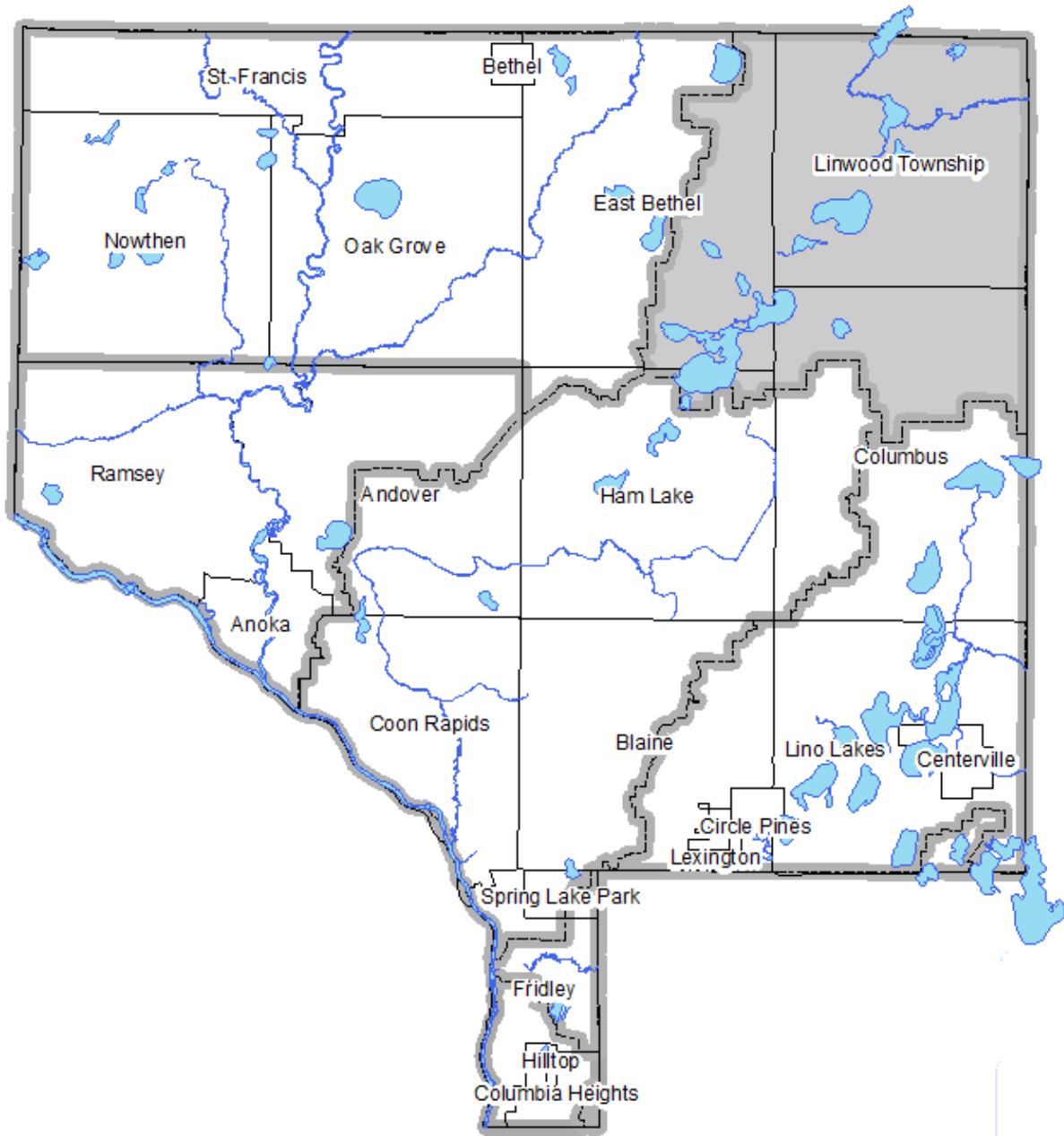


Excerpt from the 2023 Water Almanac

Chapter 2: Sunrise River Watershed



Prepared by the Anoka Conservation District

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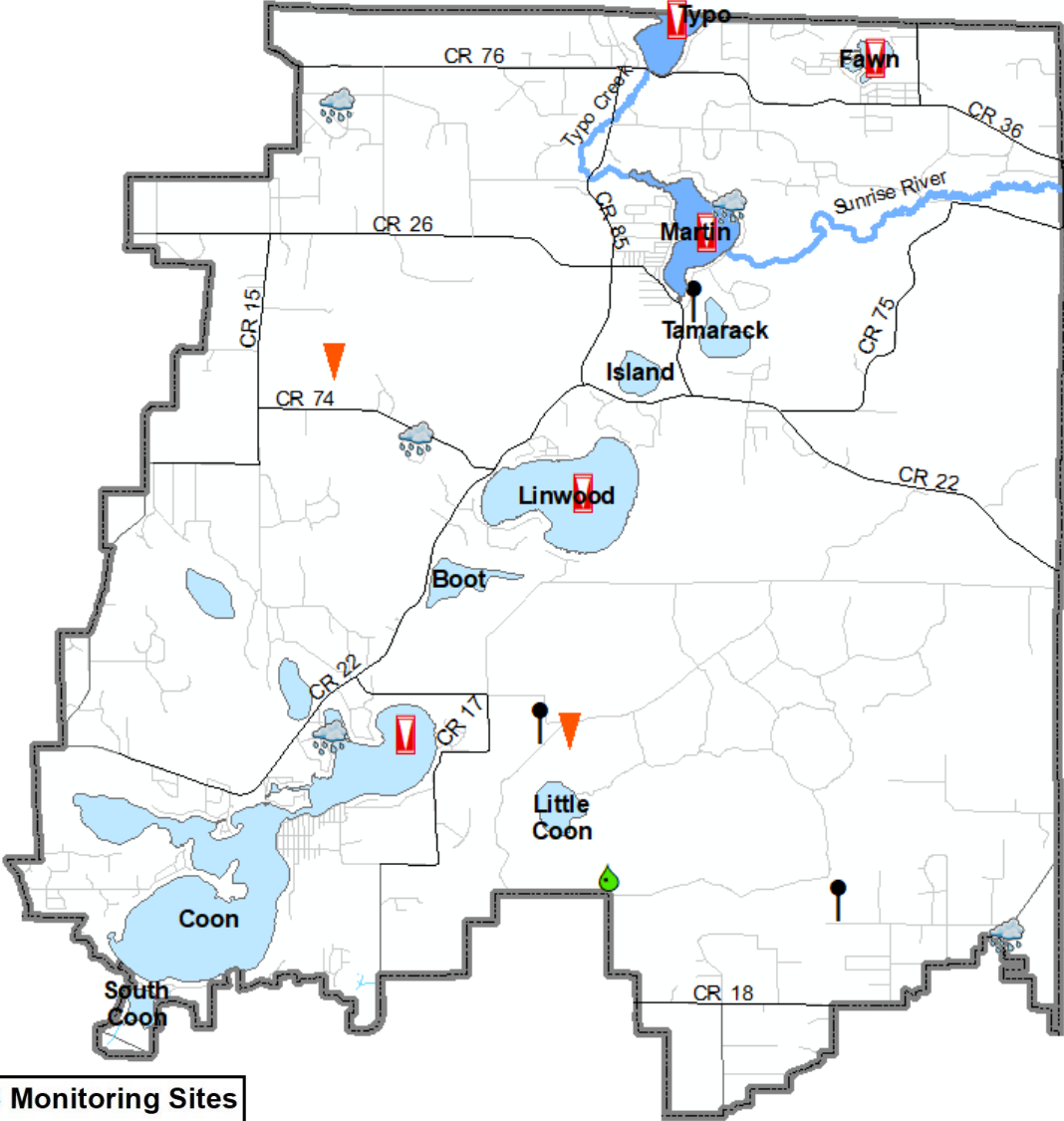
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Recommendations

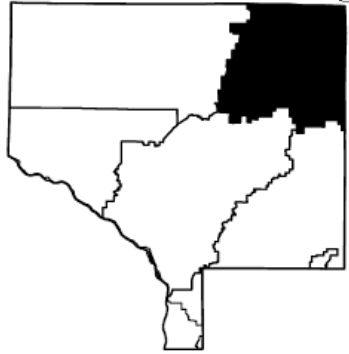
- **Implement the SRWMO Watershed Management Plan.** The plan, approved in 2019, reflects the latest science and includes schedules for various projects and programs.
- **Continue working towards removing Martin Lake from the impaired waters list.** The last five years of data support delisting.
- **Target outreach** to key audiences rather than community-wide messaging. Lakeshore landscaping messaging to lakeshore owners is one priority, particularly given the availability of funding to install lakeshore stewardship projects.
- **Utilize the recently completed shoreline 360-degree photo inventories** to prioritize shoreline projects on Martin, Linwood, and Coon Lake. Outreach can target those properties with documented problems. In 2024, inventories will likely be completed by the Anoka Conservation District at Typo Lake and possibly Fawn Lake.
- **Promote Septic System Fix-up Grants to landowners,** particularly in shoreland areas. Grants are available for low income households.
- **Promote well sealing cost-share grants to landowners.**
- **Promote Adopt-a-Drain** around Martin, Linwood, Fawn, and Coon Lakes. This program began in 2022 at Martin Lake. Annual reminders for volunteers are recommended.
- **Install the already-designed rain garden on East Front Blvd at Coon Lake as designed in 2021.** The project's cost effectiveness is only moderate, but other means to treat runoff in the neighborhood are not available.
- **Continue prioritizing water quality monitoring** to assess baseline conditions, diagnose problems early and provide quality data to help determine the effectiveness of implemented water quality projects. This data also helps with strategically implementing grant and local funds.
- **Monitor Linwood Lake tributaries** to determine the need or scope of a Linwood Lake subwatershed assessment study. The study would identify and rank water quality improvement projects.
- **Request Watershed Based Funding from the Lower St. Croix One Watershed, One Plan group.** The most immediate priority project is a Linwood Lake subwatershed assessment study. Other candidates for the future are a wetland restoration at Ditch 20 and internal loading studies for Linwood, Typo, or Martin Lake.

