik (Secretary)  
8513 W. Broadway Avenue NE  
Columbus, MN 55025  
612.464.7422  
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Denny Peterson  
14814 Lake Drive  
Columbus, MN 55025  
763.434.5204  
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##### CITY OF HAM LAKE

Kevin Armstrong  
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Vacant

##### CITY OF EAST BETHEL

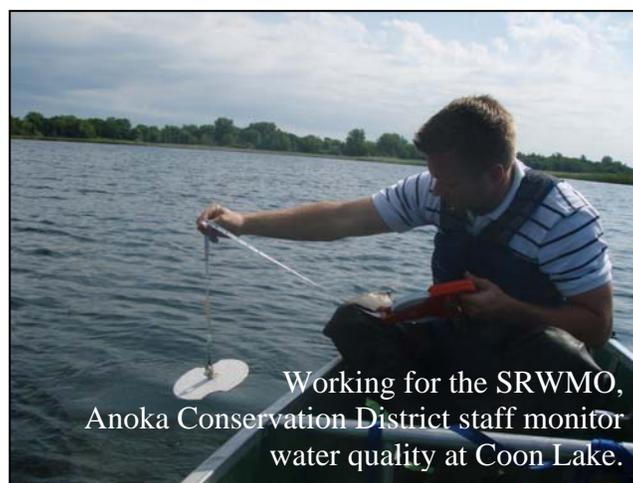
Richard Lawrence  
455 Sims Road NE  
East Bethel, MN 55011  
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Leon Mager  
19511 East Tri Oak Circle NE  
Wyoming, MN 55092-8420  
763.434.9652  
lam3@isd.net

##### LINWOOD TOWNSHIP

Tim Peterson  
23561 Fontana St NE  
Stacy, MN 55079  
651.462.4322  
braveheart51@frontiernet.net

Dan Babineau (Chair)  
22275 Martin Lake Road NE  
Stacy, MN 55079  
watershed@microconsulting.com



**b. Employees and Consultants**

The SRWMO does not employ staff, but does utilize consulting services and enters into cooperative agreements with other government agencies. A description of contracted services is listed below:

**SRWMO consultants and partners during the reporting period:**

<b>Consultant/Partner</b>	<b>Contact</b>	<b>Work Description</b>
Anoka Conservation District	Jamie Schurbon, Water Resource Specialist 1318 McKay Drive NW, #300 Ham Lake, MN 55304 763-434-2030 ext. 12 jamie.schurbon@anokaswcd.org	<ol style="list-style-type: none"> <li>1. <b>Water Monitoring</b> – Water quality and hydrology was monitored in lakes, streams, and wetlands.</li> <li>2. <b>Water Quality Improvement Projects</b> – Provides oversight of water quality improvement efforts, including administering the SRWMO water quality grant program.</li> <li>3. <b>Education</b> – Promotion of water quality improvement practices and SRWMO programs.</li> <li>4. <b>Website</b> - Maintain SRWMO website.</li> <li>5. <b>Reporting</b> - Assistance writing this annual report.</li> <li>6. <b>Administration</b> – Serve as a limited, on-call administrator to address miscellaneous day-to-day operational issues. Assists with local water plan reviews.</li> </ol>
Gail Gessner	Gail Gessner 4621 203rd Lane NW Oak Grove, MN 55303 (763) 753-2368 bethelgail@hotmail.com	<b>Recording secretary</b> for meetings.

### c. Highlighted Recent Projects

Appendix A contains summaries for the following recent projects.

- Martin and Typo Lake Carp Barriers (2012-13)
- Martin Lake Stormwater Assessment (2011)
- Martin Lake Rain Gardens (2011)
- Tierney Stormwater Retrofit for Coon Lake (2011)
- TMDL Study for Sunrise River (2010 and beyond)
- TMDL Study for Martin and Typo Lakes (2011)

### d. Public Outreach

The SRWMO does occasional public outreach and education projects, but the WMO's website serves as the primary, continuous public outreach tool. Website contents include general information about the organization, meeting agendas and minutes, water monitoring results, profiles of WMO projects, and access to mapping and data access tools. The website serves as an alternative to the state-mandated annual newsletter. The SRWMO ensures visibility of its website by asking member cities and townships to post the SRWMO website address in their newsletters. Links to the SRWMO website are also provided through each member community's website, the Anoka Natural Resources website, and Anoka Conservation District website. The SRWMO website address is <http://www.anokanaturalresources.com/srwmo/>

#### Sunrise River WMO website homepage

The screenshot shows the homepage of the Sunrise River Watershed Management Organization. The header features the organization's name in yellow and green text over a background of colorful autumn leaves. A navigation menu on the left lists various sections: HOME, Board Members, Agenda, Minutes, Planning, Projects, Monitoring, and Cost Share Grants. Below the menu are icons for a database and mapping tool, a Google search bar, and a link to Anoka Natural Resources.com. The main content area is titled "About SRWMO" and contains a detailed description of the organization's purpose, structure, and activities. A map of the watershed area is shown on the right side of the text. At the bottom, contact information is provided, including the phone number (763-434-9569), mailing address (East Bethel City Hall, 2241 - 221st Avenue, Cedar, MN 55011), and meeting schedule (1st Thursday of the month, four times per year, 6:00 p.m. at the East Bethel City Hall).

#### **e. Implementation of Watershed Management Plan**

The SRWMO Watershed Management Plan contains a schedule of tasks that the WMO should accomplish in order to realize its goals (see table on following page). In the past, the focus has been on understanding water resources throughout monitoring. The 3<sup>rd</sup> Generation Watershed Management Plan finalized 2010 uses that past monitoring to inform a number of water quality improvement projects. The implementation of the plan is subject to minor adjustments as understanding of water resources changes.

The table on the following pages compares work planned in the Watershed Management Plan and work actually accomplished. In 2011 several minor deviations from the Watershed Management Plan occurred. These include:

- Deleted the Fawn Lake Curly leaf pondweed mapping, outreach and education. Reason – ACD staff spent time examining the plant community during lake water quality monitoring in 2010. They found CLP was sparse and not problematic. They’ll keep an eye on it during future lake water quality monitoring. This task was replaced with sending a lakeshore landscaping brochure to every home on Fawn Lake. A bigger threat to this lake is the activities of lakeshore homeowners because the watershed is pretty much just those homes.
- Added web video about lakeshore landscaping, and planned to promote it by referring to it in various other public outreach documents. To make room for this in the budget the following were cut:
  - Lakeshore landscaping ed campaign - Designing and distributing door hangers about lakeshore landscaping. The SRWMO Board felt the web video was more effective educational tool.
  - Aquatic plan ed campaign -a protect native plants ad and a stop aquatic hitchhikers ad. Again, the SRWMO Board felt the web video as more effective educational tool.

Detailed work results for the most recent year can be found in Appendix C. For results of work in earlier years, please visit the SRWMO website ([www.AnokaNaturalResources.com\SRWMO](http://www.AnokaNaturalResources.com\SRWMO)).

**Work planned in the SRWMO Watershed Plan and actually accomplished for the last 5 years.** Numbers sites monitored.

Task	2007		2008		2009		2010		2011	
	Planned	Done	Planned	Done	Planned	Done	Planned	Done	Planned	Done
<b>Monitoring and Studies</b>										
Lake Levels	5	5	5	5	5	5	5	5	5	5
Lake Water Quality	5	3	5	2	5	3	3	3	Find volunteers for years when SRWMO does not monitor	Found volunteers for 5 recreational lakes
Stream Water Quality	0	3 – for lake diagnosis	0	0	8	0	0	0	0	0
Stream Hydrology	8	4 – for lake diagnosis	8	4	8	2	2	2	2	2
Reference Wetland	2	3	2	3	2	3	3	3	3	3
<b>Studies and Investigations</b>										
Typo/Martin Lake TMDL Study	none	Refine TMDL	none	MPCA finalizing study	none	T MPCA finalizing study	none	T MPCA finalizing study	none	TMDL finalized by MPCA early 2012
Fawn Lake curly leaf pondweed assmt									Yes	Preliminary review in 2010, work unnecessary
<b>Water Quality Improvement Projects</b>										
Water Quality Cost Share Grant Fund	\$1000	\$1,429 carryover	\$1000	\$2,000 contributions \$1,091 awarded	\$1000	\$2,000 contributions \$0 awarded	\$1,840	\$1,840 contributions, \$0 awarded	\$2,000	\$2,000 contributions, \$0 awarded
Martin and Typo Lakes Water Quality Projects								Rough fish barrier design.		Funding and designs completed for 4 carp barriers.
Martin Lake Area Stormwater Retrofit							\$5,000	\$5,000 Martin Lake area stormwater retrofits.	\$10,000	3 rain gardens installed.
Join St. Croix Basin Team							Yes	Done, attending occasionally		
Other Water Quality Improvement Projects		inspections of earlier projects		2 – installed 2 – planned for 2009 Rough fish harvest – Martin Lake		inspections of earlier projects, 3 landowner consultations (not installed)		Tierney stormwater retrofit planned, install in 2011.		Tierney stormwater retrofit installed by city.
Continued on next page...										

Task	2007		2008		2009		2010		2011	
	Planned	Done	Planned	Done	Planned	Done	Planned	Done	Planned	Done
<b>Education and Public Outreach</b>										
SRWMO Website	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Public Officials Tour			1	0						
Lakeshore Landscaping Ed									Yes	Web video. Mailing to 66 Fawn Lake homes. Joined Blue Thumb
Aquatic Plant Ed									New sign at Martin Lk access	New sign at Martin Lk access
Other Ed		1. Booklet – “Outdoors in Anoka Co” 1500 copies 2. EWM signs at 5 boat landings		102 mailings to lakeshore residences with erosion.					Annual newsletter article	Annual newsletter article
<b>Other</b>										
Planning				Begin WMO Plan update	Update WMO Plan	Updated WMO Plan				
Est SRWMO P export									Yes	Yes
Co. Geologic Atlas						\$4,310				
<b>Non-Operating Administrative Expenses</b>										
On call admin asst									Yes	Yes
Annual Report	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Review municipal local water plans							Yes	Reviewed 2 of 4, remainder in 2011	Yes	All completed.
Develop member community annual report template							Yes	Yes		
Grant Search/App							No	No	Yes	Applied for DNR and BWSR Grants. DNR grant for carp barriers successful.
Seek bids for services					Yes	Yes			Yes	Yes

**f. 2012 Work Plan** (excludes routine administrative tasks)

<b>Task</b>	<b>Purpose</b>	<b>Description</b>	<b>Locations or Action</b>	<b>Cost</b>
<b>Prepare 2011 Annual Report to BWSR and municipalities</b> (this report)	To provide transparency and accountability of organization operations.  To improve communication with member communities.	Produce an annual report of SRWMO activities and finances that satisfies Minnesota Rules 8410.0150 and is an effective tool for reporting WMO accomplishments to member city councils. The goal is to allow the city councils to better understand the SRWMO's work.	Secured Anoka Conservation District (ACD) staff to assist with this task.	\$675
<b>Review Municipal Local Water Plans for consistency with the new SRWMO Plan</b>	To ensure member community local water plans are updated and consistent with the newly-approved SRWMO Watershed Management Plan.	Member municipalities must update their Local Water Management Plans and ordinances within 2 years of the adoption of the new SRWMO Plan (MN Rules 8410.0130 and 84100160). All must be consistent with the SRWMO Plan. The SRWMO has approval authority.	ACD has been hired to provide technical reviews and submit them to the SRWMO Board for consideration.	\$0 (work paid in 2011)
<b>Seek bids for services</b>	To ensure the SRWMO is obtaining competitive rates.	MN Statutes 103B.227 require WMO's to solicit interest proposals for legal, professional, or technical consulting services at least every two years. This is done through publication of a request for proposal on the SRWMO website and in a newspaper of general circulation in the watershed.	Done every other year. Last done in 2011.	\$0
<b>Grant search and applications</b>	Obtain outside funding for water quality improvement projects.	Search for grant opportunities and apply for those that are applicable to SRWMO projects.	ACD has been hired to provide this service. Five projects for which to pursue grants were selected.	\$1,000
<b>Lake Water Quality Monitoring</b>	To detect water quality trends and diagnose the cause of changes.	May through September twice-monthly monitoring of the following parameters: total phosphorus, chlorophyll-a, secchi transparency, dissolved oxygen, turbidity, temperature, conductivity, pH, and salinity.	Coon Lake (both bays) Fawn Lake Linwood Lake Martin Lake Typo Lake	\$6,570
<b>Stream Water Quality Monitoring</b>	To detect water quality trends and diagnose the cause of changes.	4 baseflow samples, 4 during storms. Parameters: stage, total phosphorus, sulfates, hardness, TSS, Secchi tube, dissolved oxygen, turbidity, temperature, conductivity, pH, and salinity.	1. West Branch of Sunrise River at Hwy 77 2. South Branch of Sunrise River	\$2,660
<b>Stream Hydrology Monitoring</b>	To understand hydrology at the two outlet points of the SRWMO jurisdictional area. This hydrology data is also paired with water quality monitoring to allow pollutant load calculations.	Continuous water level monitoring in streams with automated equipment.	3. West Branch of Sunrise River at Hwy 77 4. South Branch of Sunrise River	\$1,100

<b>Task</b>	<b>Purpose</b>	<b>Description</b>	<b>Locations or Action</b>	<b>Cost</b>
<b>Reference Wetland Monitoring</b>	To provide understanding of wetland hydrology, including the impact 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.	Continuous groundwater level monitoring at a wetland boundary, to a depth of 40 inches. This is part of a network of 18 wetland hydrology monitoring stations county-wide.	1. Carlos Avery Reference Wetland 2. Carlos 181st Reference Wetland, 3. Tamarack Reference Wetland	\$1,650
<b>Cost Share Grants for Water Quality Improvement</b>	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. The landowner is responsible for the remainder of materials, all labor, and any aesthetic components of the project. Typical projects include erosion correction, lakeshore restoration, and rain gardens. The Anoka Conservation District provides grant administration and technical assistance to landowners. SRWMO funds are used only in the SRWMO area.	Contribution to grant fund.	\$2,000
<b>Martin and Typo Lakes Stormwater Retrofits</b>	Improve water quality in these impaired waterbodies.	The stormwater system is being retrofitted to improve treatment of stormwater runoff before it is discharged in to the lake. In some areas no treatment exists. A 2011 assessment identified 15 potential projects and ranked them by cost effectiveness.	Martin Lake area	\$10,000
<b>Martin and Typo Lake Carp Barriers</b>	Improve water quality, improve game fish.	Carp barriers are being installed at four locations around these lakes to prevent carp migrations between spawning and overwintering areas.	Martin Lake and Typo Lake	\$20,000
<b>Coon Lake Area Stormwater Assessment</b>	Improve lake water quality.	A comprehensive assessment of stormwater drainage to the lake. It will identify areas of inadequate stormwater treatment, projects to improve treatment before water reaches the lake, concept designs, costs, and cost effectiveness ranking.	Coon Lake area ACD will begin work in 2012, with payment delayed until 2013.	\$0
<b>SRWMO Website</b>	To increase awareness of the SRWMO 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 SRWMO's alternative to a state-mandated newsletter.	Maintain and update the SRWMO website with current information about the organization, meeting minutes and agendas, and watershed plan update information.	<a href="http://www.anokanaturalresources.com/srwmo/">http://www.anokanaturalresources.com/srwmo/</a>	\$290
<b>Lakeshore Landscaping Marketing</b>	Promote water quality projects such as lakeshore restorations, rain gardens, and others.	<ol style="list-style-type: none"> <li>1. Display or presentation to local groups like lake assoc.s</li> <li>2. SRWMO display banner</li> <li>3. Promote/distribute web video created in 2011</li> </ol>	Throughout watershed	\$700
<b>Annual Ed publication</b>	Inform the public about the SRWMO. Meet state requirements for an annual publication.	An article will be written that is informative about the SRWMO, recent projects, and includes educational messages chosen by the SRWMO Board. It is distributed to member communities for inclusion in their newsletters.	Throughout watershed	\$500

**The following deviations from watershed plan are anticipated in 2012:**

- Lakeshore landscaping – deleted distributing door hangers. Replaced it with creating a SRWMO banner for use with displays and promoting 2011 lakeshore landscaping video by emailing it to lake associations. The SRWMO will do the planned lake association display or presentation.  
Reasoning: The SRWMO feels first person interactions will be more successful than door fliers.
- Excluded a planned \$2,000 expense to reevaluate the SRWMO plan based upon new TMDL studies.  
Reasoning:
  - The Lake St. Croix TMDL study has been finalized, but did not change substantially from the early drafts we took into consideration when writing the SRWMO Plan.
  - The Sunrise River TMDL is underway, and we will await its findings to determine if changes in our approaches are warranted.
- Delayed \$1,000 of water quality improvement project effectiveness monitoring.  
Reasoning: We have a suite of BMPs being installed in 2011-13 and will wait for completion of all before effectiveness monitoring.
- Delayed pursuing a financial and technical assistance program for septic system repair and replacement.  
Reasoning: The SRWMO is trying to better determine the demand for such a program before going to the expense of establishing it. In 2012 they will try to create a list of interested residents.

**g. Status of Local Water Plan Adoption and Implementation**

All SRWMO member communities are required to have a Local Water Plan that is consistent with the SRWMO Watershed Management Plan. The WMOs have approval authority over these Local Water Plans. Whenever a WMO plan is updated the member municipalities have two years to update their Local Water Plans, ordinances, and other control measures to be consistent with the WMO Plan.

All local water plans, except Ham Lake, have been approved. The following is the status of each city or township's local water plan:

**Linwood Township** – Linwood Township has adopted the SRWMO Watershed Management Plan by reference.

**Ham Lake** – The Ham Lake Local Water Plan was reviewed in January 2012. The staff recommendation is for approval, contingent upon inclusion of the SRWMO wetland standards. The SRWMO will take action at their Feb. 2, 2012 meeting.

**East Bethel** – The SRWMO received a draft local water plan in June 2010. Changes were requested. In May 2011 a final draft was received and approved.

**Columbus** – Approved at the February 2011 SRWMO meeting.

**Deadline for all** – June 3, 2012 is the deadline for all SRWMO cities and townships to revise local water plans and ordinances to be consistent with the SRWMO 3<sup>rd</sup> Generation Watershed Management Plan.

**h. Solicitations for Services**

State rules require watershed management organizations to solicit bids for professional services at least once every two years. Most recently the SRWMO solicited bids in 2011 for work to occur in 2012. Work included hydrology monitoring, water quality monitoring, overseeing water quality improvement projects, website, preparing annual reports, grant searches, administrative assistance, and public education.

We solicited proposals by placing a public notices in local newspapers and on our website. Because half of our watershed is served by the Anoka Union newspaper and half by the Forest Lake Times, we placed the advertisement in both papers. These were published twice in each newspaper in September 2011. Notorized affidavits of publication are on file with the SRWMO. We left our request for proposals open for several months. We received only one response, from the Anoka Conservation District, and selected them for the work.

We plan to solicit bids for professional services again in 2013. At that time we will be accepting proposals for work that will occur in 2014. A similar process to the one described above is anticipated.

**i. Permits, Variances, and Enforcement Actions**

The SRWMO does not issue permits, variances, or take enforcement actions. These responsibilities are held by the member municipalities, as outlined in each municipality's local water plan, ordinances, and policies.

**j. Status of Locally Adopted Wetland Banking Program**

The SRWMO does not have a locally adopted wetland banking program.

## IV. Financial and Audit Report

### a. 2011 Financial Summary

Finances are detailed in the table below. Each municipality's contribution (WMO revenue) was based on property tax base, except operating expenses are divided evenly.

<b>Expenditures</b>	<b>Amount</b>
<b>Operating</b>	
Insurance – League of MN Cities Insurance Trust	\$0.00
Secretarial services - Gail Gessner	\$615.00
Administration tasks, postage, copies - East Bethel	\$117.51
Bank acct FDIC premium charges	\$6.00
Gordy Bayerkohler – Financial Reports for 2009 and 2010	\$300.00
ECM Publishers – newspaper public notices	\$73.50
SUBTOTAL	\$1,112.01
<b>Non-Operating</b>	
Admin assistance	\$2,270.00
Water Monitoring - Anoka Conservation District (ACD)	\$3,925.00
Water quality improvement cost share grant program	\$2,000.00
Martin Lake Stormwater Retrofits	\$10,000.00
Website – ACD	\$270.00
Phosphorus Export Estimation	\$1,200.00
Aquatic Plant Ed Campaign	\$140.00
Lakeshore Landscaping Marketing	\$1,363.00
Annual Education Publication	\$500.00
2010 annual report to BWSR – ACD	\$675.00
Review local water plans - ACD	\$1,000.00
Grant search and applications	\$1,000.00
SUBTOTAL	\$24,343.00
<b>GRAND TOTAL</b>	<b>\$25,455.01</b>
<b>Revenues (% cost distribution specified in JPA)</b>	<b>Amount</b>
<b>Operating</b>	
City of Ham Lake (25%)	\$122.75
Linwood Township (25%)	\$122.75
City of Columbus (25%)	\$122.75
City of East Bethel (25%)	\$122.75
SUBTOTAL	\$491.00*
<b>Non-Operating</b>	
City of Ham Lake (3.64% of expenses)	\$ 886.09
Linwood Township (42.80% of expenses)	\$10,418.81
City of Columbus (17.66% of expenses)	\$ 4,298.98
City of East Bethel (35.90% of expenses)	\$ 8,739.14
Anoka Cons Dist – excess funds Martin Lake Stormwater Retrofits	\$ 3,000.00
SUBTOTAL	\$27,343.02*
<b>GRAND TOTAL</b>	<b>\$27,834.02*</b>

\* Note: As of 3/26/2011 member cities had not yet been invoiced for \$315 in secretarial services and \$300 for G. Bayerkohler Financial reports (both 'operating' expenses). For this reason, expenditures are shown as greater than revenues. After invoicing occurs and is paid, 2011 operating expenditures and revenues will be consistent. Revenues are approximately \$3,000 greater than expenditures because the Anoka Conservation District returned \$3,000 of funds for the Martin Lake rain gardens which were not needed.