2023 Water Monitoring Sites: Sunrise River Watershed



2023 Monitoring Sites

-  Lake Levels
-  2023 Lake WQ
-  Wetland Hydrology
-  Volunteer Precipitation
-  Anoka County Weather
-  Groundwater Hydrology



Lake Level Monitoring

Partners: SRWMO, ACD, MNDNR, Local Volunteers

Description: Weekly water level monitoring was conducted with staff gages installed in each lake. The past one, five, and twenty-five years of data for each lake are illustrated below, and all historical data are available on the Minnesota DNR website using the “LakeFinder” feature (www.dnr.mn.us.state/lakefind/index.html). 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.

Purpose: To understand lake hydrology, inform concerns about lake levels, and understand the impact of other water budget changes. These data are useful for regulatory, building/development, and lake management decisions.

Locations: Coon, Fawn, Linwood, Martin, and Typo Lake

Results: **Coon Lake.** In 2023, Coon Lake had high spring flooding water levels. Late summer had low levels due to drought. Lower water levels have been observed in other years including 2000, 2007, 2009, and 2022.

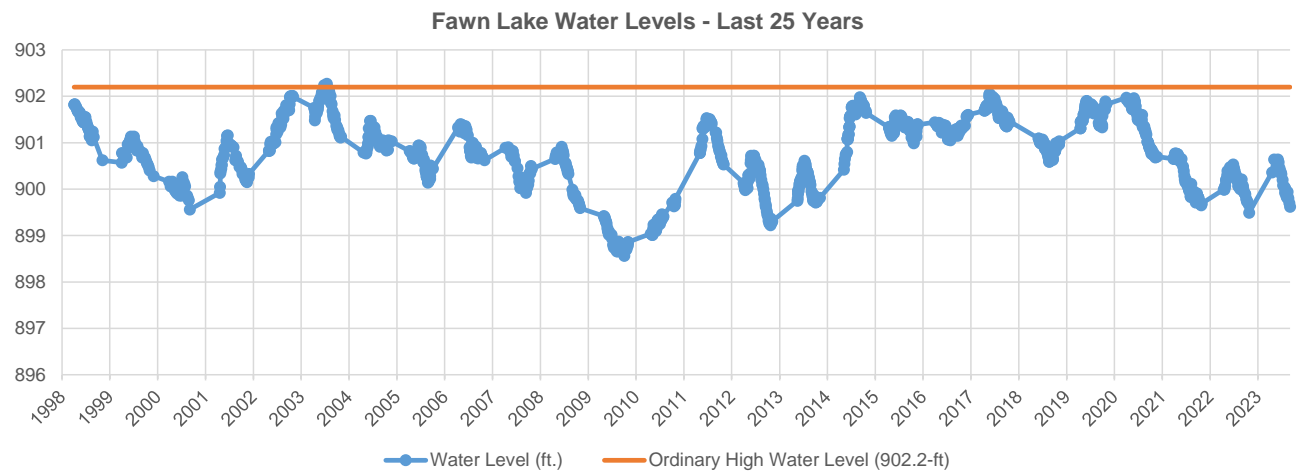
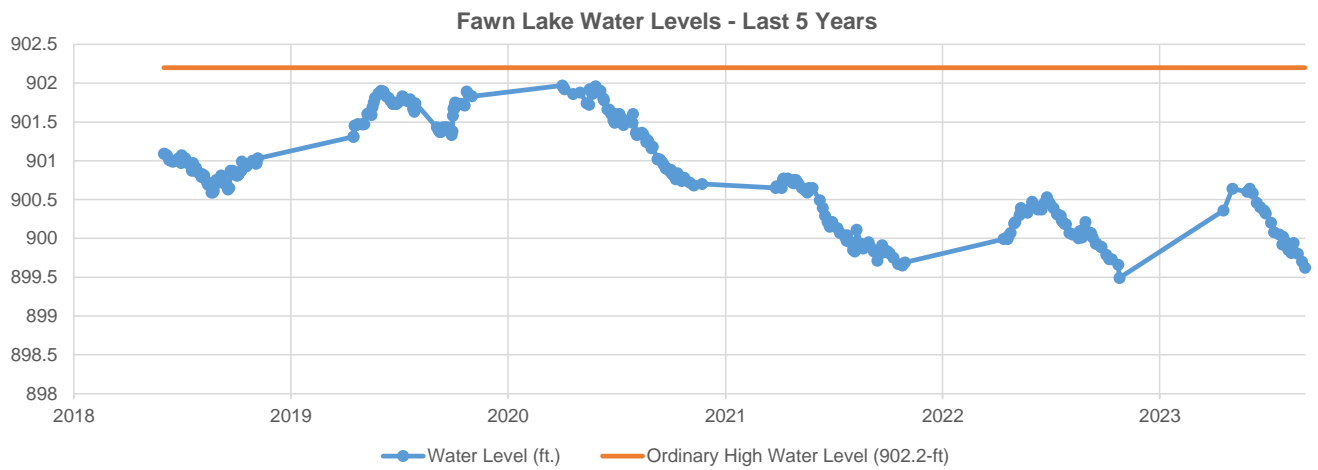
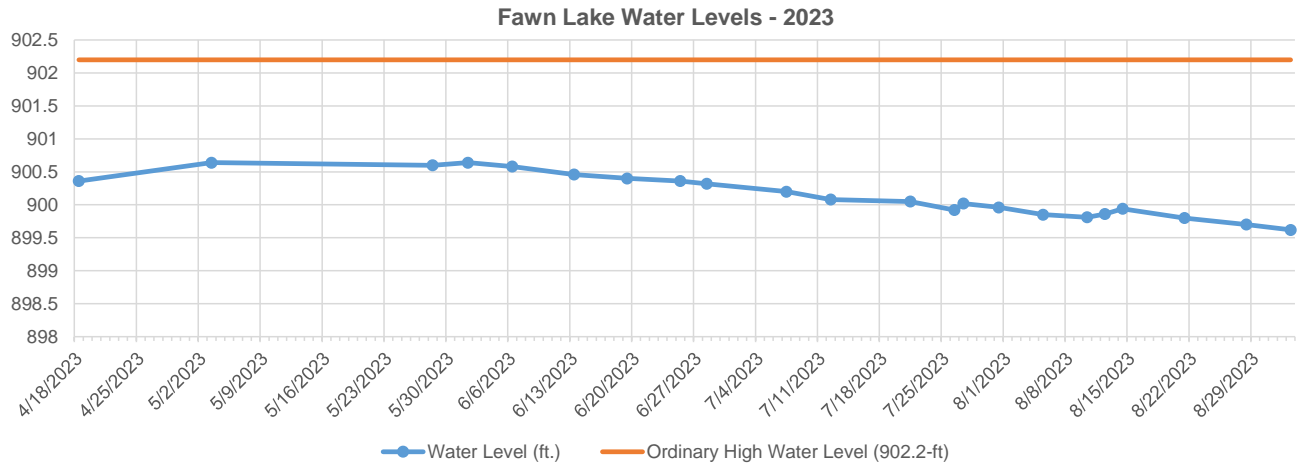
Linwood Lake. In 2023, Linwood Lake had high spring flooding water levels. Thereafter, the lake dropped to more common levels and then low levels due to drought. Lake water levels averaged similar to 2022 levels in summer. Late summer lows were not historically low; as lower water levels were observed in previous years.

Martin Lake. In 2023, Martin Lake had its highest ever recorded water levels in spring and then dropped to levels more historically common.