**b. Fund Balances**

In 2009 the SRWMO began a new arrangement for fund management in 2009. Until this time the funds and financial management were housed with the City of East Bethel. The SRWMO Board and East Bethel staff agreed that it would be preferable to manage SRWMO funds in a separate account. The SRWMO obtained a tax ID number and opened a business checking account at a local bank. Authorized signers on the account include the SRWMO Chair, Treasurer, and the East Bethel City Administrator. East Bethel staff maintain the account. **The 2011 year-end account balance was \$3,818.74.**

Additionally, the SRWMO contributes to a fund for cost share grants for water quality improvement projects. This is part of a larger county-wide fund administered by the Anoka Conservation District. SRWMO dollars can only be awarded to projects in the SRWMO area. The balance has been allowed to build up in recent years in anticipation that these funds will be needed to install water quality improvement projects planned in 2011 and 2012, including Martin Lake area stormwater retrofits and carp barriers near Martin and Typo Lakes. The fund balance history is:

2005 SRWMO Contribution	+	\$1,000.00
2006 SRWMO Contribution	+	\$1,000.00
2006 Expense - Coon Lake, Rogers Property Project	-	\$ 570.57
2007 – no expenses or contributions		\$ 0.00
2008 SRWMO Contribution	+	\$2,000.00
2008 Expense - Martin Lake, Moos Property Project	-	\$1,091.26
2009 SRWMO Contribution	+	\$2,000.00
2010 SRWMO Contribution	+	\$1,840.00
2011 SRWMO Contribution	+	\$2,000.00
<b>Fund Balance</b>		<b>\$8,178.17</b>

**c. Financial Report Documentation 2011**

An financial reports of SRWMO finances has been completed for 2011. It is attached as Appendix B.

**d. 2012 Budget**

At its August 4, 2011 meeting the SRWMO Board approved a 2011 budget of \$54,595. Details of that budget are in the table on the following page.

## 2012 SRWMO Budget

		Linwood 46.40%	East Bethel 32.93%	Columbus 16.72%	Ham Lake 3.95%
<b>NON-OPERATING EXPENSES (split by percentages)</b>					
Annual report to BWSR and member communities	\$675.00	\$313.20	\$222.28	\$112.86	\$26.66
Grant Search and Applications - Typo and Martin Lakes Water Quality Projects (rough fish barriers and stormwater retrofits) & Coon Lake stormwater assessment	\$1,000.00	\$464.00	\$329.30	\$167.20	\$39.50
Review Municipal Local Water Plans for consistency with the new SRWMO Plan (June 3, 2012 is the deadline for all SRWMO cities and townships)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Lake Level Monitoring – Coon Lake, Linwood Lake, Martin Lake, Fawn Lake, Typo Lake	\$850.00	\$394.40	\$279.91	\$142.12	\$33.58
Coon Lake West Bay, Linwood Lake, Typo Lake, Fawn Lake, Martin Lake	\$6,570.00	\$3,048.48	\$2,163.50	\$1,098.50	\$259.52
Stream Water Quality Monitoring – West Branch of Sunrise River at Hwy 77 & South Branch of Sunrise River at Hornsby St.	\$2,660.00	\$1,234.24	\$875.94	\$444.75	\$105.07
Stream Hydrology Monitoring – West Branch of Sunrise River at Hwy 77 & South Branch of Sunrise River at Hornsby St.	\$1,100.00	\$510.40	\$362.23	\$183.92	\$43.45
Reference Wetland Monitoring - Three reference wetlands	\$1,650.00	\$765.60	\$543.35	\$275.88	\$65.18
Cost Share Grant Fund for Water Quality Improvement Projects	\$2,000.00	\$928.00	\$658.60	\$334.40	\$79.00
Installation of Stormwater Retrofits for Water Quality – Martin Lake & Coon Lake	\$10,000.00	\$4,640.00	\$3,293.00	\$1,672.00	\$395.00
Rough Fish Barriers Installation – Martin Lake & Typo Lake	\$20,000.00	\$9,280.00	\$6,586.00	\$3,344.00	\$790.00
Website - Annual maintenance fee (\$170), post mtg. minutes \$10/ea x 6 = \$60, post mtg. agendas \$10/ea x 6 = \$60	\$290.00	\$134.56	\$95.50	\$48.49	\$11.45
Lakeshore Landscaping Marketing	\$700.00	\$324.80	\$230.51	\$117.04	\$27.65
Annual Educational Publication	\$500.00	\$232.00	\$164.65	\$83.60	\$19.75
	\$47,995.00	\$22,269.68	\$15,804.75	\$8,024.76	\$1,895.80
<b>NON-OPERATING ADMINISTRATIVE COSTS (split by percentages)</b>					
Financial Audit	\$300.00	\$139.20	\$98.79	\$50.16	\$11.85
Legal	\$1,000.00	\$464.00	\$329.30	\$167.20	\$39.50
	\$1,300.00	\$603.20	\$428.09	\$217.36	\$51.35
<b>OPERATING EXPENSE (split equally four ways)</b>					
ACD Administrator (on-call, limited)	\$1,500.00	\$375.00	\$375.00	\$375.00	\$375.00
Secretarial or other administrative	\$1,200.00	\$300.00	\$300.00	\$300.00	\$300.00
Liability Insurance	\$2,300.00	\$575.00	\$575.00	\$575.00	\$575.00
Administrative Assistance – City of East Bethel	\$300.00	\$75.00	\$75.00	\$75.00	\$75.00
	\$5,300.00	\$1,325.00	\$1,325.00	\$1,325.00	\$1,325.00
<b>Grand Totals</b>	<b>\$54,595.00</b>	<b>\$24,197.88</b>	<b>\$17,557.84</b>	<b>\$9,567.12</b>	<b>\$3,272.15</b>

# Appendix A:

## Highlighted Recent Projects

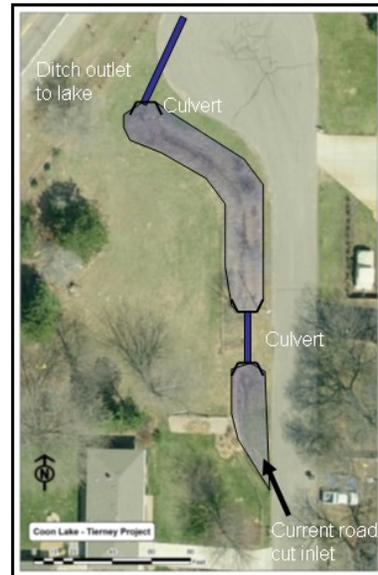
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### Tierney Stormwater Retrofit for Coon Lake

(2011)

The Coon Lake Improvement Association and City of East Bethel installed a project that will treat stormwater runoff before it is discharged into Coon Lake. The project is located along Viking Boulevard and Front Boulevard. It involves retrofitting an existing drainage-way with weirs to allow pollutant settling. It will treat runoff from a one-acre residential neighborhood, and is estimated to prevent two pounds of phosphorus from entering Coon Lake each year.

The Coon Lake Improvement Association is providing funding for installation. The City of East Bethel will provide construction oversight and long term maintenance. Installation occurred in 2011.



### TMDL Study for Sunrise River Watershed

(2010-present)

The Chisago County Soil and Water Conservation District, along with the MN Pollution Control Agency, is leading a TMDL diagnostic study of water quality problems in the Sunrise River watershed. The study is required by the Federal Clean Water Act because the river does not meet water quality standards. The study will include the SRWMO area, including several impaired waterbodies. Most notably, Linwood Lake, which is impaired



West Branch of the Sunrise River during a flood.

for excessive phosphorus and algae, will be included. Anoka Conservation District staff have met with the Linwood Lake Association to inform them. Once finalized, the TMDL study will estimate pollution sources and how much they need to be reduced in order to meet water quality standards. The SRWMO plans to keep informed about this study and comment as needed.

### **TMDL Study for Typo and Martin Lakes**

**(2001-present)**

Typo and Martin Lakes, and the stream segment between the lakes, were listed as “impaired” by the Minnesota Pollution Control Agency (MPCA) for failing to meet water quality standards. Water quality is extremely poor in Typo Lake, where water clarity is seldom greater than 6 inches. Martin Lake is somewhat better, but still poor. The water quality problems significantly affect fisheries, recreation, and property values.



All impaired waters must undergo a total maximum daily load study (TMDL) that determines the source of pollutants and strategies for improvement. The SRWMO and Anoka Conservation District began an investigative study in 2001 which was later modified into a TMDL. Financial support was from the MPCA, ACD, Anoka County Ag Preserves, and the Martin Lakers Association. The study was completed in 2003. Since that time administrative delays at the MPCA have kept the work from moving forward.

In early 2012 this TMDL study went through final approvals at the MPCA and EPA. It can be found on the MPCA website.

# MARTIN AND TYPO LAKE CARP BARRIERS



## Project Summary

This project will improve water quality in Martin and Typo Lakes by controlling carp with strategically placed barriers and increased commercial harvests. Both lakes fail to meet state water quality standards due to excessive phosphorus which fuels algae blooms. As a result, the lakes are often strongly green or brown and the game fishery is depressed. Carp are a major cause of poor water quality in these lakes, diminishing their value for swimming, boating, and fishing.

Barriers are an effective strategy for carp control because Typo and Martin Lake each provide something important for carp, and moving between the lakes is important to their success. Martin Lake is deeper, and good for overwintering. Typo Lake and Typo Creek are shallow and good for spawning. Stopping migrations between the lakes with barriers will reduce overwintering survival and spawning success. Even more, barriers will allow successful commercial carp harvests.

Stepped up carp harvests are planned once barriers are in place. Past commercial carp harvests on these lakes have had small, short-lived benefits. Harvests were limited to one lake, and carp quickly recolonized from the other lake, creek, or nearby wetlands. Once barriers are in place, commercial carp harvests on both lakes will produce greater and longer lasting benefits.

Four locations for carp barriers have been identified. These include the Typo Lake outlet, north inlet of Martin Lake, south inlet of Martin Lake., and Martin Lake outlet.

This project was formulated based on research conducted between 2001-2011



Martin Lake in mid-summer



Typo Lake in mid-summer

## Why Carp are Bad

- Disturb the bottom when feeding and spawning, stirring phosphorus and sediment into the water column.
- Uproot plants important to water quality and game fish.
- Have poor digestive systems, so they eat a lot and fertilize the water with nutrient-rich manure.
- Often become abundant, producing 300,000 eggs per female in a single spawn.

Carp are not the only cause of poor water quality, but are a significant contributor.

## Timeline

- Spring 2012—permitting, final planning, formalize maint plan.
- Summer-fall 2012—install barriers.
- Spring-summer 2013—install remaining barriers.
- Winter 2013-14—commercial carp harvests



Carp exclusion curtain on Lake Wingra, WI shows potential water quality improvement when carp are controlled.

## Funding Sources

Sunrise River WMO (2012).....\$20,000  
 Sunrise River WMO (2013)... ..\$15,000  
 Martin Lakers Association.....\$5,000

Conservation Partners Legacy Grant.....\$129,938  
 The project has been organized through in-kind efforts of the Anoka Conservation District

## Barrier Design Concepts

The images below are similar to the approaches being considered. Designs for each site are available. Designs will be refined and finalized early in the year of construction.

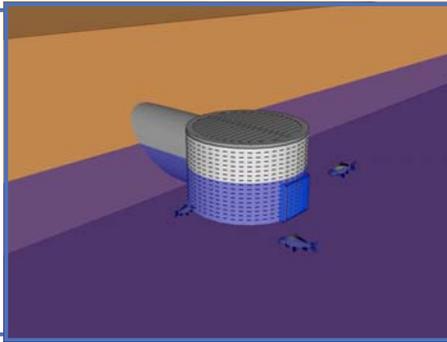


### Concept- Typo Lake outlet

Horizontal screens which are removable. Top of the screens serve as an emergency overflow.

### Concept—N and S inlets of Martin Lake

Vertical risers (pipes) with several hundred 0.5” x 3” openings affixed to the upstream end of existing culverts. Top of pipe is grated and serves as an emergency overflow.

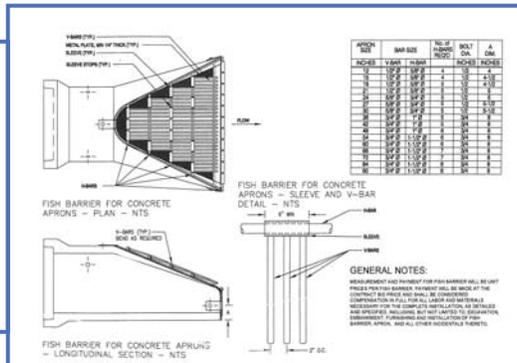


### Concept - Martin Lake outlet

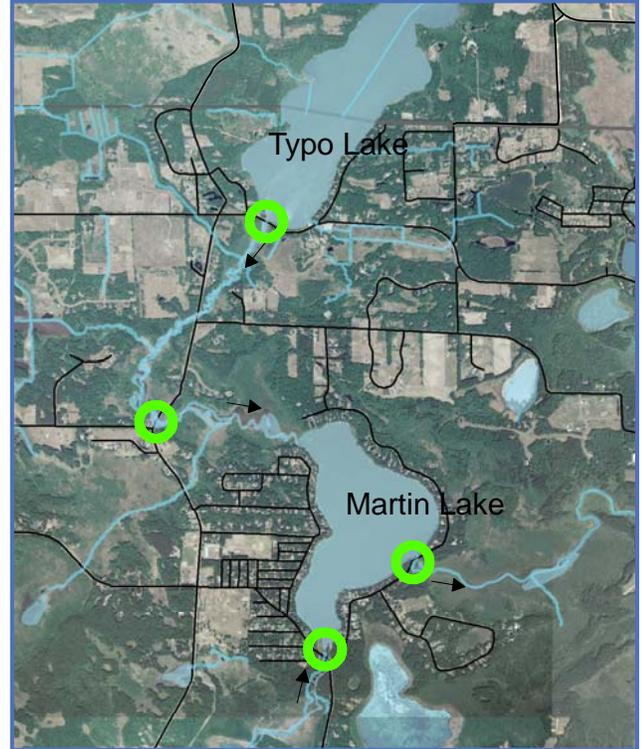
Vertical swinging bars allow passage of debris but prevent carp from jumping from the creek into the lake.

### Concept—N and S Inlets of Martin Lake

Vertical swinging bars on the downstream end of culverts allow passage of debris but prevent carp from swimming upstream.



## Proposed Carp Barrier Locations



Commercial carp harvests after barriers are installed is an important component of the overall strategy.

## Maintenance and Safeguards

All approaches require periodic inspection and removal of debris with a garden rake. Deflector posts will be placed just upstream of most barriers to prevent large debris, such as floating bogs, from catching in the barrier. All are designed to maintain the current lake and stream hydrology—allowing the passage of the same water volumes at the same rates and with the same outlet elevations. Emergency overflows provide redundant protection.

## Project Partners

Anoka Conservation District  
Sunrise River Watershed Mgmt Org

Martin Lakers Association  
MN Dept of Natural Resources

Linwood Twp MN Pollution Control Agency  
Metro Assoc of Conservation Districts

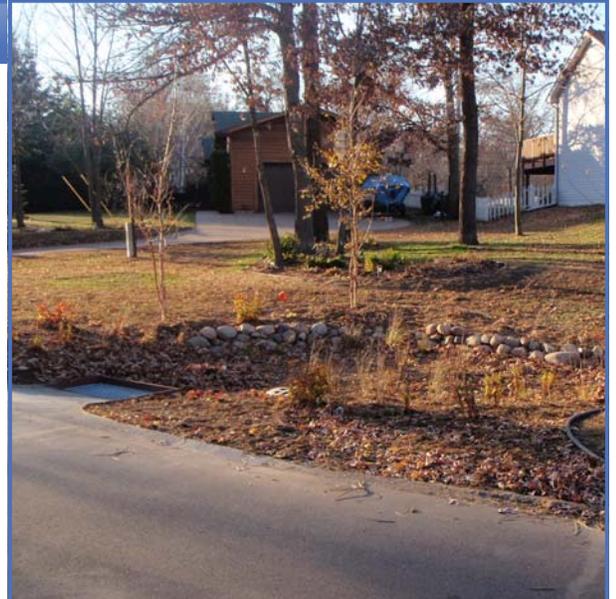
For more info contact Jamie Schurbon, Anoka Conservation District— [jamie.schurbon@anokaswcd.org](mailto:jamie.schurbon@anokaswcd.org) or 763-434-2030 ext 12



## Project Summary

The Anoka Conservation District (ACD) completed a Martin Lake stormwater retrofit assessment for the Sunrise River Watershed Management Organization (SRWMO) that identified cost-effective stormwater best management practices. As a result, three curb-cut rain gardens were installed in a residential neighborhood on the west side of Martin Lake. The rain gardens will reduce the degradation of Martin Lake by infiltrating stormwater runoff that would have otherwise drained untreated to Martin Lake.

More specifically, stormwater is diverted into the rain gardens via a curb-cut and concrete inlet. The natural hydrological cycle is restored as water infiltrates through the soils and the native plant community promotes evapotranspiration. Long term maintenance will be conducted by the landowners under an agreement with the SRWMO.



### Project Specs

Rain Gardens Installed ..... 3  
 Date Installed ..... November 2011  
 Live Storage Area ..... 860 ft<sup>2</sup>  
 Watershed Treated ..... 4.72 acres

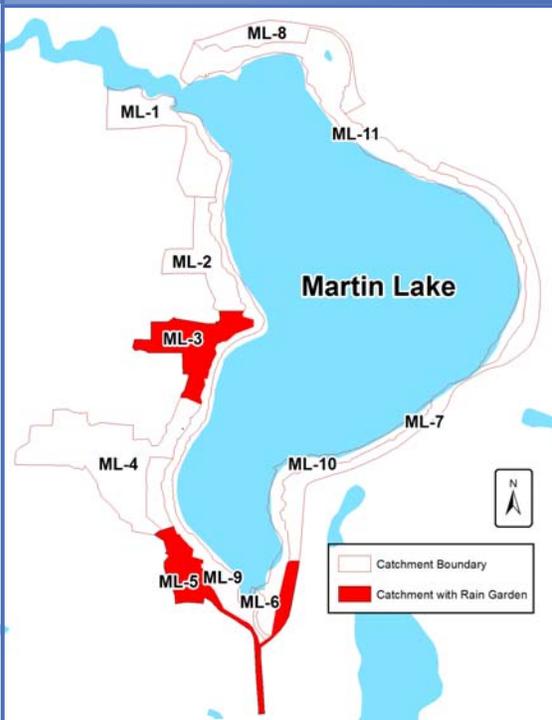
### Installation Funding

State of MN CWF ..... \$15,127.00  
 SRWMO ..... \$3,037.57  
 MCC Grant ..... \$5,640.00  
 Total Project Cost ..... \$23,804.57

### Other Expenses

Design ..... \$2,520  
 Construction Oversight ..... \$4,760  
 Promotion/Administration .... \$2,660  
 Ongoing Maintenance ..... \$225/yr

## ML-3 and ML-5 Catchments



Within the subwatershed assessment, catchments ML-3 and ML-5 were identified for retrofit projects intended to;

- Decrease stormwater volume,
- Decrease pollutant loads, and
- Increase infiltration to recharge groundwater.

The catchments consist primarily of medium density residential housing. The table below highlights important characteristics of the catchments as well as WinSLAMM model outputs of total phosphorus (TP), total suspended solids (TSS), and volume contributions prior to rain garden installations.

	ML-3	ML-5
<b>Acres</b>	10	10
<b>Land Cover</b>	Residential, 1/4 - 1/2 acre lots	Residential, 1/4 - 1/2 acre lots
<b>Parcels</b>	36	30
<b>TP (lbs/yr)</b>	4.90	7.02
<b>TSS (lbs/yr)</b>	1,457	2,299
<b>Volume (acre-feet/yr)</b>	4.00	4.52

## Installation

Detailed analysis of the ML-3 and ML-5 catchments resulted in the identification of high priority properties for rain garden placement. These locations were identified to maximize the effectiveness of the installed rain gardens by ensuring close proximity to existing catch basins and large drainage areas. Property owners at high priority locations were then contacted for potential rain garden installation. A total of three curb-cut rain gardens were installed in 2011.



1. Site preparation and soil excavation to achieve desired side slopes and 1 ft. maximum ponding depth.

2. Retaining wall construction. Retaining walls can be built using traditional landscape blocks or natural stone, as seen here.



3. An 8" soil auger was used to drill 36" deep holes throughout the rain garden basins to remove any existing soil compaction and ensure acceptable infiltration rates.

4. Curb-cut construction to accept offsite runoff from curb and gutter system.



Fully functioning curb-cut rain gardens within ML-3 and ML-5. Note the pretreatment chambers that filter incoming runoff and also prevent debris and sediment from entering or exiting the rain gardens when filled to capacity.

## Site Monitoring/Post-Project

Post-project monitoring will verify acceptable rain garden infiltration rates and proper pretreatment chamber function following storm events. Monitoring will occur during the 2012 growing season to ensure proper garden function and successful plant establishment.

## Modeled Pollutant Reductions

WinSLAMM modeling was used to estimate reductions in water volume, total suspended solids (TSS), and total phosphorus (TP) following rain garden installation. The table to the right highlights these reductions for each of the three drainage areas within ML-3 and ML-5 in which a rain garden was installed. Water quality benefits to receiving water bodies associated with these reductions include:

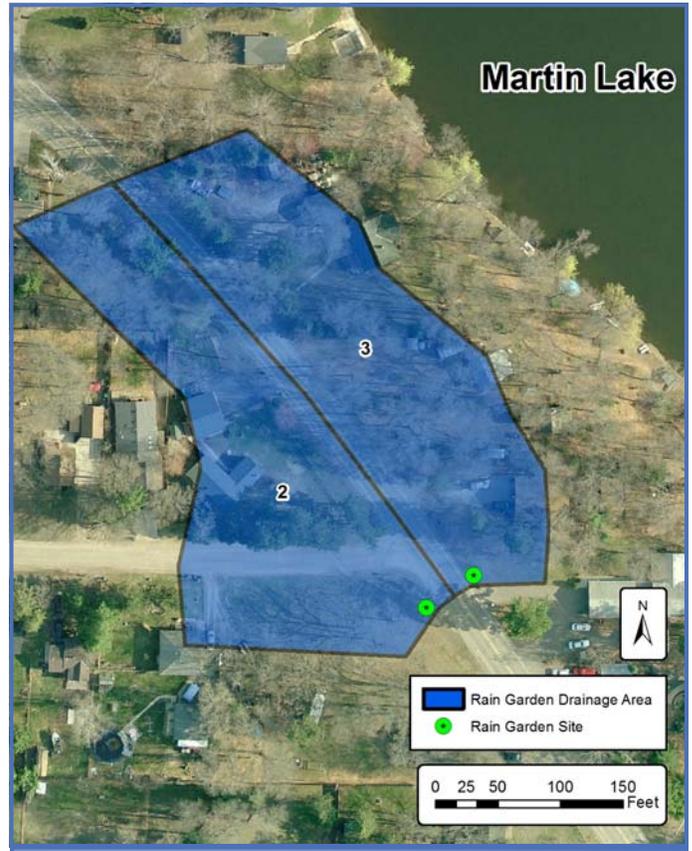
- Groundwater recharge,
- Increased water clarity,
- Decreased pollutant and toxin loading, and
- Decreased nutrient loading that stimulates nuisance algae blooms.

ID	Drainage Area / Live Storage Area	Volume Reductions		TSS Reductions		TP Reductions	
		ft <sup>3</sup> /yr	%	lbs/yr	%	lbs/yr	%
1	2.42 acres / 487 ft <sup>2</sup>	32,829	75	328.6	80	1.035	78
2	1.14 acres / 201 ft <sup>2</sup>	13,980	68	141.3	73	0.444	70
3	1.16 acres / 172 ft <sup>2</sup>	13,013	62	133.0	67	0.416	65
<b>Annual Project Total</b>		<b>59,822 ft<sup>3</sup></b>		<b>602.9 lbs</b>		<b>1.895 lbs</b>	
<b>30 Yr Project Total</b>		<b>1,794,660 ft<sup>3</sup></b>		<b>18,087 lbs</b>		<b>56.85 lbs</b>	
<b>Benefit / \$100 Spent* (over 30 years)</b>		<b>4,432 ft<sup>3</sup></b>		<b>44.7 lbs</b>		<b>0.140 lbs</b>	
<b>30 Yr Cost* / Unit</b>		<b>\$982.88/acre-ft</b>		<b>\$2.24/lb</b>		<b>\$712.31/lb</b>	

\*The 30 year cost per unit of volume or pollutant removal includes installation, design, construction oversight, promotion, administration, and 30 year maintenance costs.



Installed rain garden site and drainage area in ML-3.



Installed rain garden sites and drainage areas in ML-5.

## Project Partners and Funding

Project funds were provided by the Clean Water Fund (CWF) from the Clean Water, Land, and Legacy Amendment, the Sunrise River Watershed Management Organization (SRWMO), and the Minnesota Conservation Corps. Designs were completed by the Metro Conservation Districts' Landscape Restoration Program. Promotion, construction oversight, and administration was provided by the Anoka Conservation District.



# MARTIN LAKE STORMWATER RETROFIT ASSESSMENT



Stormwater Assessment

## Summary

The Anoka Conservation District (ACD) is conducting a stormwater retrofit assessment specifically designed to identify cost-effective stormwater treatment practices that will improve water quality in Martin Lake. This is being completed in the area where stormwater drains directly to Martin Lake with little or no treatment. Although opportunities to treat stormwater runoff are limited in the neighborhoods surrounding Martin Lake where development occurred prior to modern stormwater treatment methods, they can be identified through intensive investigation.

Pollutant contributions from this area are relatively small compared to the entire watershed. However, retrofit projects within this area can be just as cost-effective as those addressing larger scale problems. Additionally, projects completed in this area increase the visibility of lake improvement efforts and enable local residents to directly improve water quality.

Work products of this assessment include a detailed geographic information system (GIS) database, computer modeled nutrient and pollutant loads, recommended stormwater retrofit projects, concept designs, and cost estimates.



Excessive sediment entering a catch basin draining to Martin Lake



Stormwater outfall directly into Martin Lake

### Project Specs

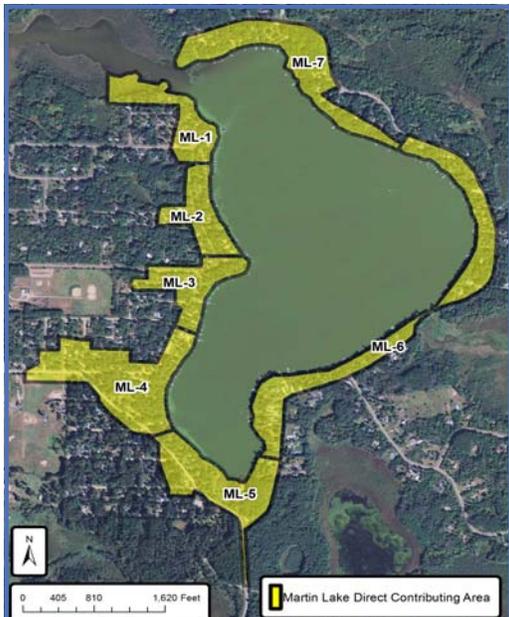
Assessment Area ..... 140 acres  
Catchments Identified ..... 7

### Assessment Funding Secured

SRWMO..... \$5,000.00  
Martin Lakers Assoc..... \$3,000.00  
Total Available..... \$8,000.00

### Installation Funding Secured

SRWMO .....\$10,000.00  
MCC Crew .....\$11,000.00  
Total Available .....\$21,000.00



## GIS and WinSLAMM Modeling

A GIS database has been generated that includes detailed catchment drainage delineation and existing stormwater infrastructure mapping. Existing and proposed stormwater treatment for each catchment were modeled using WinSLAMM software. The table below highlights characteristics of the subwatershed as well as preliminary WinSLAMM model outputs representing total phosphorus (TP) and total suspended solids (TSS) annual loads generated within the areas directly draining to Martin Lake (see map to left).

<b>Acres</b>	140
<b>Dominant Land Cover</b>	Residential, 1/3 acre lots
<b>Parcels</b>	311
<b>TP (lbs/yr)</b>	69.54
<b>TSS (lbs/yr)</b>	31,712

## Retrofit Projects

Funds have been secured to install stormwater retrofits identified by the assessment. Projects that provide the most benefit per dollar spent will be installed first. Project types will vary and may include pond modifications, swales, rain gardens, underground treatment devices, and modified maintenance schedules. Stormwater retrofit projects within the Martin Lake sub-watershed are intended to:

- Decrease stormwater volume,
- Decrease pollutant loads, and
- Increase infiltration to recharge groundwater.

Below are some examples of stormwater retrofit projects that could benefit Martin Lake.



## Curb-cut Rain Gardens

Curb-cut rain gardens receive stormwater runoff from the existing curb and gutter system and infiltrate quickly to avoid standing water (see pictures to the right). In addition to recharging the groundwater which helps maintain stable water levels in Martin Lake, the rain gardens remove pollutants and nutrients that would otherwise flow directly into the lake.



## Potential Rain Garden Site in Martin Lake Subwatershed



The high infiltration rates present across the Anoka sand plain are ideal for retrofit practices such as the curb-cut rain garden pictured to the left in a computer simulation. In addition, curb-cut rain gardens do not require large areas of open space, and would therefore work well in the areas surrounding Martin Lake.

## New Ponds and Pond Retrofits

New ponds and pond retrofits can provide treatment for large drainage areas by removing nutrients and pollutants from stormwater before it enters Martin Lake.



## Swales



Swales promote filtration and infiltration of stormwater runoff and can be installed in opportunistic locations such as ditches that are otherwise unsightly.

## Project Partners

Anoka Conservation District  
Martin Laker Association

Minnesota Conservation Corps  
Sunrise River Watershed Management Organization

# Appendix B:

## 2011 Financial Report

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# **SUNRISE RIVER WATERSHED MANAGEMENT ORGANIZATION**

## **FINANCIAL REPORT FOR YEAR ENDED DECEMBER 31, 2011**

**To the Chairperson, Dan Babineau, of Sunrise River Water Management  
Organization**

The enclosed statement has been prepared after review of the organization's financial records for 2011. I have not audited the organization's records and do not express an opinion. The enclosed information fairly reflects the Sunrise River WMO's financial position for the stated year.

March 28, 2012

Prepared by:  
Jamie Schurbon  
1318 McKay Drive NE, suite 300  
Ham Lake, MN 55304  
763-434-2030

**SUNRISE RIVER WATERSHED MANAGEMENT ORGANIZATION**  
**2241 - 221st Avenue**  
**Cedar, MN 55011**

**STATEMENT OF REVENUES AND EXPENSES**

For: year beginning January 1, 2011 and Ending December 31, 2011

<b>Expenditures</b>	<b>Amount</b>
<b>Operating</b>	
Insurance – League of MN Cities Insurance Trust	\$0.00
Secretarial services - Gail Gessner	\$615.00
Administration tasks, postage, copies - East Bethel	\$117.51
Bank acct FDIC premium charges	\$6.00
Gordy Bayerkohler – Financial Reports for 2009 and 2010	\$300.00
ECM Publishers – newspaper public notices	\$73.50
SUBTOTAL	\$1,112.01
<b>Non-Operating</b>	
Admin assistance	\$2,270.00
Water Monitoring - Anoka Conservation District (ACD)	\$3,925.00
Water quality improvement cost share grant program	\$2,000.00
Martin Lake Stormwater Retrofits	\$10,000.00
Website – ACD	\$270.00
Phosphorus Export Estimation	\$1,200.00
Aquatic Plant Ed Campaign	\$140.00
Lakeshore Landscaping Marketing	\$1,363.00
Annual Education Publication	\$500.00
2010 annual report to BWSR – ACD	\$675.00
Review local water plans - ACD	\$1,000.00
Grant search and applications	\$1,000.00
SUBTOTAL	\$24,343.00
GRAND TOTAL	\$25,455.01
<b>Revenues (% cost distribution specified in JPA)</b>	<b>Amount</b>
<b>Operating</b>	
City of Ham Lake (25%)	\$122.75
Linwood Township (25%)	\$122.75
City of Columbus (25%)	\$122.75
City of East Bethel (25%)	\$122.75
SUBTOTAL	\$491.00
<b>Non-Operating</b>	
City of Ham Lake (3.64% of expenses)	\$ 886.09
Linwood Township (42.80% of expenses)	\$10,418.81
City of Columbus (17.66% of expenses)	\$ 4,298.98
City of East Bethel (35.90% of expenses)	\$ 8,739.14
Anoka Cons Dist – excess funds Martin Lake Stormwater Retrofits	\$ 3,000.00
SUBTOTAL	\$27,343.02
GRAND TOTAL	\$27,834.02
<b>Retained Cash Reserves</b>	<b>\$2,379.01</b>
<b>Total Cash Reserves</b>	<b>\$3,818.74</b>

## SUNRISE RIVER WATERSHED MANAGEMENT ORGANIZATION

### BALANCE SHEET

For: Year Beginning January 1, 2011 and Ending December 31, 2011

<b>Assets</b>	
Cash	\$3,818.74
Accounts Receivable	
Invoice to member communities for secretarial services in 2011	\$315.00
Invoice to member communities 2009-10 financial reports – Bayerkohler	\$300.00
Water quality project grant fund held at the Anoka Conservation District	\$8,178.17
Other	-0-
<b>Total Assets</b>	<b>\$12,611.91</b>
<b>Liabilities</b>	
Accounts Payable	
LMCIT Insurance 9/1/2011 to 12/31/2011	\$805.00
Other	-0-
<b>Total Liabilities</b>	<b>\$805.00</b>

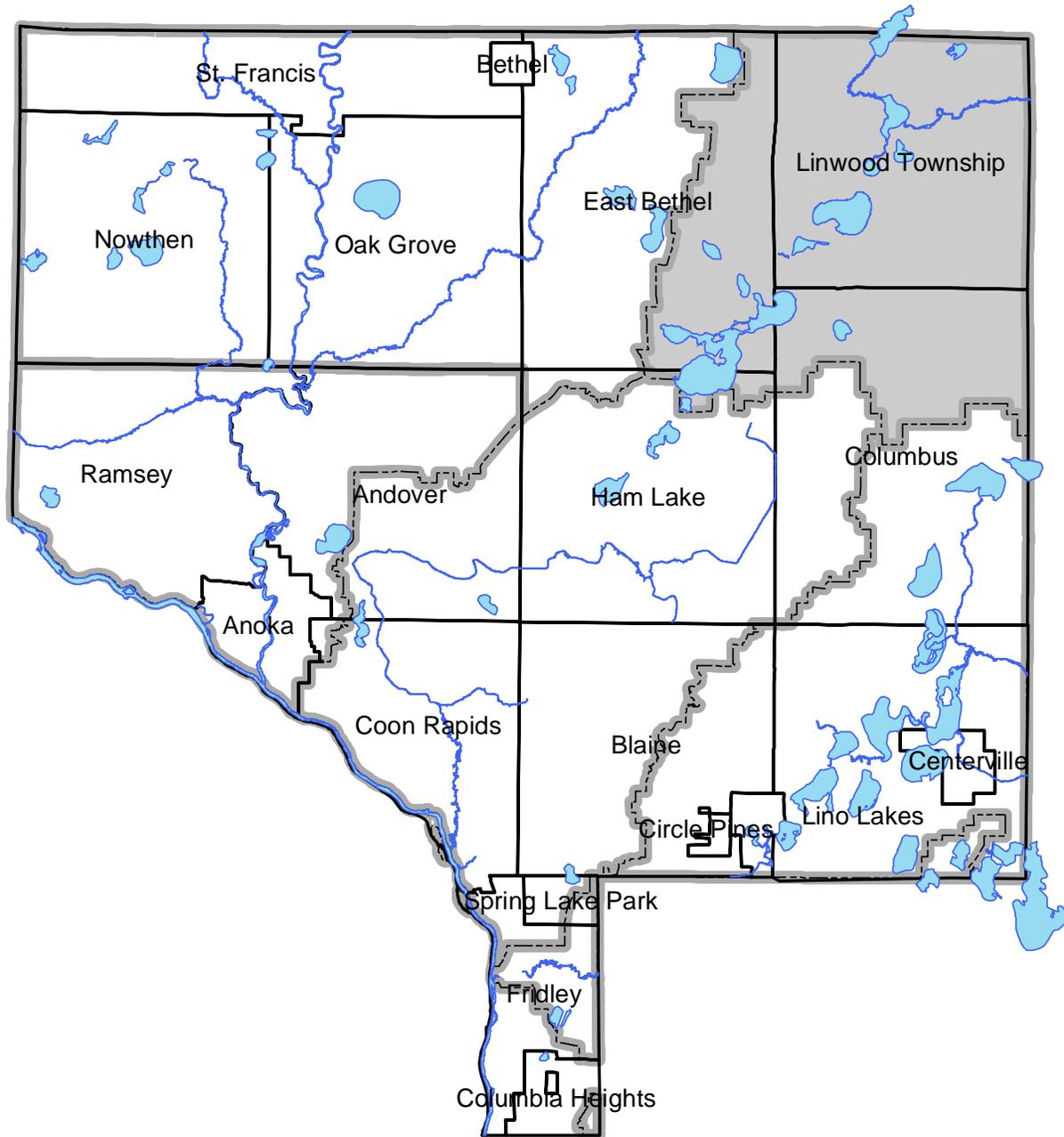
# Appendix C:

## 2011 Water Monitoring and Management Work Results

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# Excerpt from the 2011 Anoka Water Almanac

## *Chapter 2: Sunrise River Watershed*

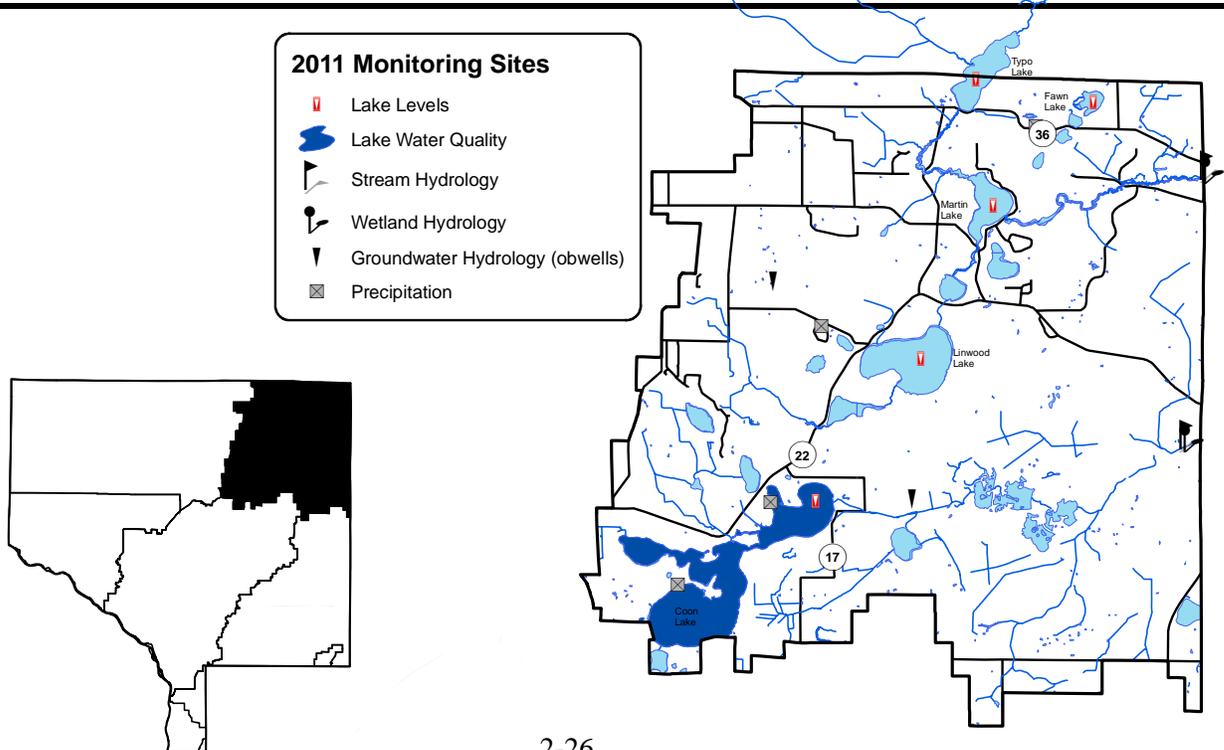


Prepared by the Anoka Conservation District

# CHAPTER 2: SUNRISE RIVER WATERSHED

Task	Partners	Page
Lake Levels	SRWMO, ACD, volunteers	2-27
Lake Water Quality (volunteers)	SRWMO, ACD, volunteers	2-29
Lake Water Quality (professional)	Coon Lake Imp Assoc, ACD, ACAP	2-30
Stream Hydrology	SRWMO, ACD	2-35
Wetland Hydrology	SRWMO, ACD, ACAP	2-38
SRWMO Phosphorus Export Estimation	SRWMO, ACD	2-42
Water Quality Grant Fund	SRWMO, ACD	2-44
Water Quality Improvement Projects	SRWMO, ACD, landowners	2-45
Martin Lake Stormwater Retrofits	SRWMO, Martin Lakers Association, Linwood Twp, ACD, landowners	2-47
Lakeshore Landscaping Education	SRWMO, ACD	2-49
Aquatic Plant Education Campaign	SRWMO, ACD	2-51
Annual Education Publication	SRWMO, ACD	2-52
SRWMO Website	SRWMO, ACD	2-53
Grant Search and Applications	SRWMO, ACD	2-55
SRWMO 2010 Annual Report	SRWMO, ACD	2-56
Review Local Water Plans	SRWMO, ACD	2-57
On-call Administrative Services	SRWMO, ACD	2-58
Financial Summary		2-59
Recommendations		2-60
Groundwater Hydrology (obwells)	ACD, MNDNR	See Chapter 1
Precipitation	ACD, volunteers	See Chapter 1

ACD = Anoka Conservation District, SRWMO = Sunrise River Watershed Management Organization, MNDNR = Minnesota Dept. of Natural Resources, ACAP = Anoka County Ag Preserves



# Lake Levels

**Description:** Weekly water level monitoring in lakes. The past five years are shown below, and all historic data are available on the Minnesota DNR website using the “LakeFinder” feature ([www.dnr.mn.us.state/lakefind/index.html](http://www.dnr.mn.us.state/lakefind/index.html)).