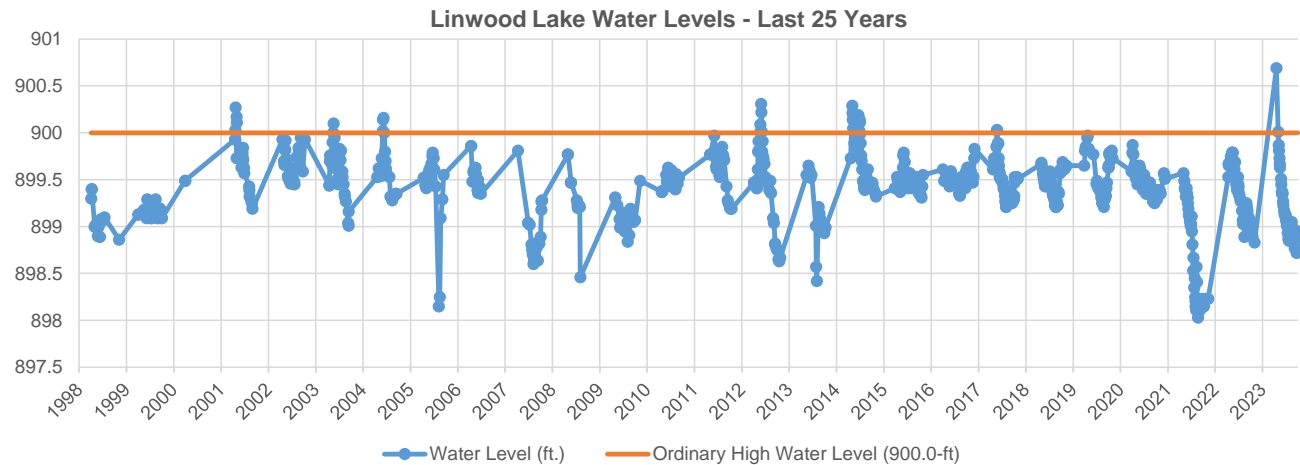
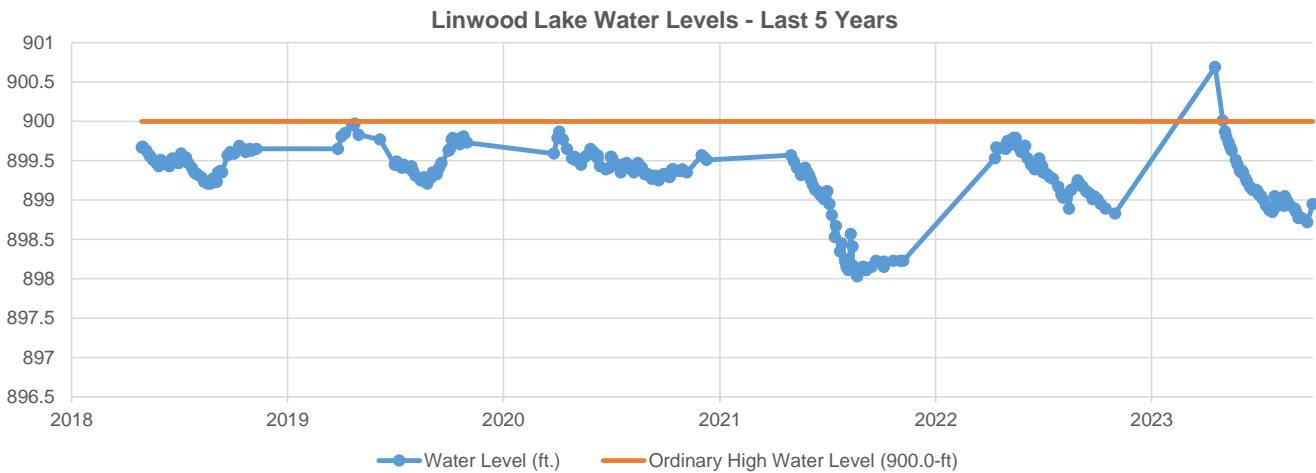
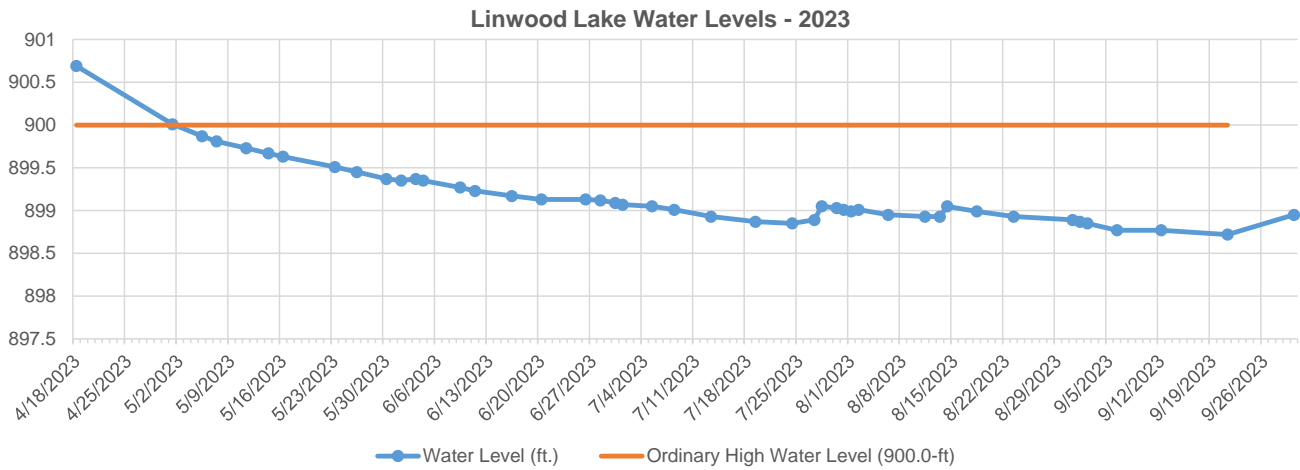
Typo Lake. In 2023, Typo Lake had spring flooding, then dropped to normal levels. In July, the lake saw an atypical increase in water levels. This was due to beaver dam blockages in downstream culverts. As a result, approximately 1-ft of water was dammed s. The Anoka County Highway Department, with assistance from their beaver trapper, worked to resolve the issue by beaver and dam removal. It needs to be watched, as the problem may reoccur.

Fawn Lake. In 2023, Fawn Lake experienced little spring flooding compared to other lakes due to its small watershed. Low levels were experienced in late summer and fall due to drought.

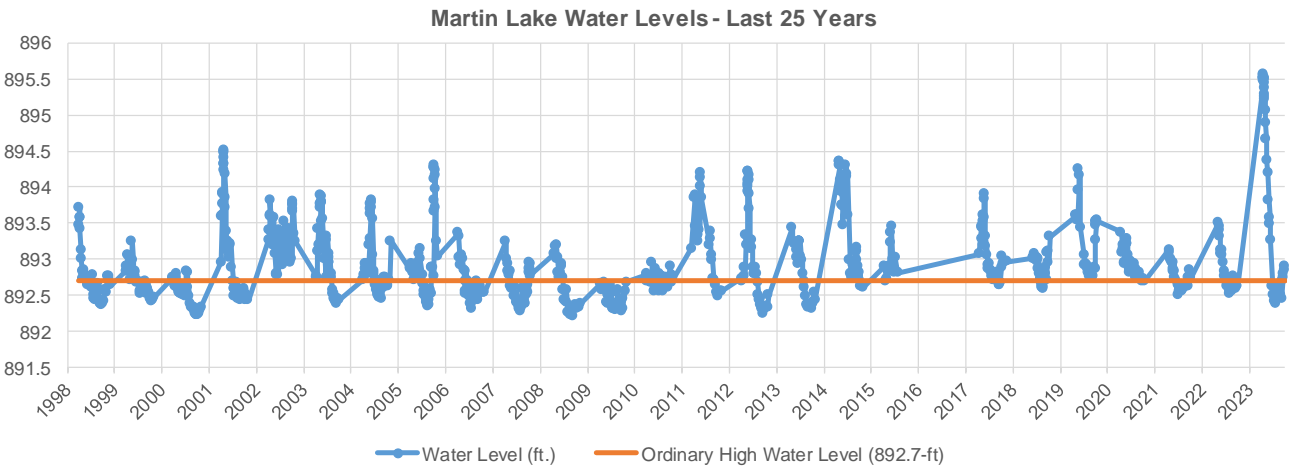
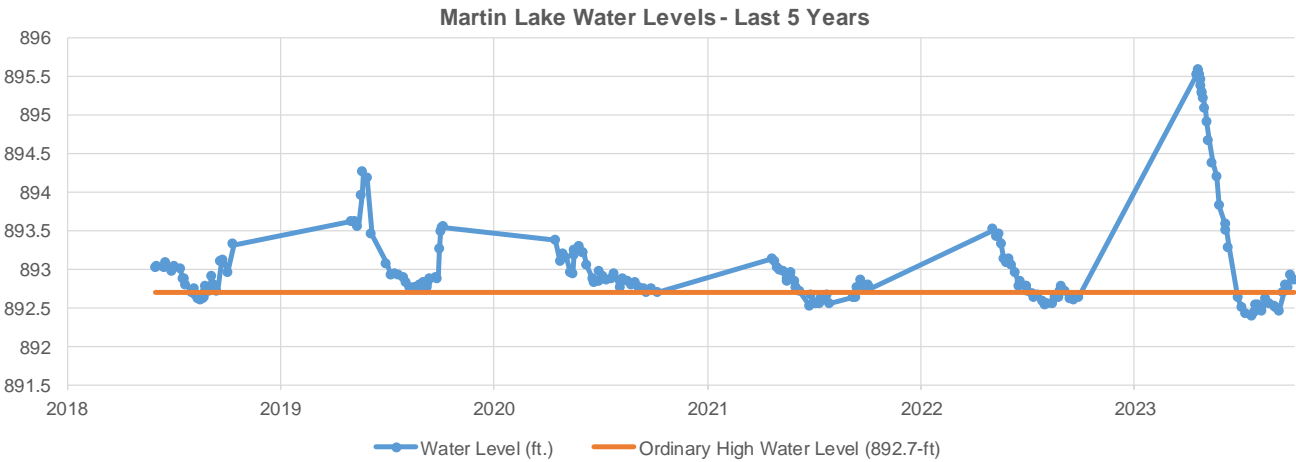
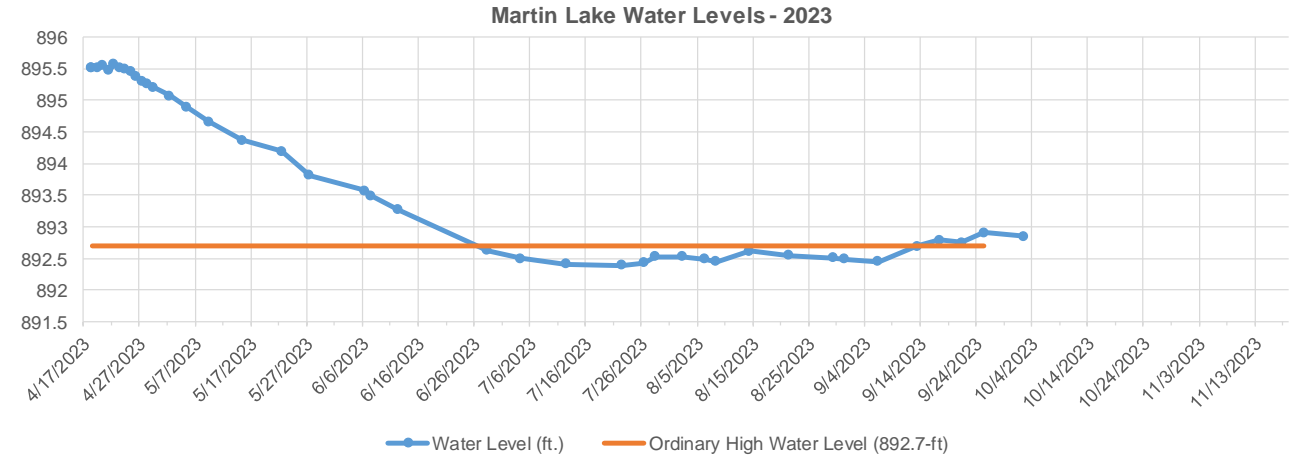
Fawn Lake



Linwood Lake

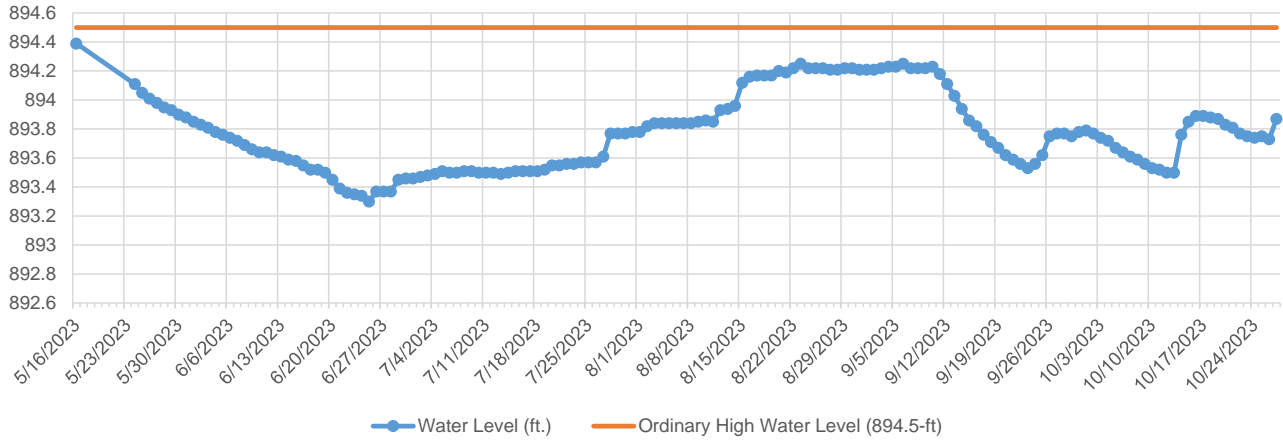


Martin Lake

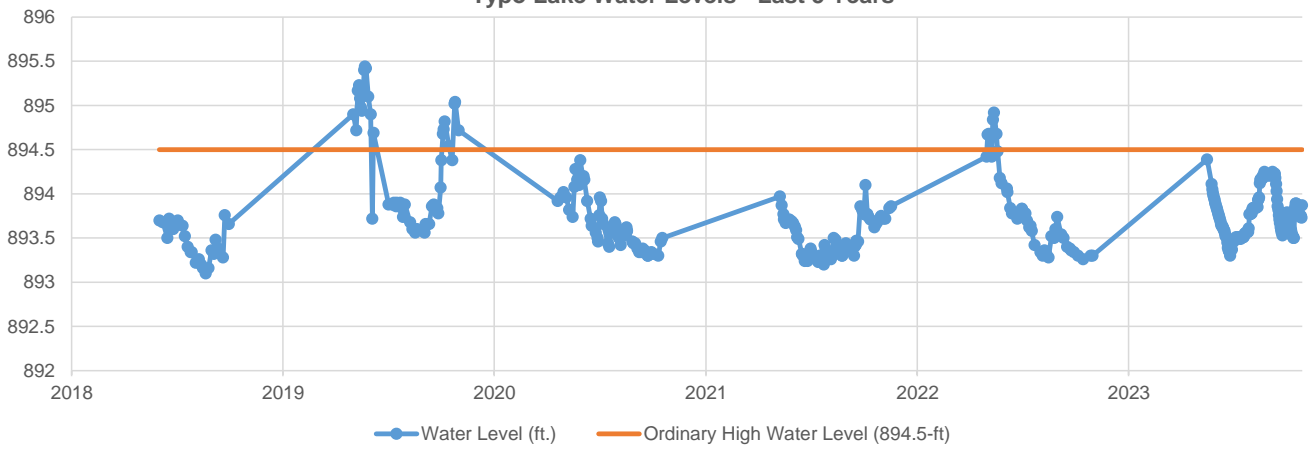


Typo Lake

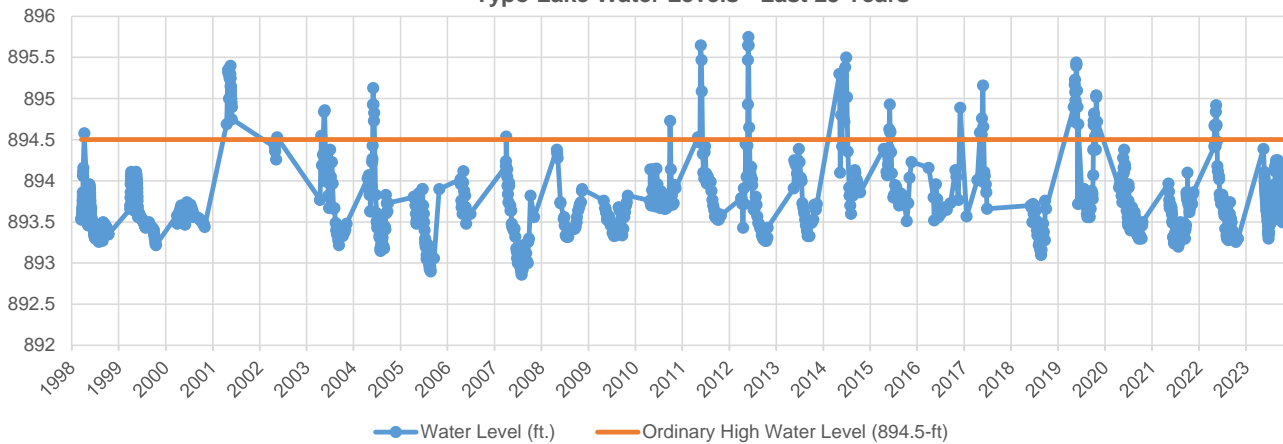
Typo Lake Water Levels - 2023



Typo Lake Water Levels - Last 5 Years

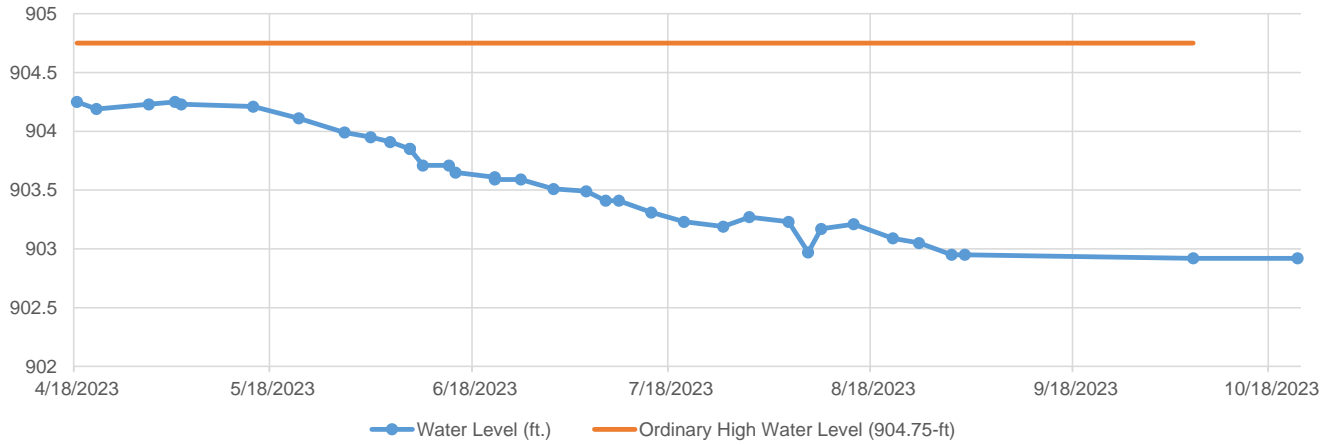


Typo Lake Water Levels - Last 25 Years

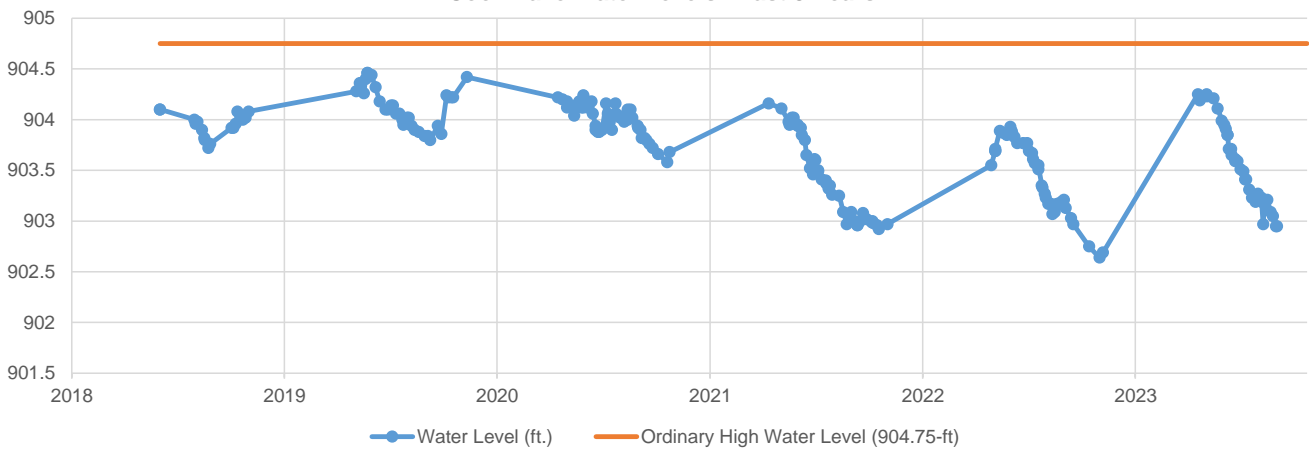


Coon Lake

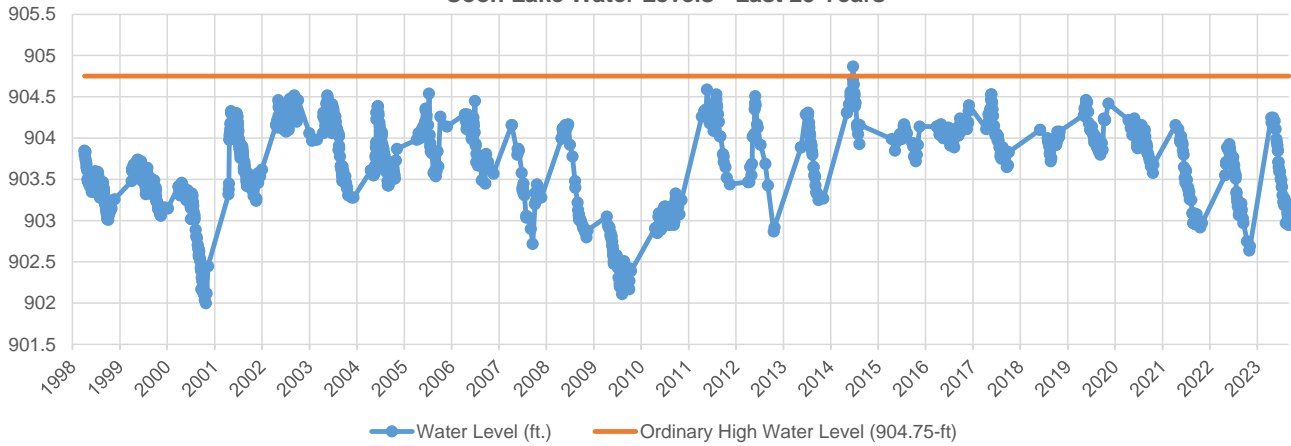
Coon Lake Water Levels - 2023



Coon Lake Water Levels - Last 5 Years



Coon Lake Water Levels - Last 25 Years



Lake Water Quality

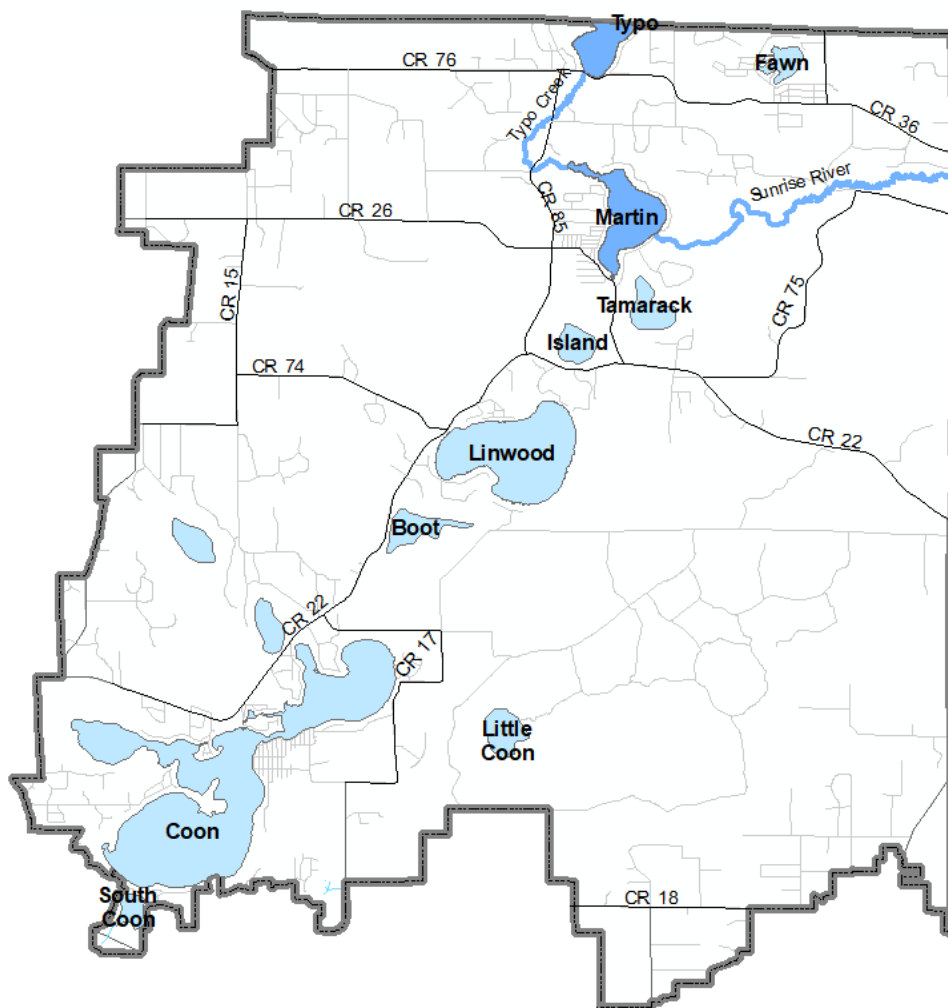
Description: Lake water quality monitoring was conducted on ten occasions between May and September, approximately every two weeks. The monitoring parameters include total phosphorus (TP), chlorophyll-a (Cl-a), Secchi transparency, dissolved oxygen, turbidity, temperature, specific conductance, pH, and salinity.

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

Locations: Typo Lake, Martin Lake

Results: Detailed data for individual lakes is provided on the following pages, including summaries of historical conditions and trend analysis. Previous years' data are available on the Minnesota Pollution Control Agency (MPCA) electronic data access (EDA) website or on ACD's online database (<https://maps.barr.com/Anoka/Home/Chart/>). Refer to Chapter 1 for additional information on lake dynamics and interpreting the data.

2023 Sunrise River Watershed Lake Water Quality Monitoring Sites (darker shaded lakes were monitored)



Typo Lake

Lake ID # 30-0009

Background

Typo Lake is located in northeast Anoka County with the north end of the lake in southeast Isanti County. The lake has a surface area of 290 acres and maximum depth of 6 feet. The lake bottom varies from mucky and loose soils to sandy soils. The public access is small, located at the south end of the lake. Typo Lake is used little for fishing or recreational boating because of the shallow depth and extremely poor water quality. The lake is not regularly suitable for swimming due to low clarity or excessive algae caused by high nutrient concentrations. The lake's shoreline is mostly undeveloped, with only 21 homes within 300 feet of the lakeshore. The lake's watershed of 11,520 acres is 3% residential, 33% agricultural, and 28% wetlands, with the remainder forest or grassland. Typo Lake is listed as impaired for excess nutrients and water quality in the lake is being monitored for best management practice (BMP) effectiveness. The MNDNR conducted a fisheries survey in 2016 which found walleye, black crappie, white crappie, northern pike, and bluegill.