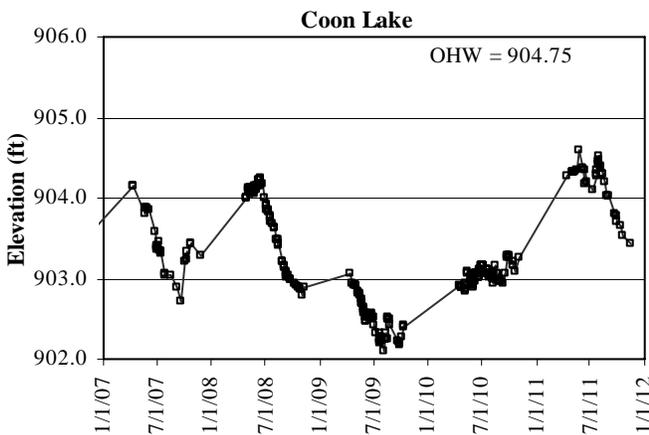
**Purpose:** To understand lake hydrology, including the impact of climate or other water budget changes. These data are useful for regulatory, building/development, and lake management decisions.

**Locations:** Coon, Fawn, Linwood, Martin, and Typo Lakes

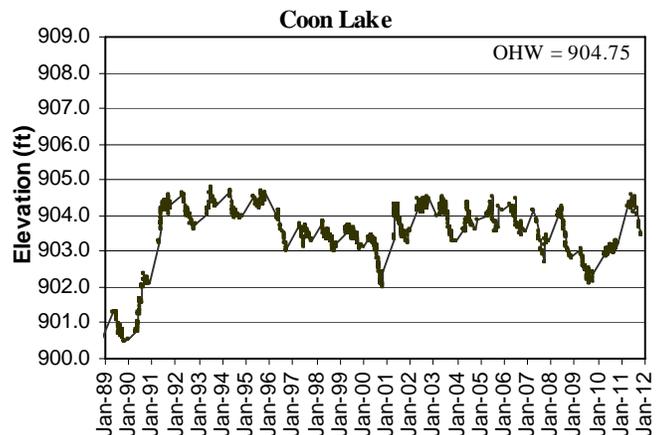
**Results:** Lake levels were measured by volunteers 23 to 58 times throughout 2011, depending upon the lake. All lakes had sharply increasing water levels in spring and early summer 2011 when extremely high rainfall totals occurred. Generally, water levels in the lakes peaked around May 23. Fawn Lake, which more closely follows groundwater levels than the other lakes, peaked about a month later. Coon Lake had second peaks around August 2, nearly as high as the first. At their peaks, lake levels were up to nearly a foot greater than seen in recent years. Coon Lake was within 0.52 feet of a record high, while Linwood was within 0.3 feet. Other lakes did not approach record highs. After these peaks, all lake levels fell continuously during late summer and fall when very little precipitation fell and drought approached.

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.

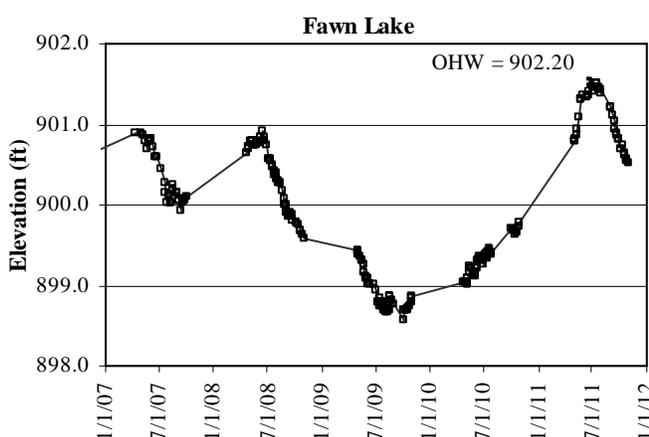
**Coon Lake Levels 2007-2011**



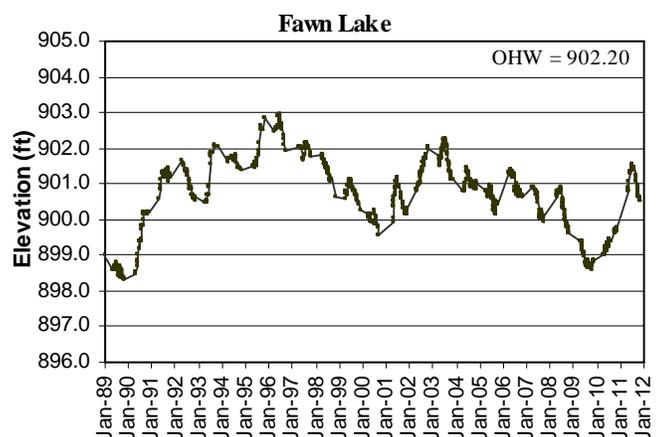
**Coon Lake Levels 1990-2011**



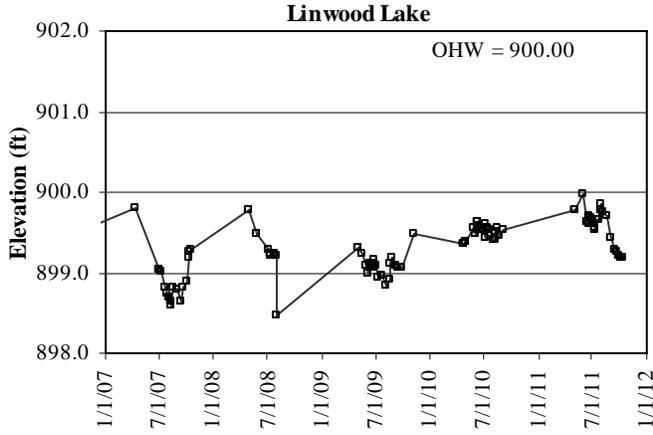
**Fawn Lake Levels 2007-2011**



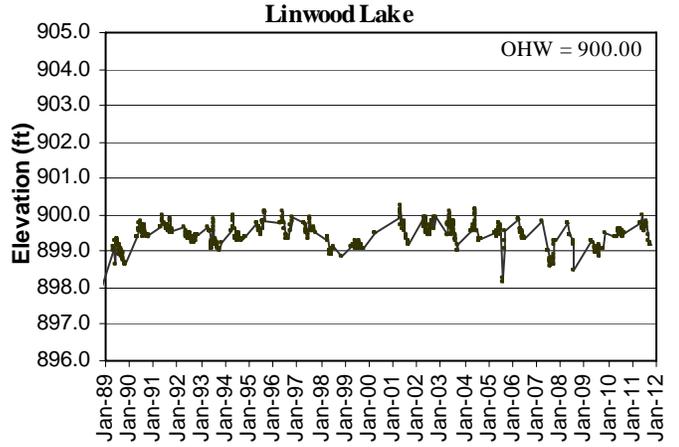
**Fawn Lake Levels 1990-2011**



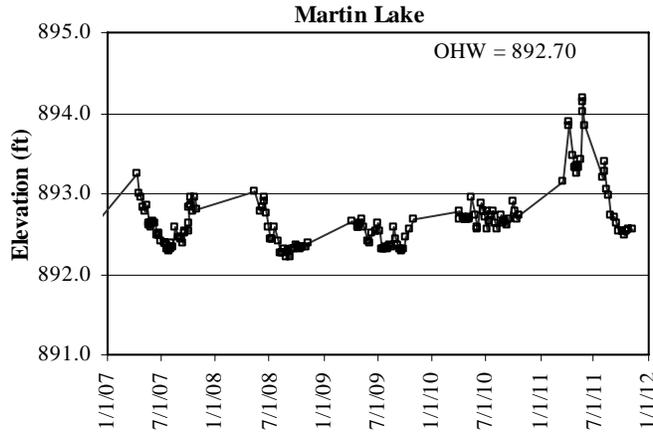
**Linwood Lake Levels 2007-2011**



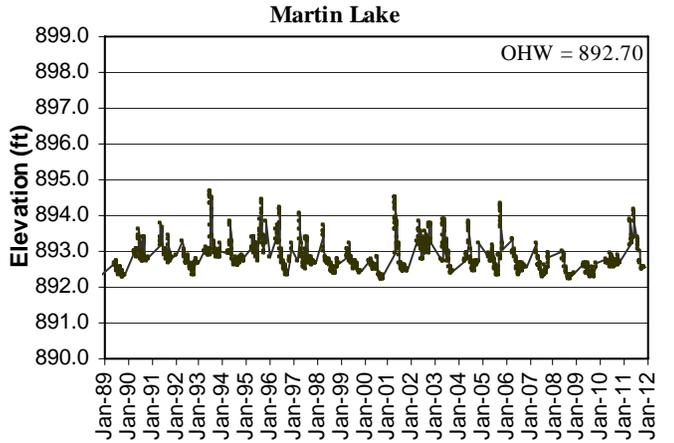
**Linwood Lake Levels 1990-2011**



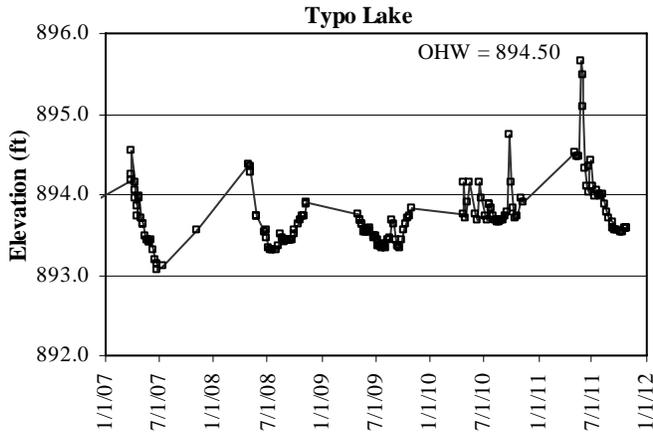
**Martin Lake Levels 2007-2011**



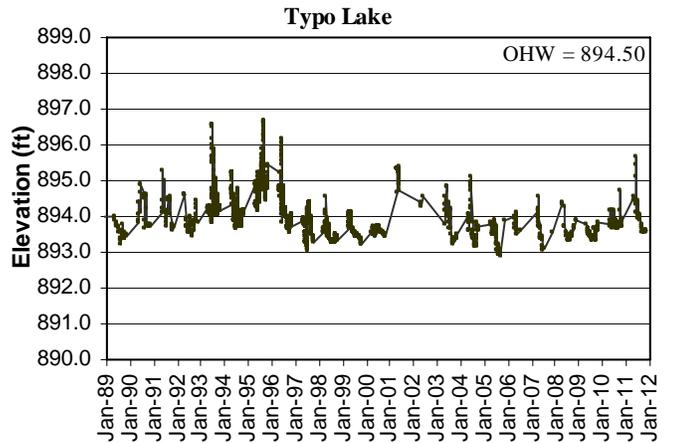
**Martin Lake Levels 1990-2011**



**Typo Lake Levels 2007-2011**



**Typo Lake Levels 1990-2011**



## **Lake Water Quality (volunteer)**

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**Description:** The SRWMO wishes to establish volunteers who on all major recreational lakes who will monitor water quality in years when professional monitoring is not occurring. Volunteers collect a more limited suite of data than professionals, usually just Secchi transparency. However this is fundamentally the most important data. The volunteers are coordinated through the MN Pollution Control Agency's Citizen Lake Monitoring Program (CLMP).

The SRWMO wished to establish volunteers and lakes where none currently exist. This included Typo, Linwood, and Fawn Lakes.

May through September every-other-week monitoring of 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. To ensure fundamental data is collected in years that professional monitoring

**Locations:** Typo Lake  
Linwood Lake  
Fawn Lake

**Results:** The Anoka Conservation District solicited and secured volunteers to monitor water quality on the three lakes where none already existed. ACD signed them up for the CLMP program. The MN Pollution Control Agency then provided these volunteers with the necessary equipment. Volunteers submit their data to the MPCA, and it is available to the public on their website.

Volunteers monitoring lake water quality in the SRWMO include:

Typo Lake	Chris Anderson
Linwood Lake	Vern Cardwell
Martin Lake	Frank Kvidera
Coon Lake	Doug Tierney, John Harvey, Arlan Mercil, and Goldie Johnson
Fawn Lake	Dorothy Damon

## Lake Water Quality (professional)

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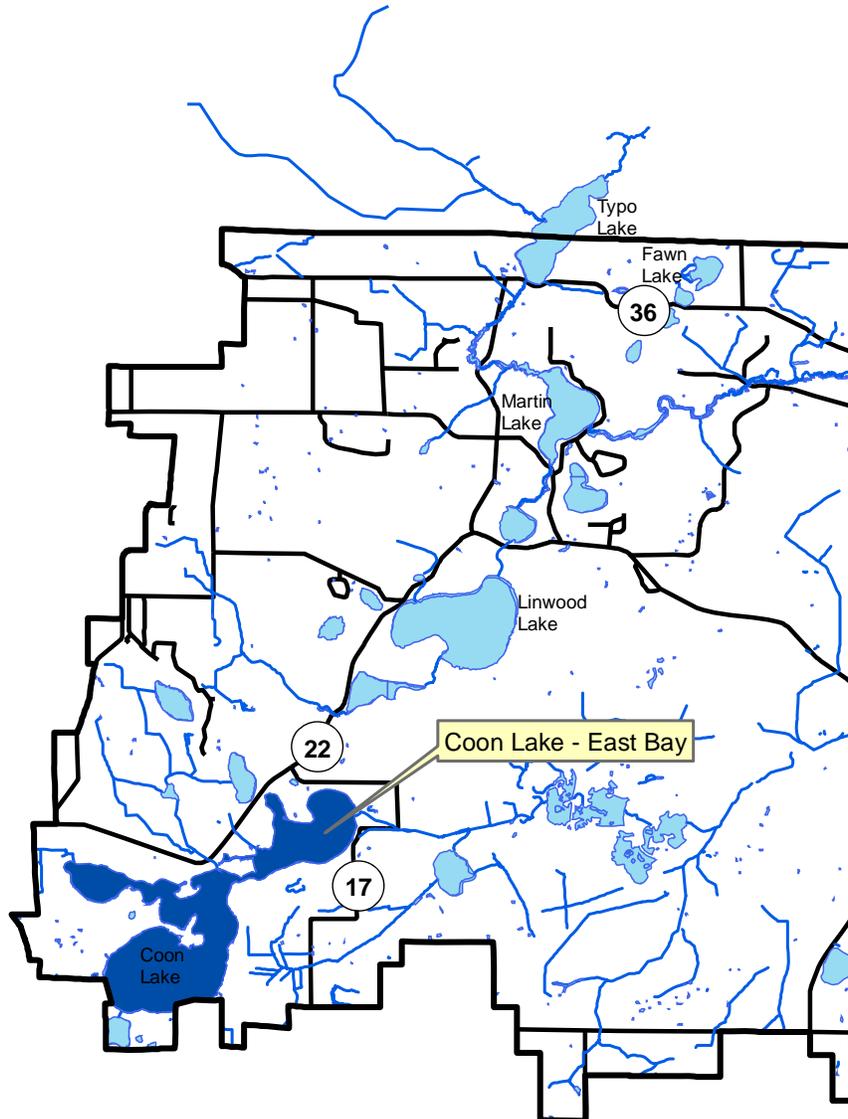
**Description:** May through September every-other-week monitoring of the following parameters: total phosphorus, chlorophyll-a, secchi transparency, dissolved oxygen, turbidity, temperature, conductivity, pH, and salinity.

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

**Locations:** Coon Lake – East Bay

**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 interpreting the data and on lake dynamics.

### Sunrise Watershed Lake Water Quality Monitoring Sites



**Coon Lake –East and West Bays**  
**City of East Bethel, City of Ham Lake & City of Columbus, Lake ID # 02-0042**

**Background**

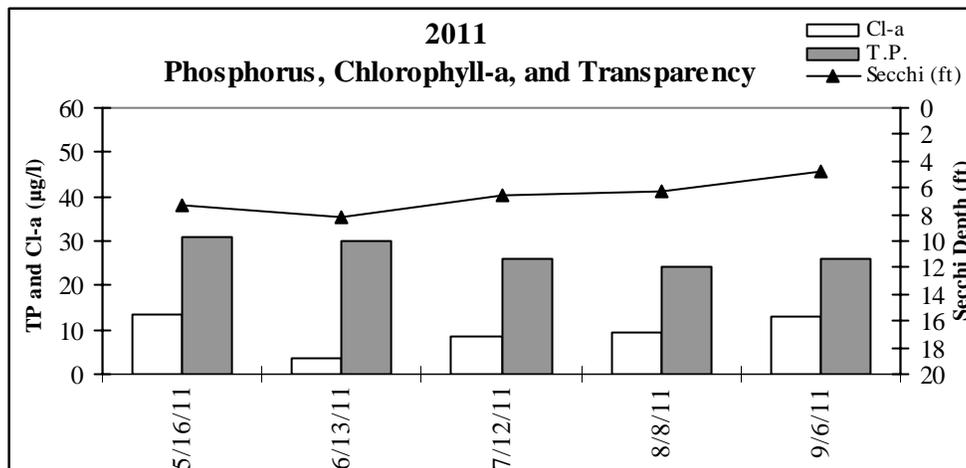
Coon Lake is located in east central Anoka County and is the county’s largest lake. Coon Lake has a surface area of 1498 acres and a maximum depth of 27 feet (9 m). Public access is available at three locations with boat ramps, including one park with a swimming beach. The lake is used extensively by recreational boaters and fishers. Most of the lake is surrounded by private residences. The watershed of 6,616 acres is rural residential.

This report includes separate information for the East Bay (aka northeast or north bay) in 2011 and West Bay (aka southwest or south bay) of Coon Lake in 2011. The 2010-11 data is from the Anoka Conservation District (ACD) monitoring at the MN Pollution Control Agency (MPCA) monitoring site #203 for the East Bay and #206 for the West Bay. Over the years, other sites have been monitored and are included in this report’s trend analysis when appropriate. When making comparisons between the two bays, please consider that both bays were monitored simultaneously only in 2010; data from other years do not lend themselves well to direct comparisons because monitoring regimes were likely different.

**2011 Results – East Bay**

In 2011 the East Bay was monitored once every four weeks. It had slightly better than average water quality for this region of the state (NCHF Ecoregion), receiving a B grade. Average values of important water quality parameters included 27 ug/L for total phosphorus, 9.6 ug/L chlorophyll-a, and Secchi transparency of 6.6 feet. Chlorophyll-a levels were the lowest of all monitored years. Phosphorus and transparency were similar to previous years. The subjective observations of the lake’s physical characteristics and recreational suitability by the ACD staff indicated that lake conditions were excellent for swimming and boating until August and September, when there was a slight algae impairment.