2023 Results

In 2023, Typo Lake had poor water quality compared to other lakes in this region (NCHF Ecoregion). While Typo Lake remains at an overall F letter grade in 2023, there was a slight increase in quality when compared to 2022 and similar to other years after 2012. Average total phosphorus (TP) was 166.2 µg/L, which was a decrease from the 2022 average of 175.5 µg/L. While TP levels continue to far exceed the 60 µg/L state standard for shallow lakes, average concentrations have improved over the past two decades (average 270 µg/L during 2000-2009, 186 µg/L 2012-2020, and 164 µg/L 2021-2023). Chlorophyll-a (Cl-a) levels in 2023 averaged 70.91 µg/L. This was a decrease from 2022 (114.26 µg/L) and consistent with previous years (average 75 µg/L 2015-2022). In many recent years, Cl-a concentrations have stayed below the historical average for the lake (105.5 µg/L 1993-2023) but are still many times higher than the state standard for Cl-a in shallow lakes (20 µg/L). Average Secchi transparency in 2023 was 1.08 feet. This is only a couple inches poorer than 2022 measurements (0.89 feet), and that particular year was the poorest since 2016. While transparency in Typo Lake has shown improvements over the last decade, it remains well below the state standard for transparency in shallow lakes (3.3 feet).

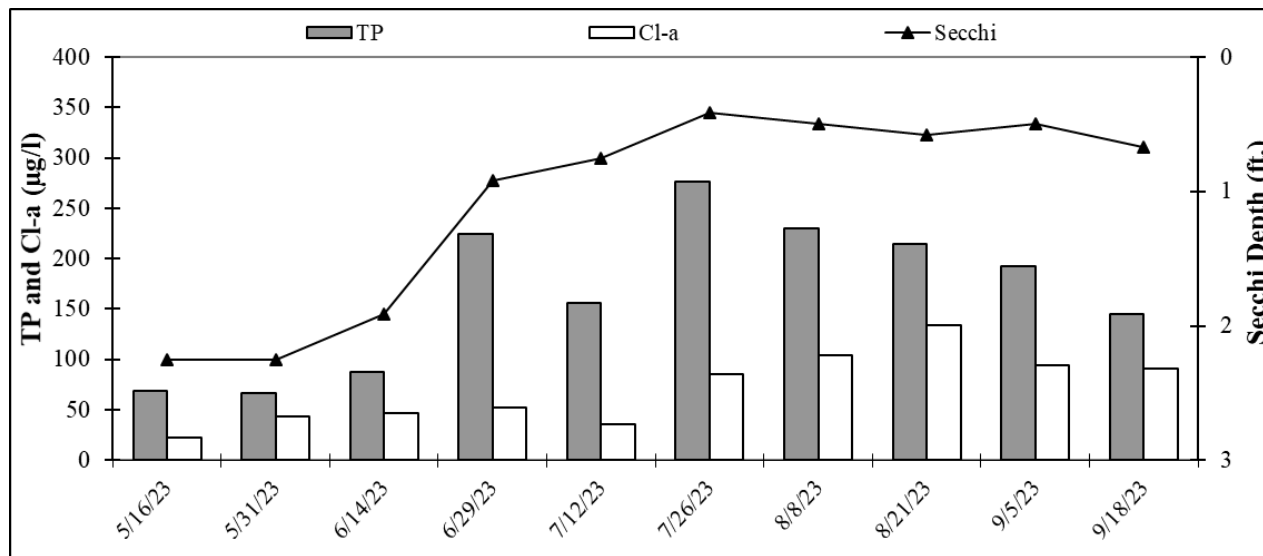
Trend Analysis

The MPCA (1993 -'95) and ACD (1997 -'01, '03, '05, '07, '09, '12, '14 -'23) have conducted twenty-three years of water quality monitoring on Typo Lake. Overall, water quality has improved in a statistically significant trend since 1993 (MANOVA with response variables TP, Cl-a, and Secchi depth ($F_{3,19}=5.0436$, $p<0.01$). When these variables are tested individually, TP shows no significant change across this time period although the data suggests that TP concentrations have an overall improving trend. Cl-a levels, however, are showing a statistically significant improvement ($p<0.001$) and is the major driver of improved water quality in Typo Lake. Increased Secchi transparency is also a positive factor although not yet statistically significant ($p <0.08$).

Discussion

Typo Lake was the subject of a TMDL study by ACD in 2012. This study documented nutrient input sources and reductions needed. Some factors it identified affecting water quality in Typo Lake included rough fish, ditched wetlands west of the lake, and internal lake sediment. Recent work has included installation of carp barriers, carp removals, and a feasibility study of ditched wetland restorations upstream of Typo Lake. The feasibility study identified four potential projects along Ditch 20. Shoreline conditions on Typo Lake were inventoried in 2020 and have assisted in identifying potential lakeshore projects. Recent water quality monitoring results suggest these management approaches are improving conditions in Typo Lake but reaching improvement goals will require substantial additional effort and time.

TYPO LAKE
2023 Results



2023 Median Results

pH		8.61
Specific Conductance	mS/cm	0.26
Turbidity	NTU	64.65
D.O.	mg/l	10.58
D.O.	%	127.20
Temp.	°F	74.50
Salinity	%	0.14
Cl-a	µg/L	68.75
T.P.	µg/l	174.50
Secchi	ft	0.71

Typo Lake

30-0009-00-204

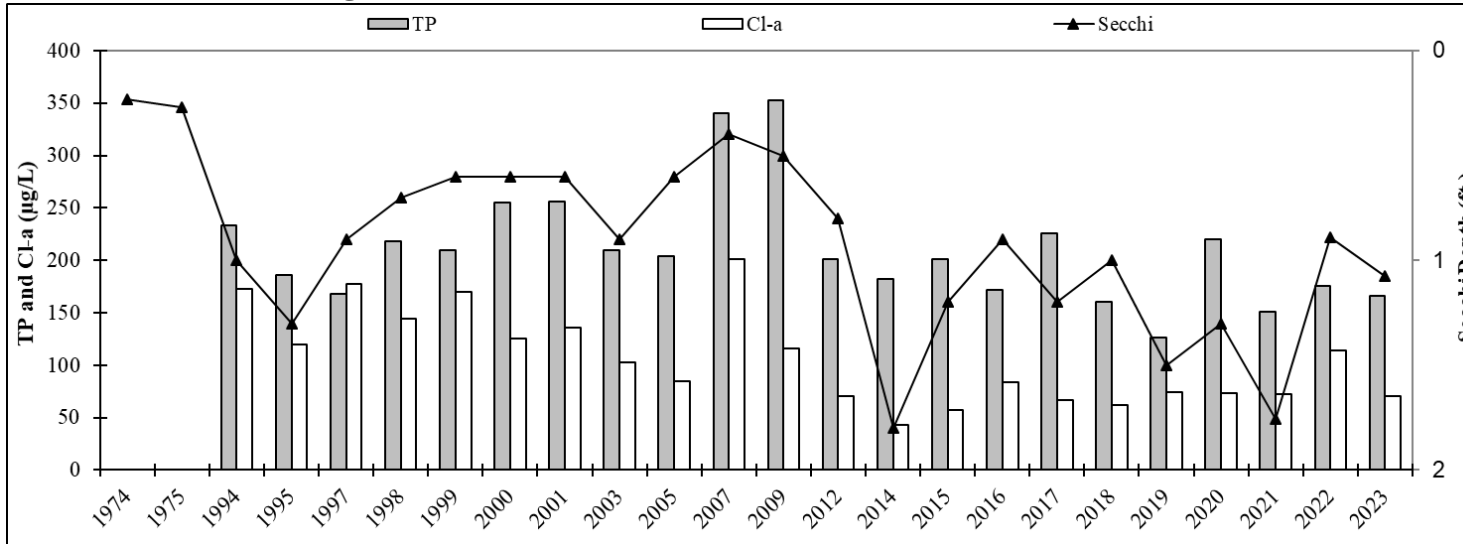
2023 Water Quality Data

Date:	5/16/2023	5/31/2023	6/14/2023	6/29/2023	7/12/2023	7/26/2023	8/8/2023	8/21/2023	9/5/2023	9/18/2023
Time:	10:20	9:45	10:55	10:30	10:00	10:00	10:30	11:00	10:30	10:04

	Units	R.L.*											Average	Min	Max
pH		0.1	8.76	8.62	8.53	8.49	8.59	8.35	8.97	9.43	9.22	8.03	8.70	8.03	9.43
Specific Conductivity	mS/cm	0.01	0.243	0.314	0.325	0.316	0.297	0.282	0.245	0.223	0.210	0.222	0.268	0.210	0.325
Turbidity	NTU	1	13.30	17.50	39.50	74.90	98.40	13.500	105.00	109.00	81.00	54.40	58.39	13	109
D.O.	mg/l	0.01	11.69	9.70	12.19	9.15	10.92	5.01	10.23	12.66	9.64	12.01	10.32	5.01	12.66
D.O.	%	100.0%	128.7	120.0	147.0	111.8	130.7	64.8	125.7	150.1	122.6	132.6	123.4	64.8	150.1
Temp.	°C	0.1	18.75	23.97	23.25	24.08	22.43	25.29	24.14	22.76	25.41	18.67	22.9	18.7	25.4
Temp.	°F	0.1	65.8	75.1	73.9	75.3	72.4	77.5	75.5	73.0	77.7	65.6	73.2	65.6	77.7
Salinity	%	0.01	0.12	0.15	0.16	0.15	0.14	0.14	0.15	0.11	0.10	0.11	0.13	0.10	0.16
Cl-a	µg/L	1	22.70	43.79	46.73	52.07	35.60	85.44	104.13	133.50	94.34	90.78	70.91	22.7	133.5
T.P.	mg/l	0.005	0.069	0.067	0.088	0.224	0.156	0.276	0.230	0.214	0.193	0.145	0.166	0.067	0.276
T.P.	µg/l	5	69	67	88	224	156	276	230	214	193	145	166.20	67	276
Secchi	ft		2.3	2.3	1.9	0.9	0.8	0.4	0.5	0.6	0.5	0.7	1.08	0.4	2.3
Secchi	m		0.69	0.69	0.58	0.28	0.23	0.13	0.15	0.18	0.15	0.20	0.3	0.1	0.7
Physical			2	2	2	2	2	2	2	2	3	3	2.2	2.0	3.0
Recreational			3	3	4	3	3	2	3	2	3	3	2.9	2.0	4.0

*Reporting Limit

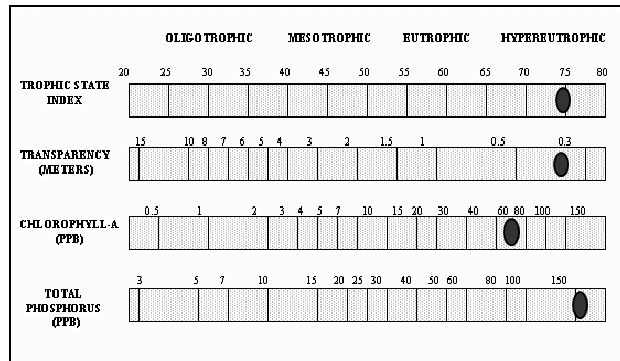
Historical Annual Averages



Historical Report Card

Year	TP	Cl-a	Secchi	Overall
1974			F	F
1975			F	F
1993	F	F	F	F
1994	F	F	F	F
1995	F	F	F	F
1997	F	F	F	F
1998	F	F	F	F
1999	F	D	F	F
2000	F	F	F	F
2001	F	F	F	F
2003	F	F	F	F
2005	F	F	F	F
2007	F	F	F	F
2009	F	F	F	F
2012	F	D	F	F
2014	F	C	F	D-
2015	F	D	F	F
2016	F	F	F	F
2017	F	D	F	F
2018	F	D	F	F
2019	D	D	D	D
2020	F	C	F	F
2021	D	D	F	D
2022	F	F	F	F
2023	F	D	F	F
State Standards	60 µg/L	20 µg/L	>3.3 ft	

Carlson's Trophic State Index



Grade	Percentile	TP (µg/L)	Cl-a (µg/L)	Secchi Disk (m)
A	< 10	<23	<10	>3.0
B	10 - 30	23 - 32	10 - 20	2.2 - 3.0
C	30 - 70	32 - 68	20 - 48	1.2 - 2.2
D	70 - 90	68 - 152	48 - 77	0.7 - 1.2
F	> 90	> 152	> 77	< 0.7

Martin Lake

Lake ID # 02-0034

Background

Martin Lake is located in northeast Anoka County. The lake has a surface area of 223 acres and a maximum depth of 20 ft. The public access is located on the south end of the lake. The lake is used extensively by recreational boaters and anglers. Martin Lake is almost entirely surrounded by private residences, and has an active lake association. The 5,402-acre watershed is 18% developed; the remaining 82% is vacant, agricultural, or wetlands. The invasive aquatic plant, curly-leaf pondweed, is present in the lake but not at nuisance levels. Martin Lake is on the state impaired water's list for excess nutrients. The MNDNR conducted a fisheries survey in 2015, with the lake being managed primarily for walleye and bluegill. An aeration system designed to prevent winter kills was installed in 1993.

2023 Results

In 2023, Martin Lake received an overall C letter grade for water quality. This is an improvement from the D letter grade the lake received for 2022 however C's have been common since 2014. In 2023, total phosphorous (TP) averaged 46.60 µg/L, a significant improvement from 2022 (78.40 µg/L) and similar to other years since 2017. Average TP over the last five years (61.4 µg/L) is close to the state impairment standard (60 µg/L). In 2023, chlorophyll-a (Cl-a) averaged 26.10 µg/L, which was half the 2022 average of 53.04 µg/L but similar to other years since 2012. While the most recent 5-year average for Cl-a (33.70 µg/L) is much lower than the 2005-2009 average (108.3 µg/L), Cl-a remains above the state impairment standard of 20 µg/L. Average Secchi transparency in 2023 was 3.0 feet, a slight increase from 2.3 feet in 2022, but still poorer than the state standard of 3.3 feet.