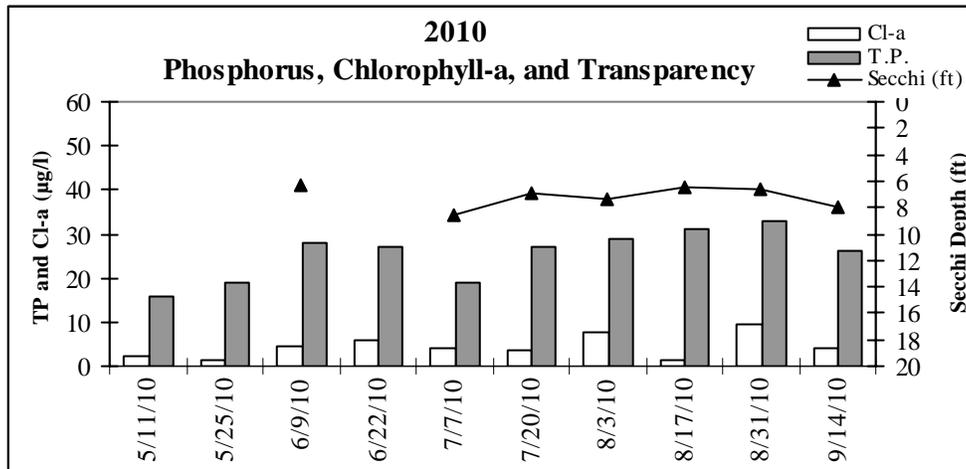
**2011 Water Quality Results – East Bay**



**2010 Results – West Bay**

In 2010 the West Bay had slightly better than average water quality for this region of the state (NCHF Ecoregion), receiving an A- letter grade. West Bay total phosphorus averaged 26.0 µg/L and chlorophyll- averaged 4.4 µg/L. Secchi transparency could not be measured on three occasions because it exceeded basin’s depth.

## 2010 Water Quality Results –West Bay



### Comparison of the Bays

The East and West Bays of Coon Lake have noticeably different water quality. In 2010 both bays were monitored simultaneously. On every date water quality was better in the West Bay than East, with an average difference of 13 µg/L phosphorus and 5.4 µg/L chlorophyll-a (algae). A direct comparison of average Secchi transparency is not possible because transparency exceeded the lake depth on three occasions in the West Bay and a reading could not be obtained. It is noteworthy, however, that the poorest Secchi transparency in the West Bay was greater than the average in the East Bay.

### Trend Analysis

To analyze Coon Lake trends we obtained historic monitoring data from the MPCA. Over the years water quality has been monitored at 17 sites on the lake. For the trend analysis, we pooled data from five East Bay sites (#102, 203, 208, 209, and 401) and four West Bay sites (#101, 105, 206, and 207). These sites were chosen because they were all in the bay of interest, close to each other, and distant from the shoreline. The trend analysis is based on average annual water quality data for each year with data. We used data only from years with data from every month from May to September, except we allowed one month of missing data. Only data from May to September were used. Starting in 1998 only data from ACD was used for greater comparability.

#### East Bay Trend Analysis

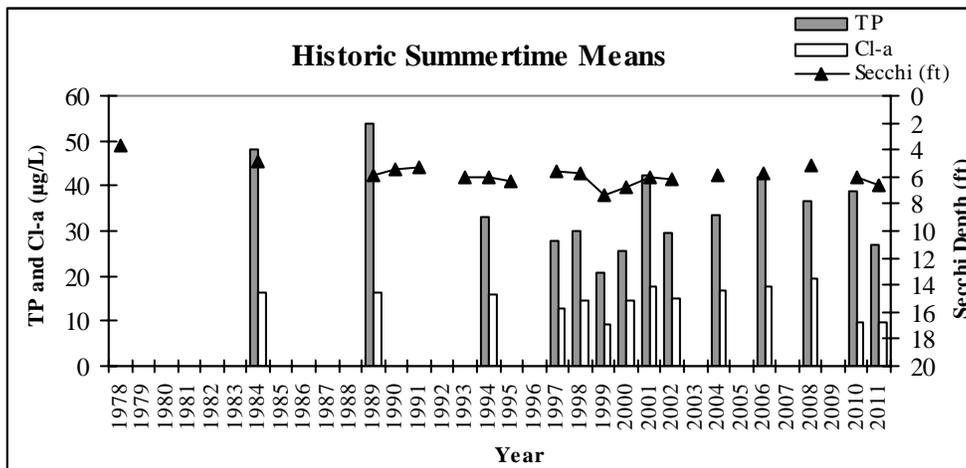
In the East Bay nineteen years of water quality data have been collected since 1978. During the most recent 11 years that were monitored (since 1996), the data collected included total phosphorus, chlorophyll-a, and Secchi transparency. For most of the other eight years (all pre-1997) only Secchi transparency data is available. This provides an adequate dataset for a trend analysis, however given that most of the data is from the last 20 years, the analysis is not strong at detecting changes that occurred prior to 1990.

No water quality trend exists when we examined those years with total phosphorus, chlorophyll-a, and Secchi transparency, excluding the years with only Secchi transparency data. The analysis was a repeated measures MANOVA with response variables TP, Cl-a, and Secchi depth. This is our preferred approach because it examines all three parameters simultaneously. This analysis indicated no trend ( $F_{2,11}=1.0$ ,  $p=0.4$ ).

We also examined Secchi transparencies alone across all 18 years using a one-way ANOVA. Including all years, a significant trend of improving transparency is found ( $F_{1,17}=8.9$ ,  $p=0.008$ ). However, this trend is driven by unusually poor transparency in 1978 of 1.11 m. We examined the data from that year and found that no transparency readings were collected in May, when water is often clearest. This would have driven the average transparency down. Therefore, we feel it is appropriate to exclude the 1978 data. When this is done, the trend is no longer statistically significant ( $F_{1,16}=2.35$ ,  $p=0.14$ ).

It is noteworthy that a water quality improvement seems to have occurred between 1989 and 1994 (see graph below). The reason for such a change, if real, is unknown. Because there are only two years of phosphorus and chlorophyll-a data before 1994 it is difficult to determine if water quality was chronically poorer prior to 1994 or if the available monitoring data is not representative of typical conditions.

### Historic Water Quality - East Bay

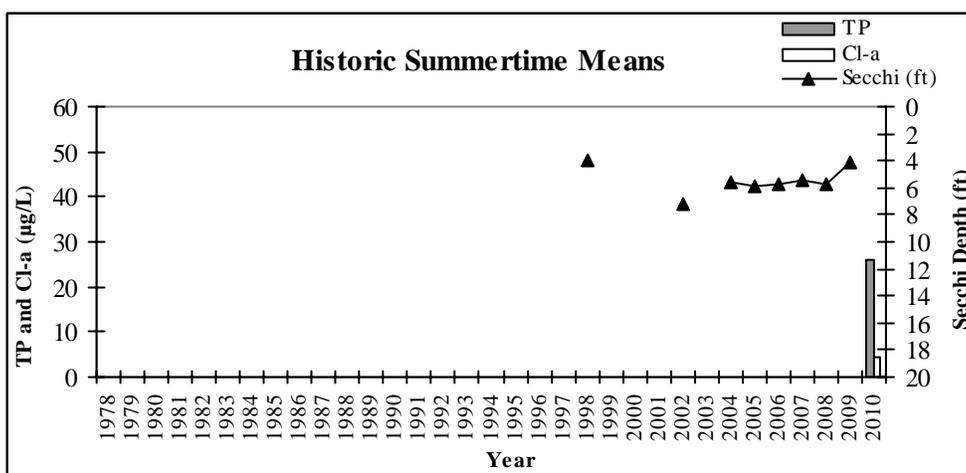


### West Bay Trend Analysis

Nine years of data are available for the West Bay including only one year with phosphorus and chlorophyll-a data, so a powerful trend analysis is not possible. We can analyze just Secchi transparency data, but this also has a weakness: 2010 must be excluded because a full suite of Secchi measurements is not available due to clarity exceeding the lake depth occasionally. Despite these limitations, we examined the Secchi data for any trends.

A one-way ANOVA was performed with Secchi transparency from 1998 to 2009 as the response variable. No water quality trend exists ( $F_{1,6}=0.0036, p=0.95$ ). Looking at the data superficially (see graph below), small variations among years is seen but no trend is apparent.

### Historic Water Quality - West Bay



### Discussion

While Coon Lake is not listed as “impaired” by the MN Pollution Control Agency, the East Bay is close to the state water quality standard of 40 µg/L of phosphorus or greater. In 2006 phosphorus averaged 42 µg/L, was 37

µg/L in 2008, and in 2010 was 39 µg/L. In 2011 phosphorus was lower (averaged 27 µg/L). Voluntary efforts to improve water quality are strongly encouraged to prevent the lake from becoming designated as “impaired.” Such a designation would trigger an in-depth study under the Federal Clean Water Act.

Given the highly-developed nature of the lakeshore, the practices of lakeshore homeowners are a reasonable place to begin water quality improvement efforts. Residents should increase the use of shoreline practices that improve water quality and lake health, such as native vegetation buffers and rain gardens. Clearing of native vegetation to create a “cleaner” lakefront should be avoided because this vegetation is important to lake health and water quality. Septic system maintenance and replacement where necessary, should be a priority on an individual home basis and on a community level. In recent years the City of East Bethel has begun the process of installing municipal sewer and water in their Highway 65 district. An eventual extension of that system to Coon Lake has been discussed but there is no assurance this will happen. That might be most beneficial in the Hiawatha Beach and Interlachen neighborhoods, where the greatest frequency of septic system failures is suspected.

A final challenge for Coon Lake is the aquatic invasive species Eurasian water milfoil (EWM) and Curly Leaf Pondweed (CLP). EWM was discovered in the lake in 2003 and has spread rapidly. In 2008 a Coon Lake Improvement District (CLID) was formed, with EWM management as a core of its function. EWM is actively monitored and treated with herbicide in accordance with DNR rules and a lake vegetation management plan, yet it continues to expand. CLP can cause a spike in phosphorus levels in early summer. CLID started treatment of CLP in 2009. In 2010 the East Bay was accepted into a five year pilot program for treatment of CLP.

### 2011 Coon Lake East Bay Water Quality Data

	Units	Date		5/16/2011		6/13/2011		7/12/2011		8/8/2011		9/6/2011		Average	Min	Max
		Time	R.L.*	Results	Results	Results	Results	Results	Results	Results	Results					
			13:40		13:30		14:45		14:55		13:00					
pH		0.1	8.49	8.370	8.440	8.550	8.330	8.436	8.330	8.550						
Conductivity	mS/cm	0.0	0.205	0	0	0	0	0	0	0	0	0	0			
Turbidity	FNRU	1.00	5	3.00	7.00	6.00	9.00	6.00	3.00	9.00						
D.O.	mg/L	0.0		995%	839%	814%	735%	846%	735%	995%						
D.O.	%	1.00		1.1	1.1	1.0	0.8	1.0	0.8	1.1						
Temp.	°C	0.10	13.2	20.4	27.8	27.2	22.0	22.1	13.2	27.8						
Temp.	°F	0.1	55.76	68.72	82.04	80.96	71.60	71.82	55.76	82.04						
Salinity	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0						
Cl-a	ug/L	1.0	13.6	3.5	8.7	9.6	12.8	9.6	3.5	13.6						
T.P.	mg/L	0	0.031	0.030	0.026	0.024	0.026	0.027	0.024	0.031						
T.P.	ug/L	5	31	30	26	24	26	27	24	31						
Secchi	ft	0.1	7.3	8.2	6.6	6.2	4.8	6.6	4.8	8.2						
Secchi	m	0.1	2.2	2.5	2.0	1.9	1.5	2.0	1.5	2.5						
Physical			1.0	2.0	1.0	3.0	2.0	1.0	3.0							
Recreational			1.0	2.0	2.0	2.0	3.0	2.0	1.0	3.0						

\*Reporting Limit

### 2010 Coon Lake West Bay Water Quality Data

	Units	Date		5/11/2010		5/25/2010		6/9/2010		6/22/2010		7/7/2010		7/20/2010		8/3/2010		8/17/2010		8/31/2010		9/14/2010		Average	Min	Max		
		Time	R.L.*	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results									
			14:30		11:15		10:40		10:10		12:35		10:50		10:40		10:25		11:00		10:45							
pH		0.1	7.64	8.38	7.67	8.28	8.14	7.75	7.89	7.68	7.57	7.90	7.89	7.57	8.38													
Conductivity	mS/cm	0.01	0.202	0.191	0.169	0.160	0.152	0.155	0.169	0.162	0.169	0.167	0.17	0.15	0.20													
Turbidity	FNRU	1.0	1	3	3	3	4	9	7	8	9	6	5.30	1.00	9.00													
D.O.	mg/L	0.01	10.52	9.65	8.39	10.72	9.15	7.61	8.81	9.45	8.89	NA	9.24	7.61	10.72													
D.O.	%	1.0	90%	108%	89%	118%	107%	85%	100%	97%	96%	NA	0.99	0.85	1.18													
Temp.	°C	0.10	10.7	23.6	21.0	23.7	27.3	25.2	26.9	22.1	24.8	18.4	22.4	10.7	27.3													
Temp.	°F	0.10	51.3	74.5	69.8	74.7	81.1	77.4	80.4	71.8	76.6	65.1	72.3	51.3	81.1													
Salinity	%	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00													
Cl-a	ug/L	1.0	2.2	1.5	4.6	5.7	3.9	3.8	7.5	1.5	9.3	4.0	4.40	1.50	9.30													
T.P.	mg/L	0.005	0.016	0.019	0.028	0.027	0.019	0.027	0.029	0.031	0.033	0.026	0.03	0.02	0.033													
T.P.	ug/L	5	16	19	28	27	19	27	29	31	33	26	25.50	16.00	33.0													
Secchi	ft	0.1	>9.8	>9.6	6.3	>9.8	8.6	6.9	7.4	6.4	6.6	8.0	NA	6.30	>9.8													
Secchi	m	0.1	>3.0	>2.9	1.9	>3.0	2.6	2.1	2.3	2.0	2.0	2.4	NA	1.92	>3.0													
Physical			1	2	2	2	2	3	3	3	2	2	2.2	1	3													
Recreational			1	2	2	2	2	2.5	3	3	2	2.2	1	3														

\*Reporting Limit

## Stream Hydrology

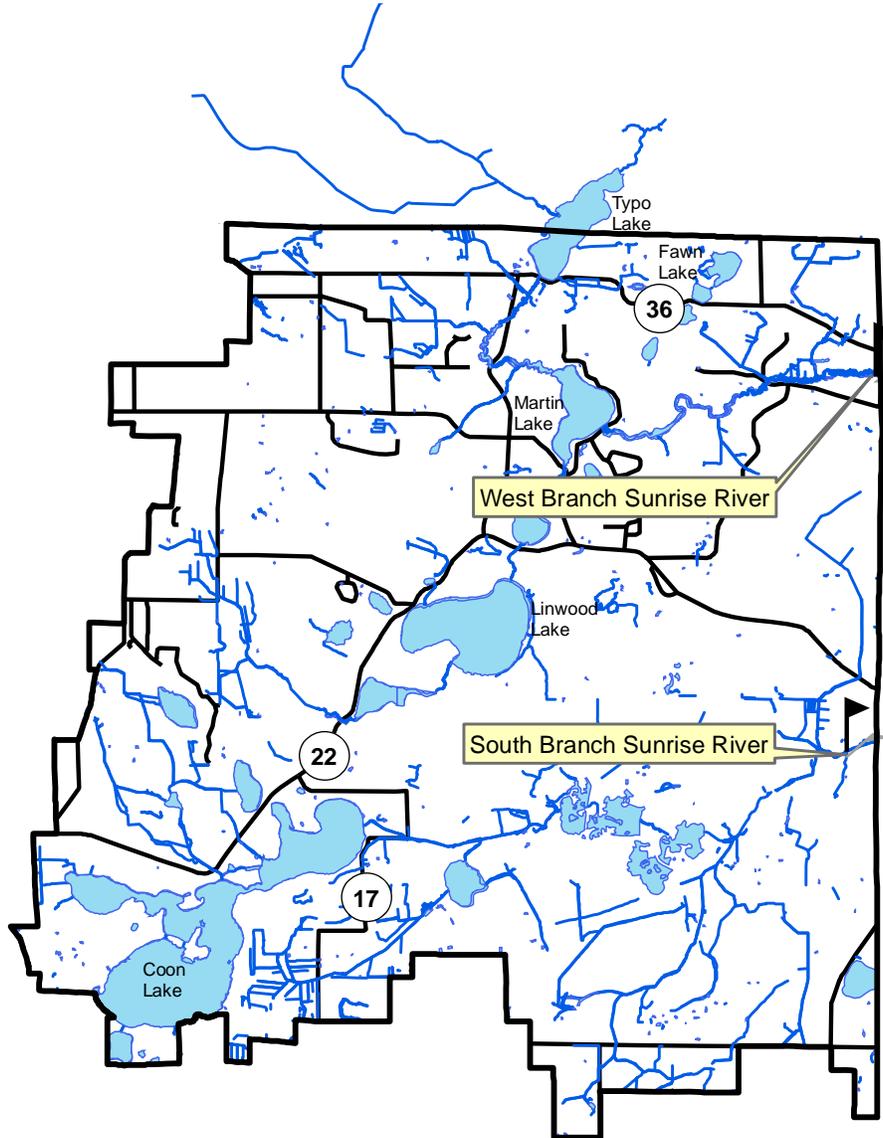
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**Description:** Continuous water level monitoring in streams.

**Purpose:** To provide understanding of stream hydrology, including the impact of climate, land use or discharge changes. These data are also needed for calculation of pollutant loads and use of computer models for developing management strategies. In the Sunrise River Watershed, the monitoring sites are the outlets of the Sunrise River Watershed Management Organization's jurisdictional area, thereby allowing estimation of flows and pollutant loads leaving the jurisdiction.

**Locations:** South Branch Sunrise River at Hornsby St NE  
West Branch Sunrise River at Co Rd 77

### Sunrise Watershed Stream Hydrology Monitoring Sites



# Stream Hydrology Monitoring

## WEST BRANCH OF SUNRISE RIVER

At Co Rd 77, Linwood Township

### Notes

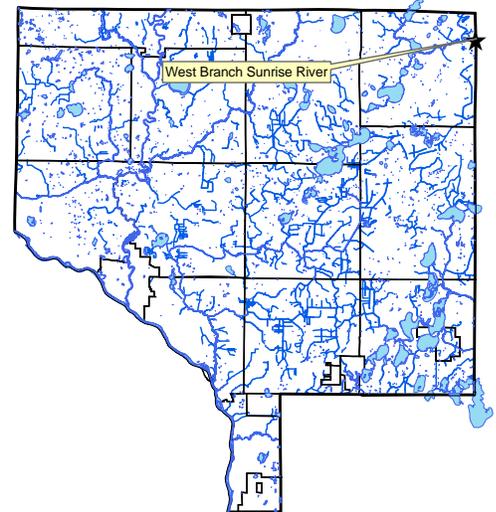
This monitoring site is the bottom of this watershed in Anoka County, at the Chisago County border. Upstream, this river drains through Linwood, Island, Martin, and Typo Lakes. The Sunrise River Watershed Management Organization monitors this site because it is at the bottom of their jurisdictional area. They have done water quality monitoring at this site and created a rating curve to estimate flow volumes from the water level measurements. In 2008 and 2009 this site was also monitored to collect data for a computer model of the entire Sunrise River watershed being done by the US Army Corps of Engineers, Chisago County, and other partners.