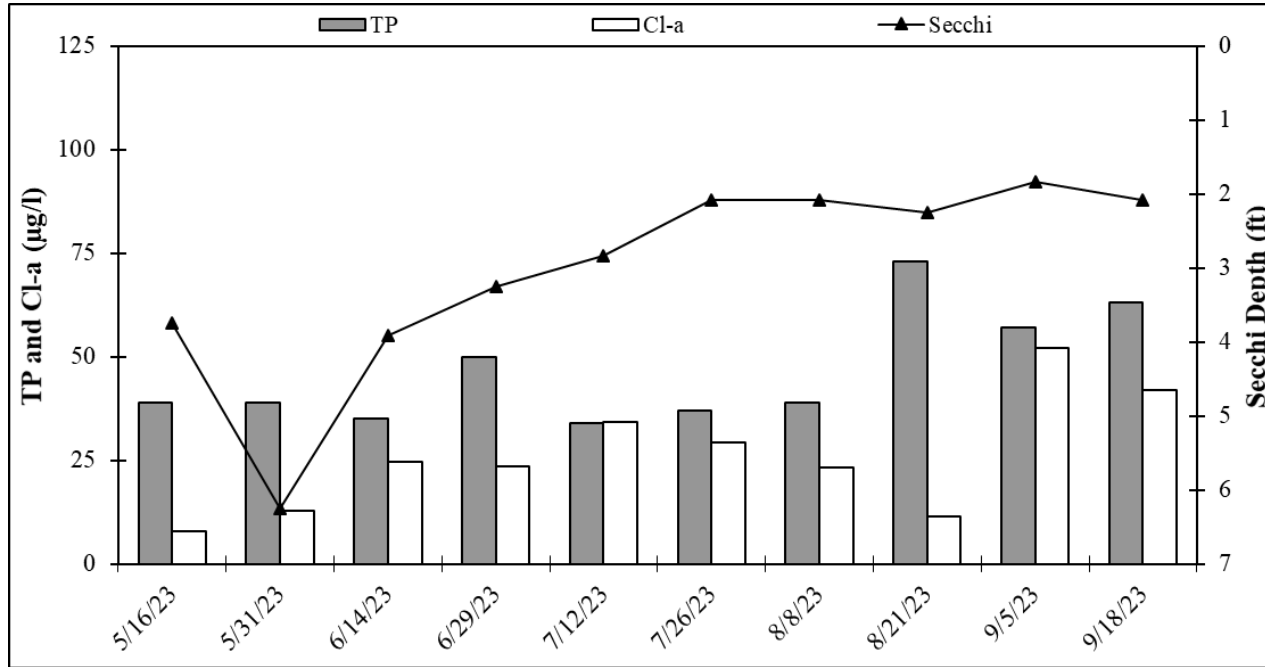
Trend Analysis

Twenty-three years of water quality data have been collected by the MPCA (1983), Metropolitan Council (1998, '08), and ACD ('97, 1999-'01, '03, '05, '07, '09, 2012-'23). Notes from DNR fisheries data indicate poor water quality dating back to 1954. Water quality in Martin Lake has shown a statistically significant improvement from 1983 to 2023 (MANOVA with response variables TP, Cl-a, and Secchi; $F_{2,18}=5.96$, $p < 0.005$), and this is especially true for the last decade. Further examination of the data shows that while Secchi transparency has not changed in a statistically significant way since 1983, chlorophyll-a ($p < 0.005$) and TP ($p = 0.05$) concentrations have both shown a statistically significant improvement over this time period.

Discussion

Martin Lake was the subject of a TMDL study by ACD in 2012. The study found that low quality water flowing from Typo Lake and internal loading (carp, septic systems, sediment, etc.) are two of the largest factors negatively impacting water quality in Martin Lake. Carp management efforts, septic system replacements, and storm water retrofits have been implemented in recent years. Shoreline conditions on Martin Lake were inventoried in 2019 and 2023, resulting in the implementation of multiple lakeshore restoration projects in 2021 and 2022. Eight additional lakeshore restoration are scheduled for construction in 2024. Additional funding for projects has been secured for the Sunrise River Watershed. Recent water quality monitoring results suggest these types of management approaches are resulting in measurable lake improvement. Because many of the most cost-effective watershed projects have been implemented already an alum-treatment should be considered in the future.

MARTIN LAKE
2023 Results



2023 Median Results

pH		8.11
Specific Conductance	mS/cm	0.31
Turbidity	NTU	15.50
D.O.	mg/l	8.76
D.O.	%	106.35
Temp.	°F	73.92
Salinity	%	0.15
Cl-a	µg/L	24.03
T.P.	µg/l	39.00
Secchi	ft	2.54

Martin Lake

02-0034-00-202

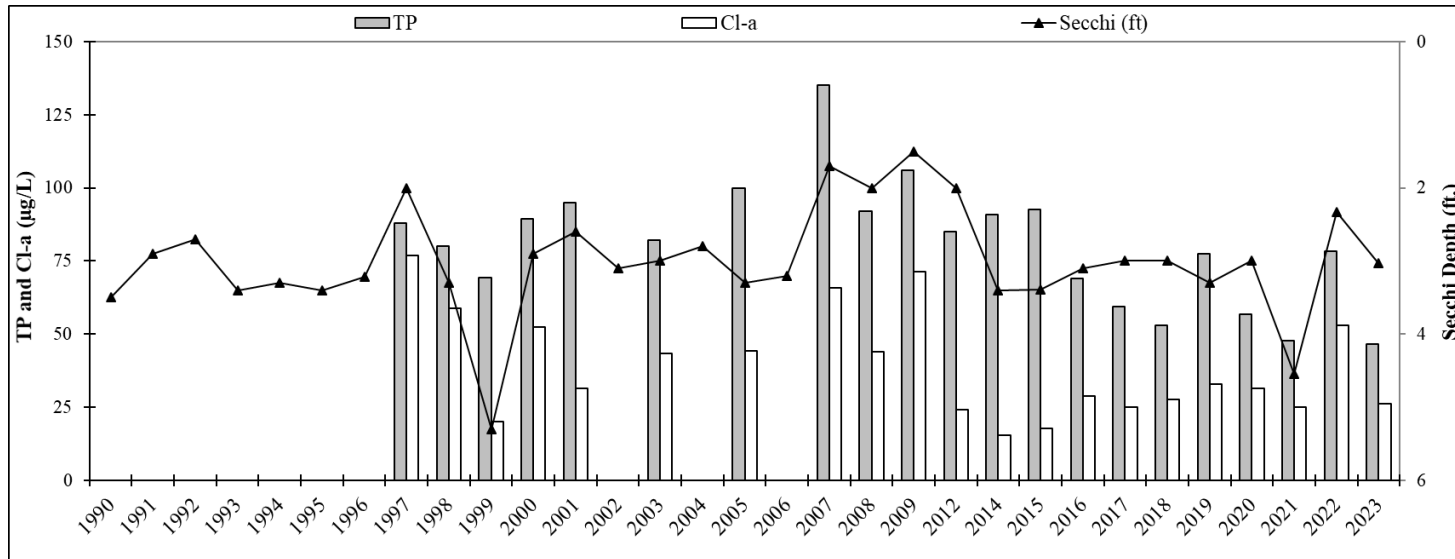
2023 Water Quality Data

Date:	5/16/2023	5/31/2023	6/14/2023	6/29/2023	7/12/2023	7/26/2023	8/8/2023	8/21/2023	9/5/2023	9/18/2023
Time:	9:10	9:00	9:50	9:30	9:00	9:00	9:30	10:00	9:30	9:26

	Units	R.L.*	5/16/23	5/31/23	6/14/23	6/29/23	7/12/23	7/26/23	8/8/23	8/21/23	9/5/23	9/18/23	Average	Min	Max
pH		0.1	8.45	7.88	8.12	8.28	8.08	8.10	8.39	7.84	8.15	7.82	8.11	7.82	8.45
Specific Conductivity	mS/cm	0.01	0.247	0.301	0.311	0.322	0.331	0.318	0.307	0.318	0.301	0.309	0.307	0.247	0.331
Turbidity	NTU	1	5.40	2.40	9.10	12.40	15.80	17.400	27.20	15.50	19.60	20.30	13.94	2	27
D.O.	mg/l	0.01	10.95	8.64	9.84	8.41	8.05	10.95	8.85	8.39	8.67	9.03	9.18	8.05	10.95
D.O.	%	100.0%	121.3	104.0	118.6	104.0	97.8	141.2	111.2	100.4	108.7	100.2	110.7	97.8	141.2
Temp.	°C	0.1	18.62	22.72	22.66	24.61	23.42	26.24	25.22	23.16	24.68	19.28	23.1	18.6	26.2
Temp.	°F	0.1	65.5	72.9	72.8	76.3	74.2	79.2	77.4	73.7	76.4	66.7	73.5	65.5	79.2
Salinity	%	0.01	0.12	0.14	0.15	0.16	0.16	0.15	0.15	0.15	0.14	0.15	0.15	0.12	0.16
Cl-a	µg/L	1	8.01	12.82	24.56	23.50	34.18	29.37	23.14	11.57	52.07	41.83	26.10	8.0	52.1
T.P.	mg/l	0.005	0.039	0.039	0.035	0.050	0.034	0.037	0.039	0.073	0.057	0.063	0.047	0.034	0.073
T.P.	µg/l	5	39	39	35	50	34	37	39	73	57	63	46.60	34	73
Secchi	ft		3.8	6.3	3.9	3.3	2.8	2.1	2.1	2.3	1.8	2.1	3.03	1.8	6.3
Secchi	m		1.14	1.90	1.19	0.99	0.86	0.63	0.63	0.69	0.56	0.63	0.9	0.6	1.9
Physical			1	1	2	2	2	1	1	3	3	3	1.9	1.0	3.0
Recreational			1	1	2	2	2	2	2	2	3	3	2.0	1.0	3.0