The rating curve to calculate flows (cfs) from stage data is:  

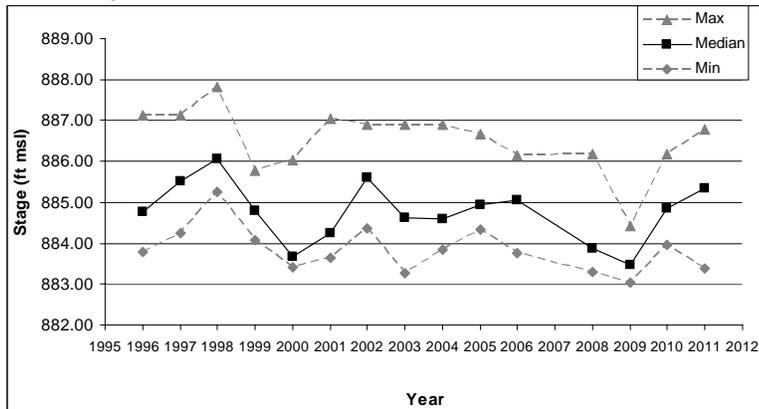
$$\text{Discharge (cfs)} = 2.9171(\text{stage}-883.5)^3 - 7.9298(\text{stage}-883.5)^2 + 10.131(\text{stage}-883.5) + 10.18$$

$$R^2=0.94$$

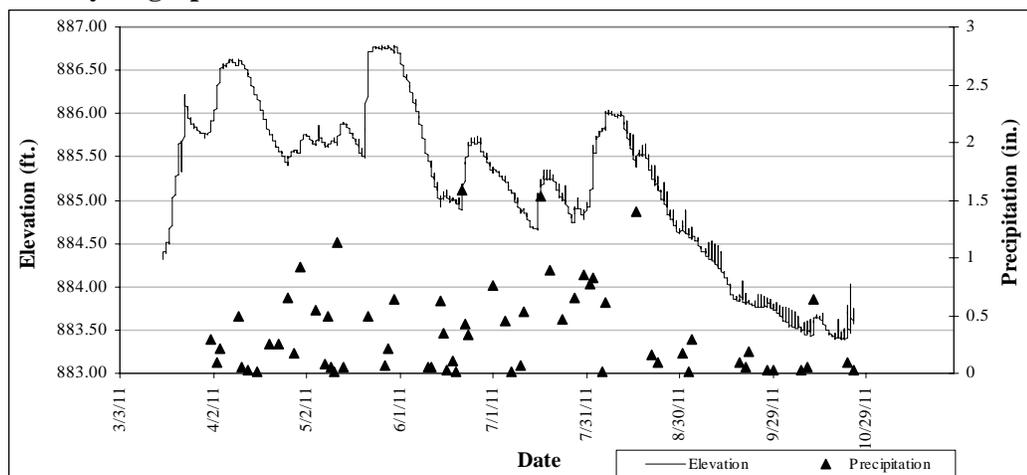
This rating curve was first prepared in 2002. Five additional flow-stage measurements were taken in 2008-09 to keep the equation updated.



### Summary of All Monitored Years



### 2011 Hydrograph



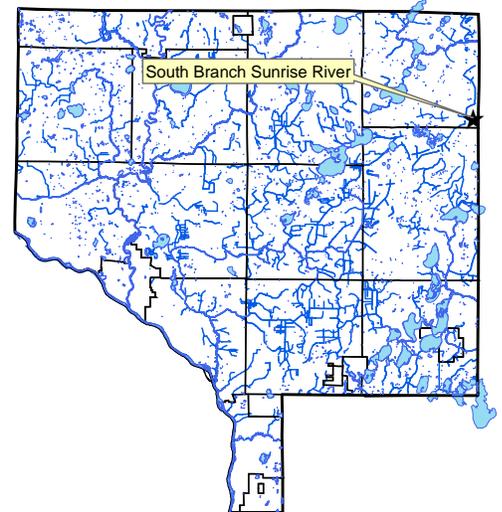
# Stream Hydrology Monitoring

## SOUTH BRANCH OF SUNRISE RIVER

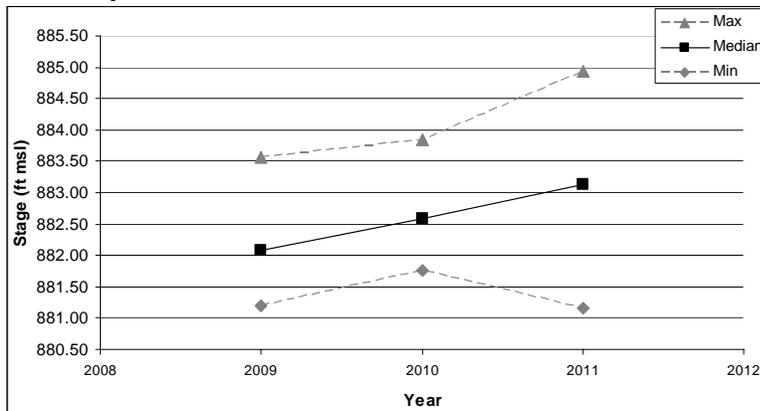
At Hornsby St, Linwood Township

### Notes

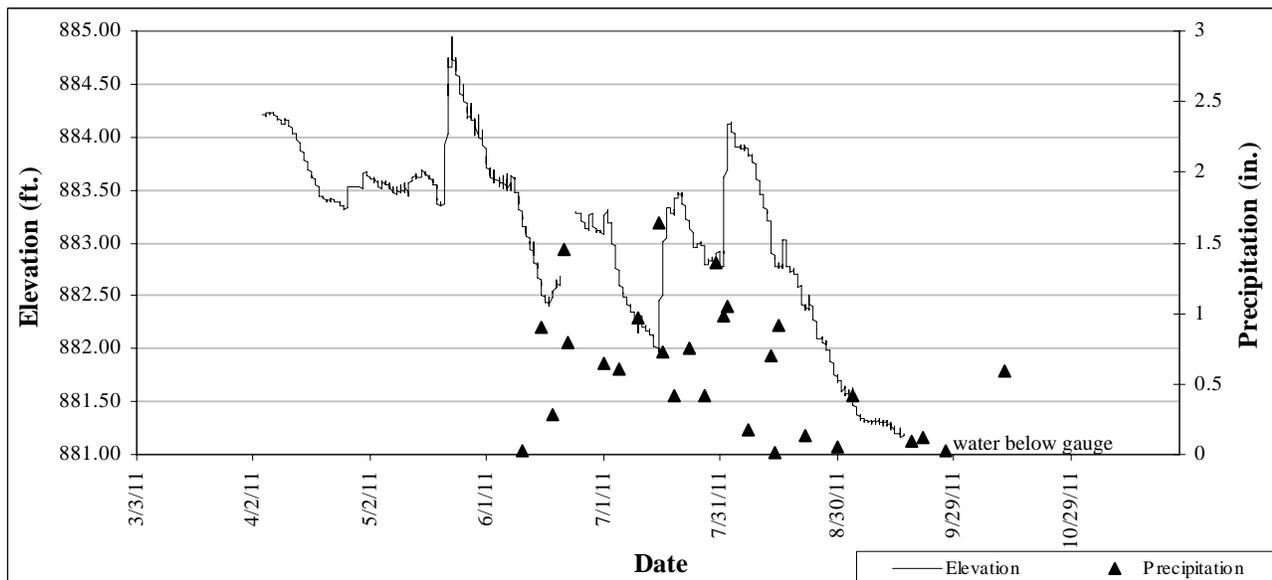
This monitoring site is the bottom of this watershed in Anoka County, at the closest accessible point to the Anoka-Chisago County boundary. Upstream, this river drains from Coon Lake and through the Carlos Avery Wildlife Management Area. The Sunrise River Watershed Management Organization monitors this site because it is at the bottom of their jurisdictional area. This site was first monitored in 2009 to collect data for a computer model of the entire Sunrise River watershed being done by the US Army Corps of Engineers, Chisago County, and other partners. Water quality monitoring has not yet occurred at this site, nor has a rating curve been created to estimate flow volumes from the water level measurements.



### Summary of All Monitored Years



### 2011 Hydrograph

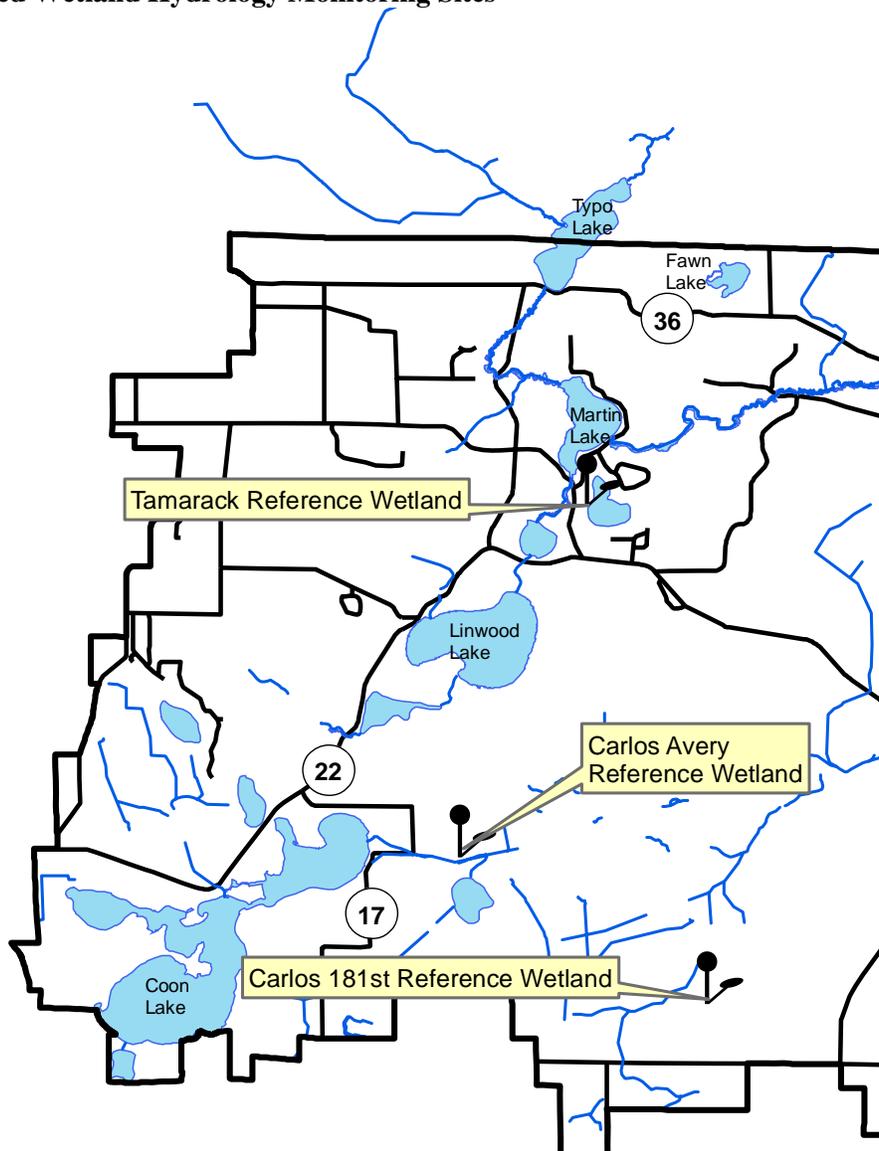


## Wetland Hydrology

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- Description:** Continuous groundwater level monitoring at a wetland boundary, to a depth of 40 inches. County-wide, the ACD maintains a network of 18 wetland hydrology monitoring stations.
- Purpose:** To provide understanding of wetland hydrology, including the impact 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:** Carlos Avery Reference Wetland, Carlos Avery Wildlife Management Area, City of Columbus  
Carlos 181<sup>st</sup> Reference Wetland, Carlos Avery Wildlife Management Area, City of Columbus  
Tamarack Reference Wetland, Linwood Township
- Results:** See the following pages. Raw data and updated graphs can be downloaded from [www.AnokaNaturalResources.com](http://www.AnokaNaturalResources.com) using the Data Access Tool.

### Sunrise Watershed Wetland Hydrology Monitoring Sites



# Wetland Hydrology Monitoring

## CARLOS AVERY REFERENCE WETLAND

Carlos Avery Wildlife Management Area, City of Columbus

### Site Information

**Monitored Since:** 1997  
**Wetland Type:** 3  
**Wetland Size:** >300 acres  
**Isolated Basin?:** No  
**Connected to a Ditch?:** Yes

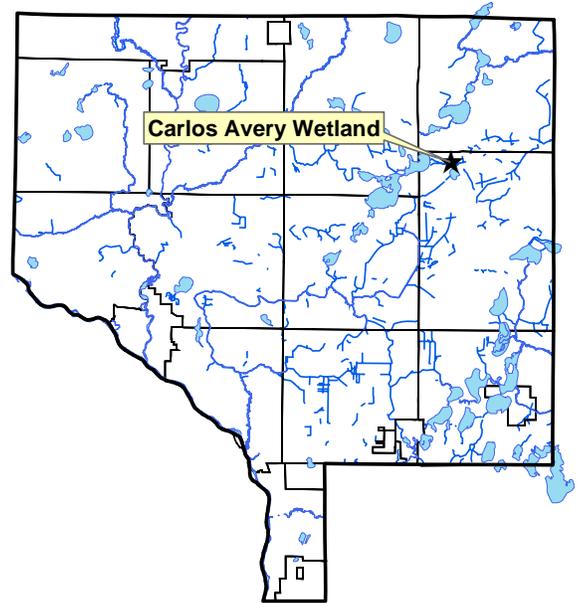
### Soils at Well Location:

Horizon	Depth	Color	Texture	Redox
Oa	0-4	N2/0	Organic	-
Bg	4-25	10yr 5/2	Sandy Loam	25% 10yr 5/6 with organic streaking

**Surrounding Soils:** Lino loamy fine sand

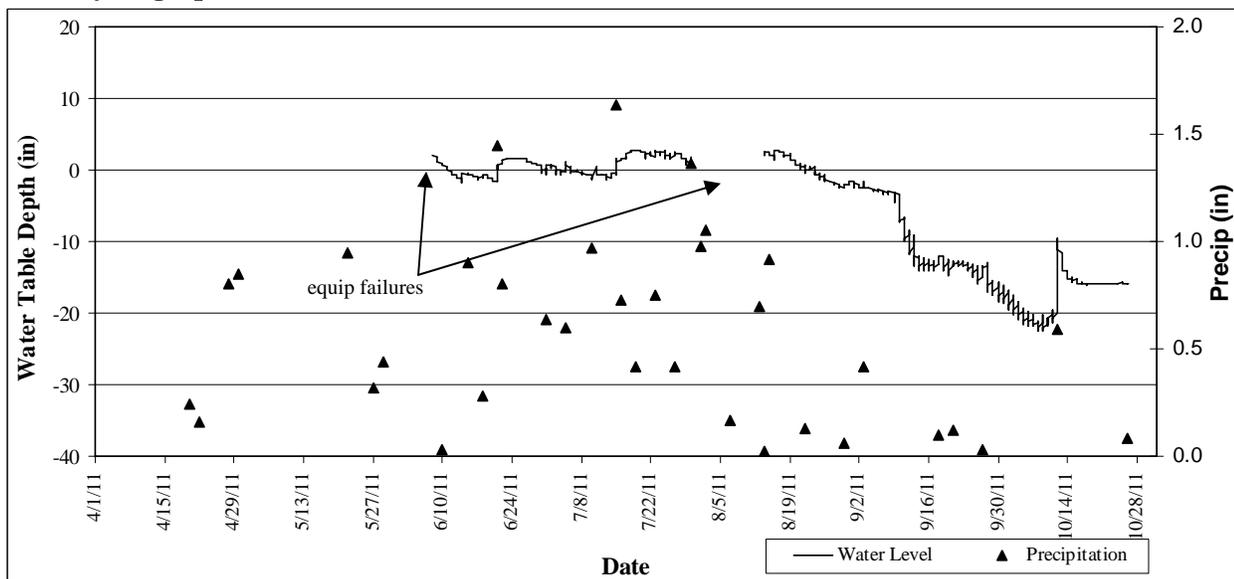
### Vegetation at Well Location:

Scientific	Common	% Coverage
Phalaris arundinacea	Reed Canary Grass	80
Carex Spp	Sedge undiff.	40
Quercus macrocarpa	Bur Oak	40
Sagittaria latifolia	Broad-leaf Arrowhead	20
Cornus stolonifera	Red-osier Dogwood	20



**Other Notes:** This is a broad, expansive wetland within a state-owned wildlife management area. Cattails dominate within the wetland.

### 2011 Hydrograph



Well depths were 40 inches, so a reading of -40 indicates water levels were at an unknown depth greater than or equal to 40 inches.

# Wetland Hydrology Monitoring

## CARLOS 181ST REFERENCE WETLAND

Carlos Avery Wildlife Management Area, City of Columbus

### Site Information

**Monitored Since:** 2006  
**Wetland Type:** 2-3  
**Wetland Size:** 3.9 acres (approx)  
**Isolated Basin?:** Yes  
**Connected to a Ditch?:** Roadside swale only

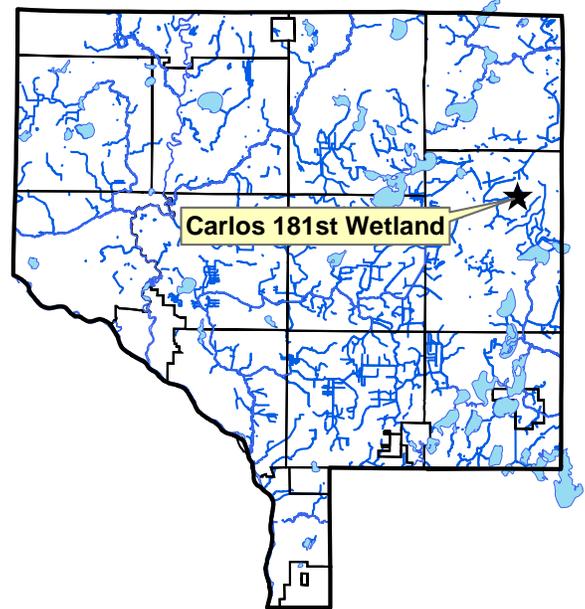
### Soils at Well Location:

Horizon	Depth	Color	Texture	Redox
Oa	0-3	N2/0	Sapric	-
A	3-10	N2/0	Mucky Fine Sandy Loam	-
Bg1	10-14	10yr 3/1	Fine Sandy Loam	-
Bg2	14-27	5Y 4/3	Fine Sandy Loam	-
Bg3	27-40	5y 4/2	Fine Sandy Loam	-

**Surrounding Soils:** Soderville fine sand

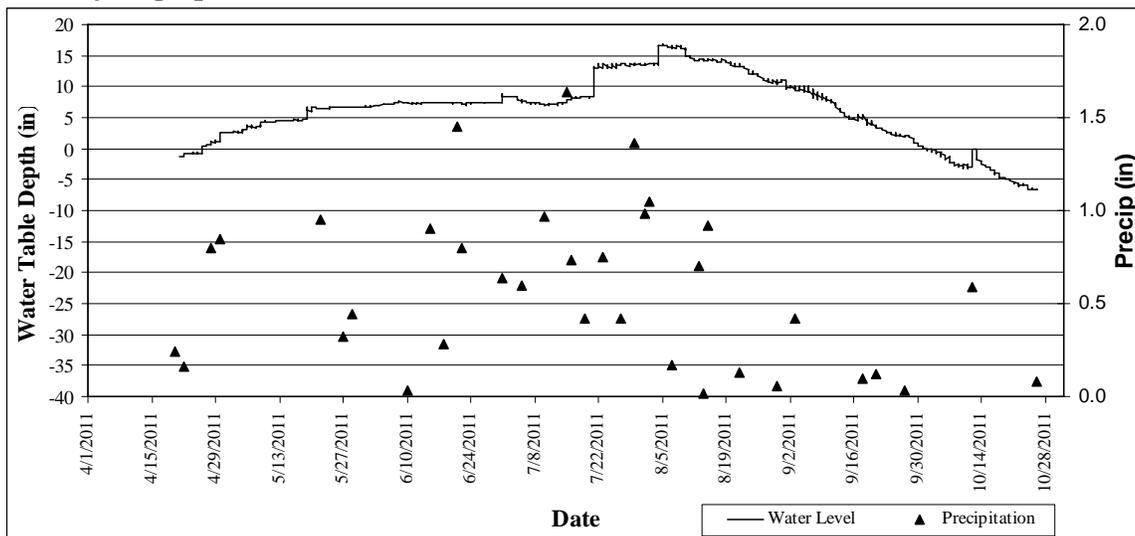
### Vegetation at Well Location:

Scientific	Common	% Coverage
Phalaris arundinacea	Reed Canary Grass	100
Rhamnus frangula (S)	Glossy Buckthorn	40
Ulmus american (S)	American Elm	15
Populus tremuloides (T)	Quaking Aspen	10
Acer saccharum (T)	Silver Maple	10



**Other Notes:** The site is owned and managed by MN DNR. Access is from 181<sup>st</sup> Avenue.

### 2011 Hydrograph



Well depths were 40 inches, so a reading of -40 indicates water levels were at an unknown depth greater than or equal to 40 inches.

# Wetland Hydrology Monitoring

## TAMARACK REFERENCE WETLAND

Martin-Island-Linwood Regional Park, Linwood Township

### Site Information

**Monitored Since:** 1999  
**Wetland Type:** 6  
**Wetland Size:** 1.9 acres (approx)  
**Isolated Basin?:** Yes  
**Connected to a Ditch?:** No

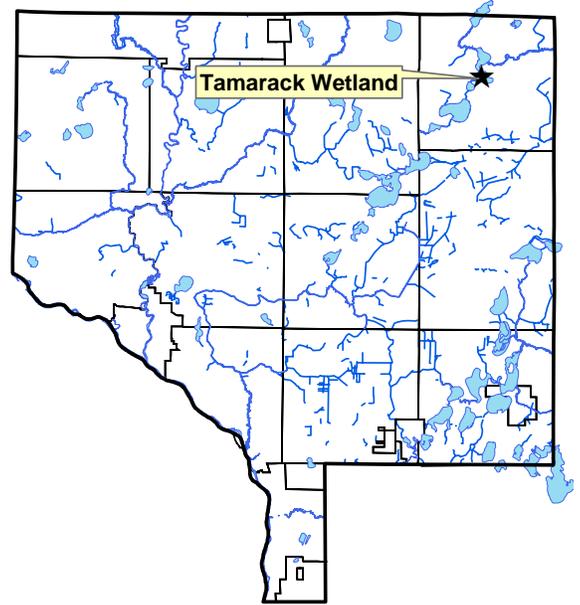
### Soils at Well Location:

Horizon	Depth	Color	Texture	Redox
A	0-6	N2/0	Mucky Sandy Loam	-
A2	6-21	10yr 2/1	Sandy Loam	-
AB	21-29	10yr3/2	Sandy Loam	-
Bg	29-40	2.5y5/3	Medium Sand	-

**Surrounding Soils:** Sartell fine sand

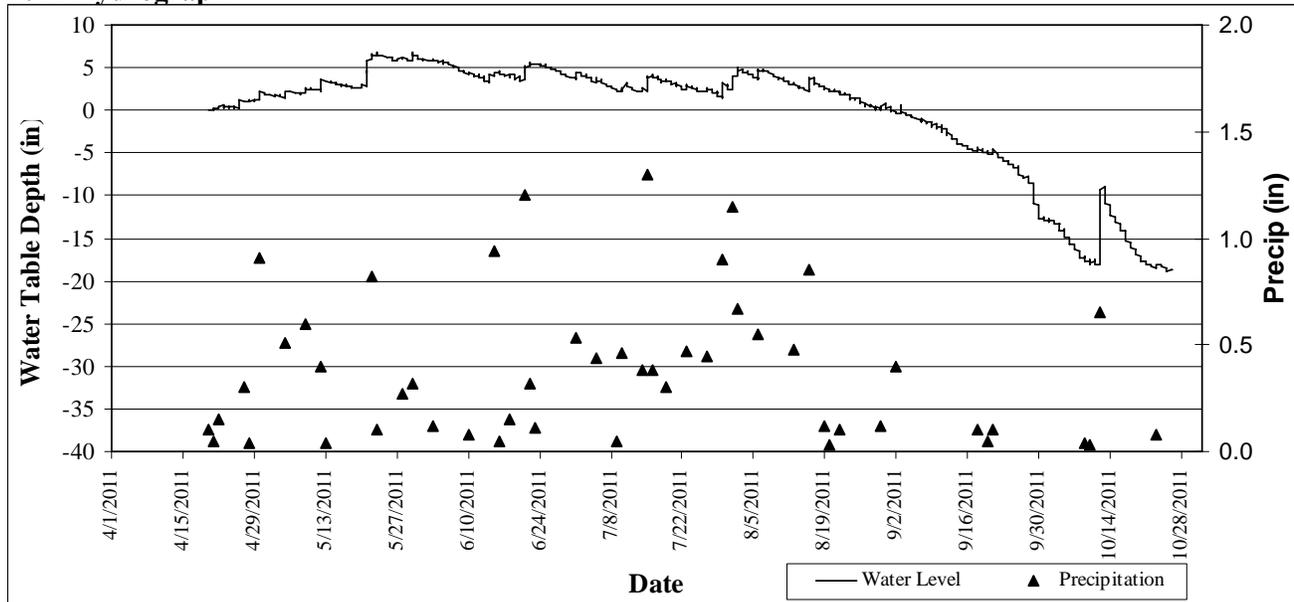
### Vegetation at Well Location:

Scientific	Common	% Coverage
Rhamnus frangula	Common Buckthorn	70
Betula alleghaniensis	Yellow Birch	40
Impatiens capensis	Jewelweed	40
Phalaris arundinacea	Reed Canary Grass	40



**Other Notes:** The site is owned and managed by Anoka County Parks.

### 2011 Hydrograph



Well depth was 35 inches, so a reading of -35 indicates water levels were at an unknown depth greater than or equal to 35 inches.

## SRWMO Phosphorus Export Estimation

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- Description:** Three methods were used to estimate phosphorus export from the SRWMO jurisdictional area.
- Purpose:** The purpose of this analysis is to estimate phosphorus export from the Sunrise River WMO jurisdictional area, and thereby quantify the 20% phosphorus reduction goal the organization has set. For each water quality improvement project that is implemented in the SRWMO the phosphorus reduction achieved by that project can be estimated. In this way the SRWMO can track progress toward the 20% phosphorus reduction goal.
- Locations:** South Branch Sunrise River at Hornsby St NE  
West Branch Sunrise River at Co Rd 77
- Results:** Anoka Conservation District staff compared three estimates of phosphorus export from the SRWMO to arrive at a single number. The three estimates are from FLUX, the Martin Lake TMDL, and the St. Croix River TMDL. FLUX, was done by the Anoka Conservation District for this project while the other two estimates were available from unrelated work by others and help to ensure accuracy. Each method of estimation has inherent strengths and weaknesses, and professional judgment exercised across all the three methods leads to a reasonable estimate.

### FLUX Methodology

FLUX is a statistical model that combines continuous flow data with water quality grab samples to estimate continuous phosphorus discharge. This data exists for the West Branch of the Sunrise River at County Road 77. Neither continuous flow nor water quality data is available for the South Branch of the Sunrise River where it exits the SRWMO, so the analysis could not be performed for that area.

The FLUX analysis was done by a flow weighted concentration method. Data used was from 2001, 2003, and 2006, and included 685 days with continuous flow data and 24 water samples. The data were stratified by splitting the flows at the mean to reduce variation in the data. This stratification resulted in 8 samples greater than mean flows and 16 samples less than mean flows.

FLUX estimated a total loading of 4,068 lbs of phosphorus per year for the open water season. Because no sampling data is available from the winter season, the most conservative option is to apply open water season loading rates to winter months. This is conservative because winter loading is often much less than other seasons because there is little runoff. This approach results in an estimate of 2,431 lbs during the unmonitored winter season, or a year round total of 6,499 lbs. The actual total is likely somewhere between the open water estimate of 4,068 lbs and the year round estimate of 6,499 lbs.

It should be stressed that the FLUX estimate excludes the South Branch of the Sunrise River because the necessary data did not exist. The South Branch is a smaller and much less developed portion of the SRWMO, but nevertheless the FLUX estimate is an underestimate of total phosphorus export from the SRWMO.

### Martin Lake TMDL Methods

The Martin Lake Total Maximum Daily Load Study estimated phosphorus loading to Martin Lake. The West Branch of the Sunrise River flows through Martin Lake. Martin Lake is 3 miles upstream of the SRWMO jurisdictional boundary, and the area between these points is lightly developed with no tributaries or other large, additional phosphorus sources. Therefore, the estimate of phosphorus loading to Martin Lake is informative

when considering export from the SRWMO. The TMDL was completed by the Minnesota Pollution Control Agency using the model BATHTUB in 2011.

Lake St. Croix TMDL

The Lake St. Croix TMDL was also completed by the Minnesota Pollution Control Agency. This TMDL partitioned the watershed. A phosphorus export for just the Anoka County portion of the St. Croix River Watershed, which happens to be the same as the SRWMO’s jurisdictional area, is provided. This study found that Anoka Co parts of St. Croix watershed have loading of 4,931 lbs/yr and need to reduce it by 1,607 lbs/yr (32.6%) in order to meet St. Croix River water quality goals.

Comparison of Phosphorus Estimates

A comparison among the three methods, and their strengths and weaknesses, is provided in the table below. The FLUX and Lake St. Croix TMDL estimates are in general agreement, while the Martin Lake TMDL estimate is substantially higher and applies to an undesirably small geographic area. It would be inappropriate to simply use the FLUX estimate, because it applies to only the April-October portion of each year. The Lake St. Croix TMDL estimate (4,931 lbs) is 21% greater than the FLUX estimate for the open water season (4,068 lbs). It’s reasonable to think that adding 21% to the FLUX estimate would account for winter loading and loading through the South Branch.

**Therefore, we recommend that the SRWMO use 4,931 lbs/yr from the Lake St. Croix TMDL as the phosphorus export estimate for their jurisdictional area.  
The SRWMO’s goal of 20% phosphorus reduction = 986 lbs**

**Comparison of three phosphorus export estimation methods for the SRWMO.**

Method	P export estimate	Description	Strengths	Weaknesses
Martin Lake TMDL study	7,149 lbs/yr	<ul style="list-style-type: none"> <li>Bathtub modeling for Martin Lake and upstream monitoring sites.</li> </ul>	<ul style="list-style-type: none"> <li>Based on actual monitoring data in Martin Lake and upstream.</li> </ul>	<ul style="list-style-type: none"> <li>Estimate is for the outlet of Martin Lake. Excludes the lower 3 miles of the river, though this largely undeveloped area.</li> <li>Estimate excludes the S Branch of Sunrise River, though this mostly drains the undeveloped Carlos Avery Wildlife Mgmt Area.</li> </ul>
Lake St. Croix TMDL study	4,931 lbs/yr	<ul style="list-style-type: none"> <li>Combination of land uses, each land use’s literature values for phosphorus export, and monitoring data.</li> </ul>	<ul style="list-style-type: none"> <li>Includes both the W and S Branches of the Sunrise River (none of the other methods do).</li> </ul>	<ul style="list-style-type: none"> <li>Based mostly on literature values of phosphorus export from various land use types, less so on monitoring data from the site of interest.</li> </ul>
FLUX	4,068 lbs for the open water season (April-Oct)	<ul style="list-style-type: none"> <li>Statistical analysis of continuous hydrology and water quality sample data.</li> </ul>	<ul style="list-style-type: none"> <li>Estimate is calculated from water quality and hydrology data for the Sunrise River at Co Rd 77, our site of greatest interest, in 2001, 2003, and 2006.</li> </ul>	<ul style="list-style-type: none"> <li>Estimate is for only April-Oct, excludes winter season.</li> <li>Estimate excludes the S Branch of Sunrise River, though this mostly drains the undeveloped Carlos Avery Wildlife Mgmt Area.</li> </ul>

## Water Quality Grant Fund

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- Description:** The Sunrise River Watershed Management Organization (SRWMO) offers cost share grants encourage projects that will benefit lake and stream water quality. These projects include lakeshore restorations, rain gardens, erosion correction, and others. These grants, administered by the ACD, offer 50-70% cost sharing of the materials needed for a project. The landowner is responsible for the remaining materials expenses, all labor, and any aesthetic components of the project. The ACD assists interested landowners with design, materials acquisition, installation, and maintenance.
- Purpose:** To improve water quality in area lakes, streams, and rivers.
- Locations:** Throughout the watershed.
- Results:** None of the projects installed in 2011 used SRMWO cost share grants.

### SRWMO Cost Share Fund Summary

2005 SRWMO Contribution	+	\$1,000.00
2006 SRWMO Contribution	+	\$1,000.00
2006 Expense - Coon Lake, Rogers Property Project	-	\$ 570.57
2007 – no expenses or contributions		\$ 0.00
2008 SRWMO Contribution	+	\$2,000.00
2008 Expense - Martin Lake, Moos Property Project	-	\$1,091.26
2009 SRWMO Contribution	+	\$2,000.00
2010 SRWMO Contribution	+	\$1,840.00
<u>2011 SRWMO Contribution</u>	<u>+</u>	<u>\$2,000.00</u>
<b>Fund Balance</b>		<b>\$8,178.17</b>

## Water Quality Improvement Projects

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**Description:** Projects on either public or private property that will improve water quality, such as repairing streambank erosion, restoring native shoreline vegetation, or rain gardens. These projects are partnerships between the landowner, the Anoka Conservation District, state agencies, lake associations, or others.

**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 installed in 2011 in the SRWMO include:

- **Martin Lake rain gardens.** Three residential, curb-cut rain gardens were installed. These rain gardens intercept stormwater that was previously begin directed into the lake without any treatment. Collectively, these projects will reduce phosphorus entering Martin Lake by 1.8 lbs/yr and suspended solids by 596 lbs/year. These projects were the 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> most cost effective projects identified in the Stormwater Retrofit Assessment completed in August 2011. These projects were a collaboration between the SRWMO, Anoka Conservation District, landowners, Linwood Township, landowners, and the Minnesota Conservation Corps. Partial project dollars were provided by the Clean Water Fund (from the Clean Water, Land, and Legacy Amendment).
- **Coon Lake - East Front Blvd stormwater retrofit.** This project treats stormwater before it enters Coon Lake. The project involved installation of sediment capture devices in a drainageway. Before this project, stormwater runoff from a residential area entered the lake by this route without any treatment. This project was a collaboration between the Coon Lake Improvement Association, Mr. Doug Tierney, and the City of East Bethel.
- **Braido – native plant gardens.** The Braido ecological restoration project focused on restoring the ecological integrity of a 5.1 acre residential property. Practices implemented include the installation of a rain garden, native prairie plantings, and removal of invasive woodland species. The benefits associated with this ecological restoration include water quality improvement and increased biodiversity from the native prairie plantings. The restoration of the woodland community consisted of removing invasive species and replacing them with native species that will provide food and habitat for wildlife.

Projects anticipated soon in the SRWMO include:

- **Carp barriers at Martin and Typo Lakes.** In 2012 and 2013 carp barriers will be installed at four sites around Martin and Typo Lakes. Additionally, commercial carp harvests will be conducted with the aid of radio tracking the schooling fish in wintertime. This project aims to improve water quality in these lakes by reducing the carp population. Carp are a high percentage of the fish biomass in these waterbodies. They strongly degrade habitat and water quality throughout their feeding and spawning behaviors. Carp control will improve water clarity, increase plants, improve the game fishery, and enhance wildlife opportunities. Barriers are an effective strategy for carp control because Typo and Martin Lake each provide something important for carp, and moving between the lakes is important to their success. Martin Lake is deeper, and good for overwintering. Typo Lake is shallow and good for spawning. Stopping migrations between the lakes will reduce overwintering survival and spawning success. The barriers alone will achieve this over time, but we will accelerate results with carp harvests.

This project is a collaboration between the SRWMO, Anoka Conservation District, Martin Lakers Association, MN DNR, and Linwood Township. Major funding is provided by the SRWMO, Martin Lakers Association, and the Outdoor Heritage Fund (from the Clean Water, Land, and Legacy Amendment).

- **Martin Lake Stormwater Retrofits** – In 2012 the SRWMO and Anoka Conservation District will install other stormwater retrofits identified as cost effective in the 2011 Martin Lake Stormwater Assessment.
- **Coon Lake Stormwater Retrofit** - In 2012-13 a stormwater assessment will be conducted to identify and rank the most cost effective stormwater retrofits that will benefit Coon Lake water quality. In 2014-15 the SRWMO plans funding to install the best of these projects.

## Martin Lake Stormwater Retrofits

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**Description:** The stormwater retrofits are projects that treat stormwater runoff before it reaches Martin Lake, thereby reducing phosphorus and other pollutants in the lake. In early 2011 a Stormwater Assessment was completed for Martin Lake. That study identified 15 stormwater retrofits and ranked them by cost effectiveness (amount of pollution reduced per dollar spent). Later in 2011, installation of cost effective projects began. These were three residential curb-cut rain gardens.

**Purpose:** To improve Martin Lake water quality.

**Results:** In fall 2011 three residential, curb-cut rain gardens were installed in the yards of willing homeowners. All of these rain gardens were located at the end of a long run of curb, and just up-gradient of a catch basin that would direct the water into the lake. A cut in the curb was created, directing the water into the excavated rain garden basin. In the rain garden, storm water soaks into the ground through the engineered soils. Standing water is present for no more than 48 hours after storms, and often much less. If the garden fills to the curb elevation during heavy rains, water will simply pass by the rain garden and go to the catch basin.

These projects were the 3rd, 4th, and 5th most cost effective projects identified in the Stormwater Retrofit Assessment completed earlier in 2011. They will prevent an estimated 1.8 pounds of phosphorus from entering Martin Lake each year, as well as 596 pounds of solids. Phosphorus is the nutrient that fuels algae blooms that are a common problem in Martin Lake. This project and others like it are important steps toward helping Martin Lake meet state water quality standards.

These projects were a collaboration between the SRWMO, Anoka Conservation District, landowners, Linwood Township, and the Minnesota Conservation Corps. Partial project dollars were provided by the Clean Water Fund (from the Clean Water, Land and Legacy Amendment).

### Project financial summary:

#### Funding sources:

\$15,127	Clean Water Fund (LRP)
\$5,500	MCC grant for labor
<u>\$7,000</u>	SRWMO
\$27,627	Total cost including ACD project promo and mgmt

The SRWMO committed \$10,000 to this project. The funds were used as follows:

\$3,037.57	Installation
\$3,962.43	ACD reimbursement for promotion, administration, and construction oversight.
<u>\$3,000</u>	Funds returned to the SRWMO
\$10,000	Total

The Anoka Conservation District contributed an additional \$3,457.57 of in-kind efforts to this project which included project promotion, administration, and construction oversight.

Project promotion, administration, and construction oversight tasks included:

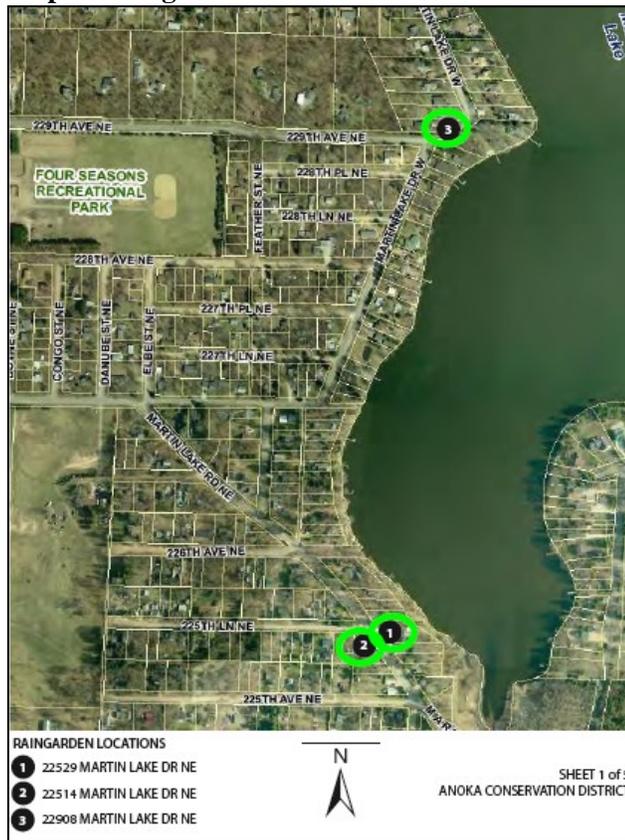
#### **Promotion**

- Contact high priority property owners via mailing
- Follow-up with visit to property
- Provide informational meeting for interested property owners
- Coordinate signature of intent forms

**Rain Garden Installation**

- Develop base maps prior to design work
- Develop online survey for property owners to provide input on design
- Coordinate design process
- Conduct bid process for installation contractor
- Develop and coordinate contracts between contractors and property owners
- Coordinate installation process between contractor and Minnesota Conservation Corps crew
- Construction oversight throughout project
- Verification of proper project installation through on-site surveys and measurements

**Map of rain garden locations**



**22514  
Martin  
Lake  
Dr.**



**22529  
Martin  
Lake  
Dr.**



**22908  
Martin  
Lake  
Dr.**

## Lakeshore Landscaping Education

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**Description:** One goal of the Sunrise River WMO is to encourage and facilitate lakeshore restorations with native plants. These projects, usually accomplished by homeowners with assistance from agencies like the SRWMO, are beneficial to overall lake health. By planting native plants at the shoreline runoff into the lake is filtered, and fish and wildlife habitat is substantially improved. To move toward its goal, the SRWMO is doing regular education and marketing of lakeshore restorations to homeowners.

**Purpose:** To improve lake water quality and lake health.

**Results:** In 2011 the SRWMO contracted the Anoka Conservation District (ACD) to accomplish four lakeshore landscaping education tasks, including:

Join Blue Thumb – Blue Thumb is a consortium of Minnesota agencies, plant nurseries, landscapers, and others who share resources in their efforts to promote the use of native plants to improve water quality through shoreline stabilizations, rain gardens, and native plant gardens. Resources that are shared amongst Blue Thumb members include pre-fab marketing materials, displays, how-to manuals, and others. The ACD enrolled the SRWMO in Blue Thumb and performed all necessary administration to maintain the membership and renew it in 2012.



Maintaining a Blue Thumb membership requires an annual contribution of either \$1,500 cash or 30 hours of efforts. The SRWMO chooses to meet this requirement by incorporating Blue Thumb into a variety of tasks that are already planned and benefit from Blue Thumb. In 2011 the SRWMO exceeded the 30 hour commitment with the following work:

- Membership administration
- Presentation at Linwood Lake Association annual meeting
- Braido native plant gardens
- Mailing to Fawn Lake residents including lakeshore landscaping mailing
- Placing a link to the Blue Thumb website on the SRWMO website
- Promoting, organizing, and installing the Martin Lake rain gardens.

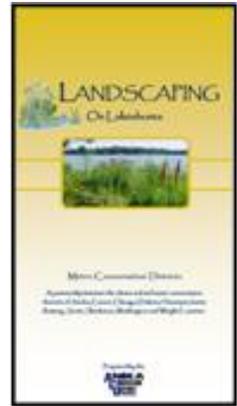
Blue Thumb Link on SRWMO Website – The ACD added a link to the Blue Thumb website on the SRWMO website. On the Blue Thumb website residents can access a variety of tools including how-to manuals and a plant selection tool.

30-second Web Video – The SRWMO requested that the ACD create a short web video that would promote lakeshore restorations and also serve to improve awareness of the SRWMO. The work includes creating a script, securing video clips and photos, producing the video including audio, and posting it to the SRWMO website.

The two minute video was completed and posted to the SRWMO website in March 2012.

Brochure distribution at Fawn Lake - The SRWMO wished to make a special effort to promote lakeshore restorations at Fawn Lake. This lake's watershed is not much larger than the homes encircling the lake. Therefore, water quality in the lake largely hinges on these homeowners activities. Presently, Fawn Lake has the best water quality of all Anoka County Lakes.

A full-color, 11x17, tri-folded brochure about lakeshore restorations was delivered to all 66 homes on Fawn Lake. The brochure included many photos highlighting the attractiveness of these restorations, as well as how they help address some challenges of landscaping near the lake. It described methods, and technical and financial assistance available. The brochure was accompanied by a letter. Linwood Township staff handled distribution of the addressed envelopes. No phone or email responses to this mailing were received.



## Aquatic Plant Education Campaign

**Description:** Mailings, workshops, signage, and articles to educate lakeshore homeowners about the benefits of native aquatic plants, threat of invasive species, and ecologically-sound and legal lakeshore management. Target neighborhoods are those surrounding Coon, Fawn, Linwood, and Martin Lakes.

**Purpose:** To educate lakeshore homeowners about the benefits of native aquatic plants, threat of invasive species, and ecologically-sound and legal lakeshore management.

**Results:** In 2011 the SRWMO contracted with the ACD to replace vandalized SRWMO signage at the Martin Lake boat landing. That signage asks boaters to take measures that prevent that spread of aquatic invasive species. This signage is designed to be a local voice that reinforces messages in DNR signage on this topic. These signs had been installed on the five major recreational lakes in 2007. While the signs at other locations are in good condition, the sign at Martin Lake was destroyed by vandals. The ACD replaced the sign at Martin Lake with another Aluminum sign.

### New SRWMO Sign at the Martin Lake Public Boat Landing



**PLEASE!**

**Remove all plants and water from your boat and trailer to stop the spread of aquatic invasive species.**

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Number of Anoka County lakes infested with Eurasian Watermilfoil **8**

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 Sunrise River  
Watershed Management Organization

 **ANOKA**  
CONSERVATION  
DISTRICT

# Annual Education Publication

**Description:** An annual newsletter article about the SRWMO is required by MN Rules 8410.010 subpart 4, and planned in the SRWMO Watershed Management Plan.

**Purpose:** To improve citizen awareness of the SRWMO, its programs, and accomplishments.

**Results:** In 2011 the SRWMO contracted with the ACD to write the annual newsletter and provide it to member communities for distribution in their newsletters. Topics for annual newsletter educational efforts were discussed at the February 24, 2011 SRWMO meeting. The article shall be written to cover the following:

- Recent and upcoming efforts to treat stormwater drainage to area lakes (i.e. stormwater retrofitting). These efforts include the Martin Lake stormwater assessment and upcoming projects, Coon Lake stormwater assessment, and East Front Blvd project.
- Ask residents to report any stormwater outfalls into area waterbodies that concern them, especially around Martin or Coon Lakes where assessments are ongoing or planned.
- Good housekeeping practices people can use in their yards to keep stormwater cleaner.
- SRWMO website address and other SRWMO organizational info.

The Anoka Conservation District drafted the newsletter article. It was provided to the SRWMO Board for review before distribution to the member communities. This was accomplished before the end of July so the cities will have ample time to run it in their newsletters sometime during the remainder of the year.

## SRWMO 2011 newsletter article, which was published in member city newsletters

**Stormwater Cleanup Around Local Lakes**

Stormwater is one of many things that can hurt water quality in a lake. It is rainfall that flows across lawns, rooftops, driveways, roads, and other surfaces. As it travels it picks up a variety of pollutants – silt, sediment, nutrients, bacteria, heavy metals, and others. Today, regulations require that most of this water be treated with stormwater settling ponds or other practices. But it wasn't always so. Many areas developed before those requirements. Those areas, where untreated stormwater goes straight into lakes, are today being "retrofitted" to improve stormwater treatment. Two of those areas are Martin Lake and Coon Lake.

Stormwater retrofitting is a tricky process. Neighborhoods are already built up, so we must find ways to incorporate the stormwater retrofits. The best projects aren't always the ones you would expect, so the retrofitting process starts with an assessment to find all the possible projects, analyze how much pollution will be removed by each, and estimate the cost. The result is a list of projects prioritized by cost effectiveness. The best projects get installed first.

**Martin Lake**

Martin Lake stormwater retrofitting is currently underway in Linwood Township. It is in the assessment stage, but moving fast. To-be-determined projects will be installed by the end of the year using a combination of local funds and grants. So far, computer modeling has found that an area of 140 acres surrounding the lake is carrying approximately 70 lbs/yr of phosphorus and 31,712 lbs/yr of suspended solids into the lake. Phosphorus causes algae blooms while suspended solids cloud the water and carry many other pollutants, like heavy metals. Possible retrofit activities include residential rain gardens, modifying existing ponds, swales, and underground treatment devices. Some projects, like rain gardens, will require willing participation from residents, those who live in strategically important locations for stormwater treatment will be hearing from project leaders late this summer.



Rain gardens are attractive and effective

**Coon Lake**

A stormwater assessment for areas around Coon Lake is planned for 2012, but this year one demonstration project was installed to get a jump-start on the process. Along East Front Boulevard an area of about 1 acre drains to a ditch that then flows into Coon Lake, resulting in 2 lbs/yr of phosphorus being flushed to the lake. One concrete pretreatment

structure was placed at the ditch inlet, and two concrete weirs were placed at culverts. Together, these capture sediment, street grime, and other pollutants, reducing phosphorus entering Coon Lake by 1.34 lbs/yr. Considering 1 lb of phosphorus can produce 500 lbs of algae, this one project may reduce algal growth in Coon Lake by 670 lbs/yr!

**Help Make a Difference**

Anyone who lives near a stormwater drain has waterfront property, at least in a sense. These curbside gutters drain to lakes, streams, and wetlands. Let's keep it clean. If you do live directly next to water, don't mow the yard to the water's edge. Instead, leave a strip of plants to catch pollutants and provide habitat.

**Project Leaders**

Stormwater retrofitting on these lakes is led by the Sunrise River Watershed Management Organization (SRWMO) with assistance from partners including the Anoka Conservation District, City of East Bethel, Linwood Township, Martin Lakers Association, and the Coon Lake Improvement Association.

**Sunrise River WMO Contact Information and Meetings**

Information about the SRWMO may be found on the website at <http://www.anokanaturalresources.com/srwmo>. The remaining 2011 SRWMO meetings are on August 4<sup>th</sup> and November 3<sup>rd</sup>, meetings are held at 6pm at East Bethel City Hall.

# SRWMO Website

- Description:** The Sunrise River Watershed Management Organization (SRWMO) contracted the Anoka Conservation District (ACD) to design and maintain a website about the SRWMO and the Sunrise River watershed. The website has been in operation since 2003.
- Purpose:** To increase awareness of the SRWMO 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 SRWMO's alternative to a state-mandated newsletter.
- Location:** [www.AnokaNaturalResources.com/SRWMO](http://www.AnokaNaturalResources.com/SRWMO)
- Results:** The SRWMO website contains information about both the SRWMO and about natural resources in the area.
- Information about the SRWMO includes:
- a directory of board members,
  - meeting minutes and agendas,
  - the watershed management plan and information about- plan updates,
  - descriptions of work that the organization is directing,
  - highlighted projects.
- Other tools on the website include:
- an interactive mapping tool that shows natural features and aerial photos
  - an interactive data download tool that allows users to access all water monitoring data that has been collected
  - narrative discussions of what the monitoring data mean

## SRWMO Website Homepage



more on next page

## Interactive Mapping Tool

## Interactive Data Access Tool

## Grant Searches and Applications

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**Description:** The Anoka Conservation District (ACD) assisted the SRWMO with the preparation of grant applications. Several projects in the SRWMO Watershed Management Plan need outside funding in order to be accomplished.

**Purpose:** To provide funding for high priority local projects that benefit water resources.

**Results:** In 2011 two grant applications were prepared for the Martin and Typo Lake Carp barriers, and one was funded. Fees paid to the ACD only covered preparation of only one of these grant applications. Because the carp barriers project is a partnership between the SRWMO and ACD, the ACD bore the cost of preparing the second application.

The grant awarded was from the DNR Conservation Partners Legacy Program which obtains its funding from the Outdoor Heritage Fund (from the Clean Water, Land, and Legacy Amendment). The grant award of \$129,938 is sufficient to fund carp barrier at four locations around Martin and Typo Lakes, as well as perform a commercial harvest of carp aided by radio tagging the fish. The 15% required local match for the project is from the SRWMO (\$35,000 in 2012-13) and Martin Lakers Association (\$5,000 in 2012). Project installation will begin in 2012.

The second grant application was also for the carp barriers project. The application was to the Clean Water Fund from the Board of Water and Soil Resources (BWSR). This application was not awarded, perhaps because the project was already being funded by the DNR grant.

The SRWMO requested that the ACD be the applicant for the DNR grant. This was due to questions about whether the SRWMO's lack of a recent financial audit would make it ineligible for the grant. State rules regarding financial audits for WMO's are currently being changed, and the SRMWO is working with the BWSR to ensure they are meeting requirements.

# SRWMO 2010 Annual Report to BWSR

**Description:** The Sunrise River Watershed Management Organization (SRWMO) is required by law to submit an annual report to the Minnesota Board of Water and Soil Resources (BWSR), the state agency with oversight authorities. This report consists of an up-to-date listing of SRWMO Board members, activities related to implementing the SRWMO Watershed Management Plan, the status of municipal water plans, financial summaries, and other work results. The SRWMO bolsters the content of this report beyond the statutory requirements so that it also serves as a comprehensive annual report to SRWMO member communities. The report is due annually 120 days after the end of the SRWMO’s fiscal year (April 30<sup>th</sup>).

**Purpose:** To document progress toward implementing the SRWMO Watershed Management Plan and to provide transparency of government operations.

**Locations:** Watershed-wide

**Results:** Anoka Conservation District (ACD) assisted the SRWMO with preparation of a 2010 Sunrise River WMO Annual Report. ACD drafted the report and a cover letter. The draft was provided to the SRWMO Board on April 14, 2011. After SRWMO Board review, a final draft was delivered to the Chair on April 21, 2010 for his signature and forwarded to BWSR. On April 22, 2010 a sufficient number copies of the report were sent to each member community to ensure that each city council person and town board member would receive a copy. A copy was also provided to each SRWMO Board member. The report is available to the public on the SRWMO website.

Cover

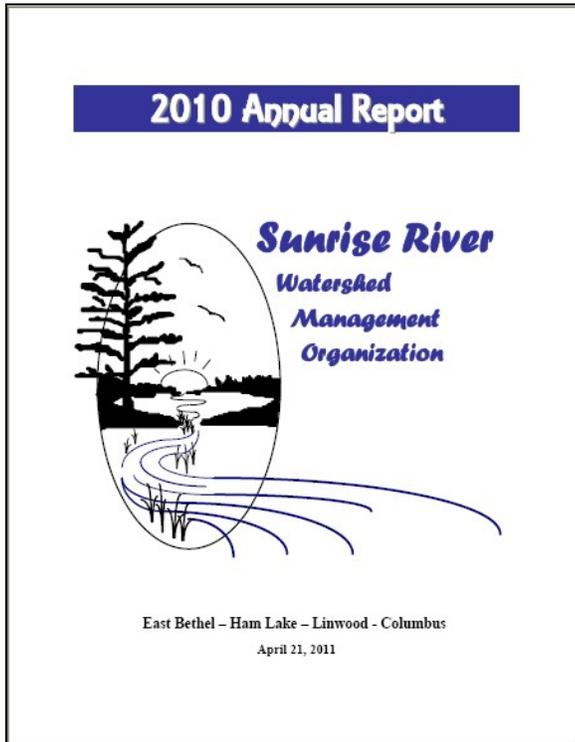


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## Review Local Water Plans

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**Description:** SRWMO member municipalities must update their Local Water Management Plans and ordinances within 2 years of the adoption of the new SRWMO Plan (MN Rules 8410.0130 and 84100160). All must be consistent with the SRWMO Plan. The SRWMO has approval authority over the Local Water Management Plans. Once a community submits their updated Local Water Management Plan to the WMO for review, the WMO has 60 days to provide comments. The Metropolitan Council has a simultaneous 45-day review period, and the WMO's review of the Plan must include a review of Metropolitan Council's comments. ACD assists the SRWMO by providing a technical review of Local Water Management Plans, as they are completed, and Metropolitan Council's comments on each.

ACD's assistance includes:

- Reviewing each of the four member municipalities' draft local water management plan, and any relevant ordinances, for consistency with the SRWMO Plan.
- Writing comments in the form of a letter to the municipality and presenting it to the SRWMO Board.
- Sending the comments to the municipality when authorized by the SRWMO Board.
- Do all of the above within the 60 day comment period allowed by law.

**Purpose:** To ensure consistency between municipal local water plans and the SRWMO Watershed Management Plan.

**Results:** All local water plans, except Ham Lake, have been approved. The following is the status of each city or township's local water plan, as of January 23, 2012:

**Linwood Township** – Linwood Township has adopted the SRWMO Watershed Management Plan by reference.

**Ham Lake** – The Ham Lake Local Water Plan was reviewed in January 2012. The staff recommendation is for approval, contingent upon inclusion of the SRWMO wetland standards. The SRWMO will take action at their Feb. 2, 2012 meeting.

**East Bethel** – The SRWMO received a draft local water plan in June 2010. Changes were requested. In May 2011 a final draft was received and approved.

**Columbus** – Approved at the February 2011 SRWMO meeting.

**Deadline for all** – June 3, 2012 is the deadline for all SRWMO cities and townships to revise local water plans and ordinances to be consistent with the SRWMO 3<sup>rd</sup> Generation Watershed Management Plan.

## On-call Administrative Services

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**Description:** The Anoka Conservation District Water Resource Specialist provides limited, on-call administrative assistance to the SRWMO. Tasks are limited to those defined in a contractual agreement.

**Purpose:** To ensure day-to-day operations of the SRWMO are attended to between regular meetings.

**Results:** In 2011 a total of 43 hours of administrative assistance were performed. This was beyond the 22 hours that were pre-paid under contract because of unanticipated, non-routine tasks such as two rounds of amendments to the Watershed Management Plan, updates to the joint powers agreement, changes to insurance, creating a display or a local event, and others. Those hours in excess of 22 were charged at an hourly rate of \$70 after approval by the SRWMO Board.

The following tasks were accomplished:

- Two rounds of watershed plan amendments.
- Edited the SRWMO joint powers agreement, and facilitated approvals and distribution.
- Coordinating financial arrangement changes East Bethel Finance Director.
- Coordinated annual reporting.
- Responded to 11 separate email inquiries/questions from Board members. This excludes simple emails and phone calls that took only moments to address.
- Appealed an MPCA decision that SRWMO carp barriers are ineligible for section 319 grant funding.
- Signed up the SRWMO for Blue Thumb reported in-kind contributions.
- Communications with BWSR and the Treasurer regarding SRWMO delinquent financial audits and audit requirements, and grant eligibility.
- Met with the SRWMO Treasurer, as requested, to discuss financial audit requirements.
- Reminders to some communities, at the SRWMO Board's direction, regarding delinquent local water plans and annual reports to the SRWMO.
- Reviewed draft minutes from one meeting. Due to the complex nature of some conversations, the recording secretary requested a technical review of the draft minutes.
- Portions of SRWMO meeting time that were dedicated to advising the board on administrative topics, including budgeting, JPA revisions, watershed plan revisions, soliciting bids for services, and financial arrangements.
- Recorded February 2011 meeting minutes when the recording secretary was absent.
- Phone calls from residents or developers. Most commonly, phone calls are from construction firms inquiring about permit requirements.
- Assembled meeting packets and recommended agenda items to the recording secretary.
- Assisted the Treasurer with insurance company questions and obtaining a quote.
- Assembled a display about the SRWMO and lakeshore landscaping for the SRWMO Board to use at Linwood Family Fun Day.
- Prepared materials for meetings (not including materials relating to tasks that were paid separately by the SRWMO).
- Communications related to returning \$3,000 of SRWMO funding that was not needed for the Martin Lake rain gardens project.

# Financial Summary

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.

## Sunrise River Watershed Financial Summary

Sunrise River Watershed	WMO Asst	WMO Websites	Reference Wetland	Lake Level	Stream Level	Lake WQ	Martin Typo Lake TMDL	Martin Lake Fish Barriers	SRWMO Admin	SRWMO Grant Search	SRWMO P Export	WMO Videos	Lcoal Water Plan reviews	WMO annual rpt	Martin Lk Retro Assess	Martin Lake Retro Promo	Martin Lake Retro Install	Total
<b>Revenues</b>																		
SRWMO	140	770	1620	800	1090	400			2270	1000	1200	1363	1000	675	5000		7000	24328
State																	15127	15127
Anoka Conservation District	2260		9	140	585	1253	776	7639	795	427		908		51	8005	1829	1629	26306
County Ag Preserves																		
Regional/Local																	5640	5640
Other Service Fees																		
Local Water Planning																		
TOTAL	2400	770	1629	940	1675	1653	776	7639	3065	1427	1200	2271	1000	726	13005	1829	29396	71401
<b>Expenses</b>																		
Capital Outlay/Equip	6	2	4	1	9	2	3	12	7				4					50
Personnel Salaries/Benefits	2052	409	1418	822	1412	1076	662	6653	2676	1254	966	2049	286	628	11341	1609	8061	43376
Overhead	175	36	109	61	128	494	62	515	205	76	49	113	36	56	848	95	263	3323
Employee Training	7	2	8	5	7	3	1	23	13	3	11	19	1	1	21	4	46	176
Vehicle/Mileage	38	6	22	14	20	22	13	131	46	30	11	28	3	14	260	39	70	766
Rent	96	19	58	31	68	51	34	305	117	64	25	62	17	28	534	83	157	1748
Program Participants																		
Program Supplies	25		9	6	30	5											20798	20873
Equipment Maintenance																		
TOTAL	2400	475	1629	940	1675	1653	776	7639	3065	1427	1062	2271	347	726	13005	1829	29395	70312

## Recommendations

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- **Follow the guidance of the SRWMO's 10-year watershed management plan**, which as updated in February 2010.
- **Integrate the Typo and Martin Lake Total Maximum Daily Load (TMDL) Study and Implementation Plan into SRWMO efforts.** These reports are being completed by the MN Pollution Control Agency in 2012.
- **Actively follow development of St. Croix River and Sunrise River TMDLs**, and become involved as appropriate. The St. Croix TMDL is being completed in early 2012. The Sunrise River TMDL is began 2011 and will take several years.
- **Install rough fish barriers round Typo Lake and Martin Lake, and track response of the lakes.** Carp barriers will be installed around Martin and Typo Lakes in 2012-2013. Tracking the lakes' water quality and fishery response to these should be a priority.
- **Install high priority stormwater retrofits around Coon and Martin Lakes.** A stormwater assessment is complete for Martin Lake and will begin in 2012 for Coon Lake. They identify and rank stormwater retrofit projects that will benefit lake water quality. Installation should be a priority.
- **Continue efforts to secure grants.** A number of water quality improvement projects are being identified. Outside funding will be necessary for installation of most of these. These projects should be highly competitive for those grants.
- **Bolster lakeshore landscaping education efforts.** The SRWMO Watershed Management Plan sets a goal of 3 lakeshore restorations per year. Few are occurring. New efforts or incentives are planned for 2013, and new approaches should be welcomed.
- **Increase the use of web videos as an effective education and reporting tool.** Web videos are increasingly easy to do. They convey a lot of information quickly by combining visual and audio messages. They can be effective for public education, but also for highlighting successful projects or reporting.
- **Continue the SRWMO cost share grant program** to encourage water quality projects.
- **Encourage communities to report water quality projects to the SRWMO.** An overarching goal in the SRWMO Plan is to reduce phosphorus by 20% (986 lbs). State oversight agencies will evaluate efforts toward this goal. Both WMO and municipal project benefits should be counted.