*Reporting Limit

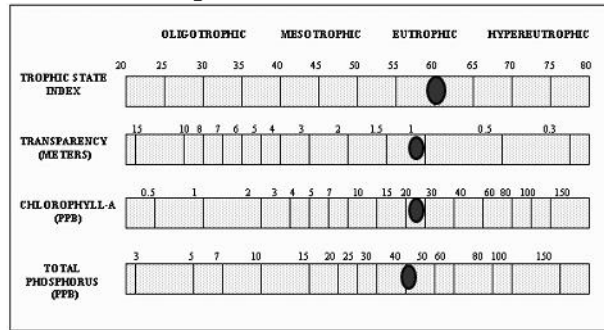
Historical Annual Averages



Historical Report Card

Year	TP	Cl-a	Secchi	Overall
1996			D	D
1997	D	D	F	D
1998	D	D	D	D
1999	C	B	C	C
2000	D	C	D	D
2001	D	C	D	D
2002			D	D
2003	D	C	D	D
2004			D	D
2005	D	C	D	D
2006			D	D
2007	D	D	F	D
2008	D	C	F	D
2009	D	D	F	D
2012	D	C	F	D
2014	D	B	D	C
2015	D	B	D	C
2016	C	C	D	C
2017	C	C	D	C
2018	C	C	D	C
2019	D	C	D	D
2020	C	C	D	C
2021	C	C	C	C
2022	D	D	D	D
2023	C	C	D	C
State Standards	40 ug/L	14 ug/L	>4.6 ft	

Carlson's Trophic State Index



Grade	Percentile	TP (µg/L)	Cl-a (µg/L)	Secchi Disk (m)
A	< 10	<23	<10	>3.0
B	10 - 30	23 - 32	10 - 20	2.2 - 3.0
C	30 - 70	32 - 68	20 - 48	1.2 - 2.2
D	70 - 90	68 - 152	48 - 77	0.7 - 1.2
F	> 90	> 152	> 77	< 0.7

Wetland Hydrology

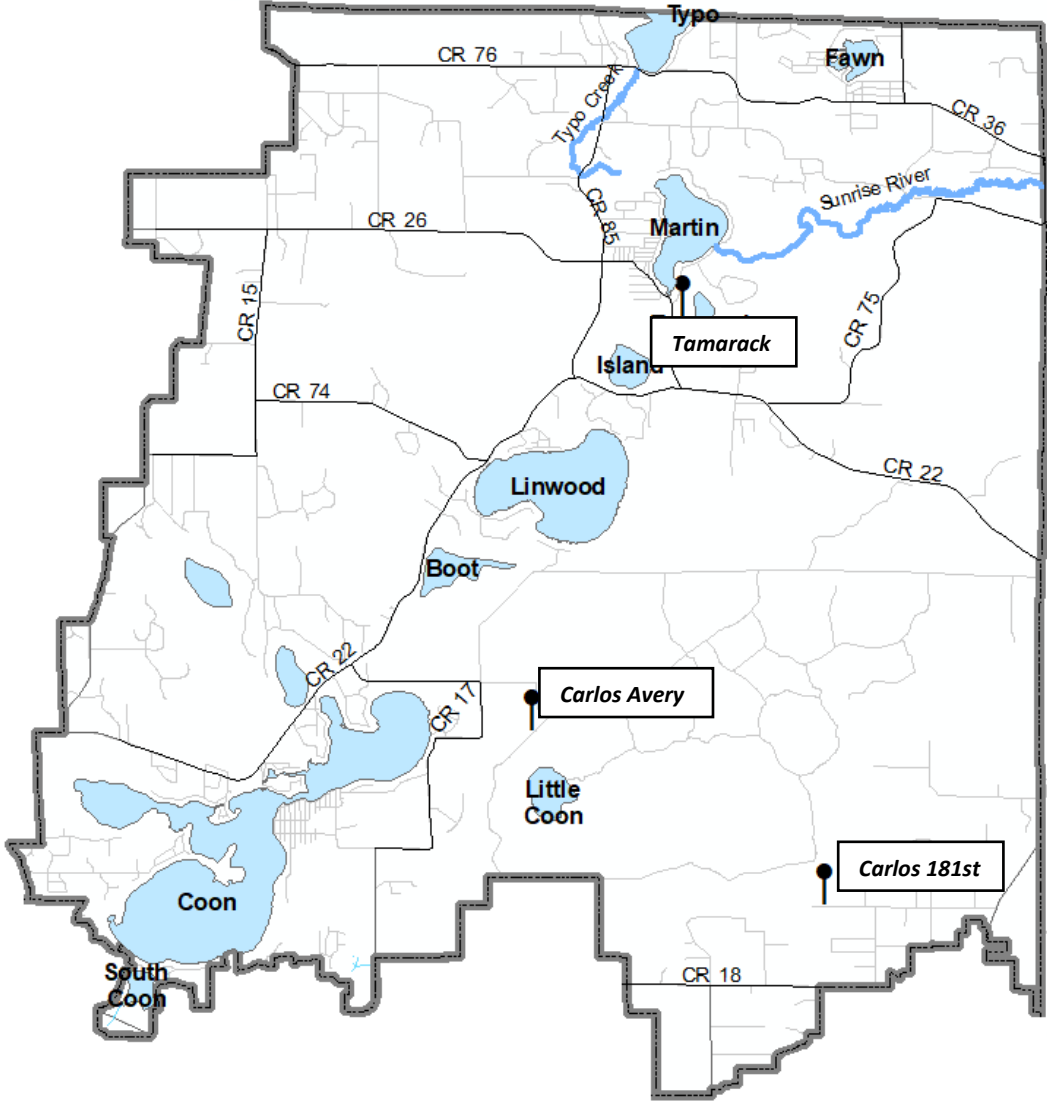
Description: Continuous groundwater level monitoring. Countywide, ACD maintains a network of 23 wetland hydrology monitoring stations.

Purpose: To provide understanding of wetland hydrology, including the impacts of climate and land use change. These data aid in delineation of nearby wetlands by documenting hydrologic trends including the timing, frequency, and duration of saturation.

Locations: Carlos Avery Wetland, Carlos 181st Wetland, Tamarack Wetland

Results: See the following pages.

2023 Sunrise River Watershed Wetland Hydrology Monitoring Sites

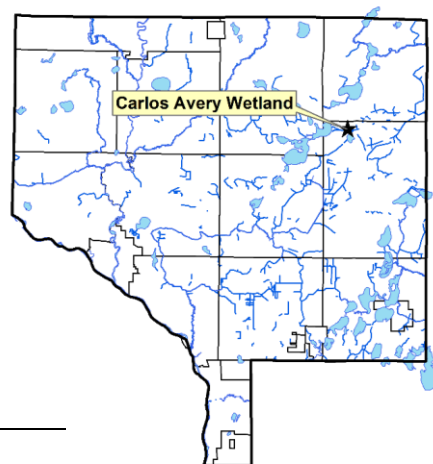


CARLOS AVERY REFERENCE WETLAND

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 Ditch: Yes
Surrounding Soils: Lino loamy fine sand



Soils at Well Location:

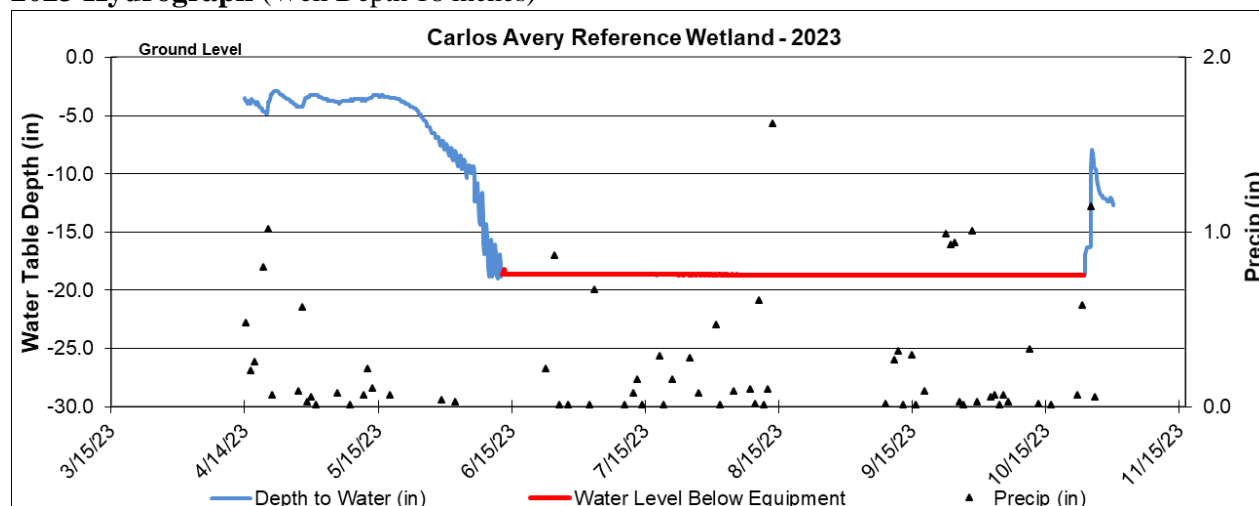
Horizon	Depth	Color	Texture	Redox
Oa	0-4	N2/0	Organic	-
Bg	4-25	10yr 5/2	Sandy Loam	25% 10yr 5/6 with organic streaking

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 wetland is within a state managed WMA. Anoka County was in a state of drought most of the growing season, which caused this well to go dry in the summer-fall.

2023 Hydrograph (Well Depth 18 inches)

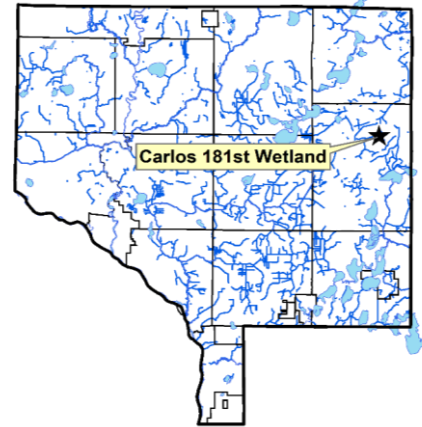


CARLOS 181st REFERENCE WETLAND

Carlos Avery Wildlife Management Area, City of Columbus

Site Information

Monitored Since: 2006
Wetland Type: 2-3
Wetland Size: Approx. 3.9 acres
Isolated Basin: Yes
Connected to Ditch: Roadside swale only
Surrounding Soils: Soderville fine sand



Soils at Well Location:

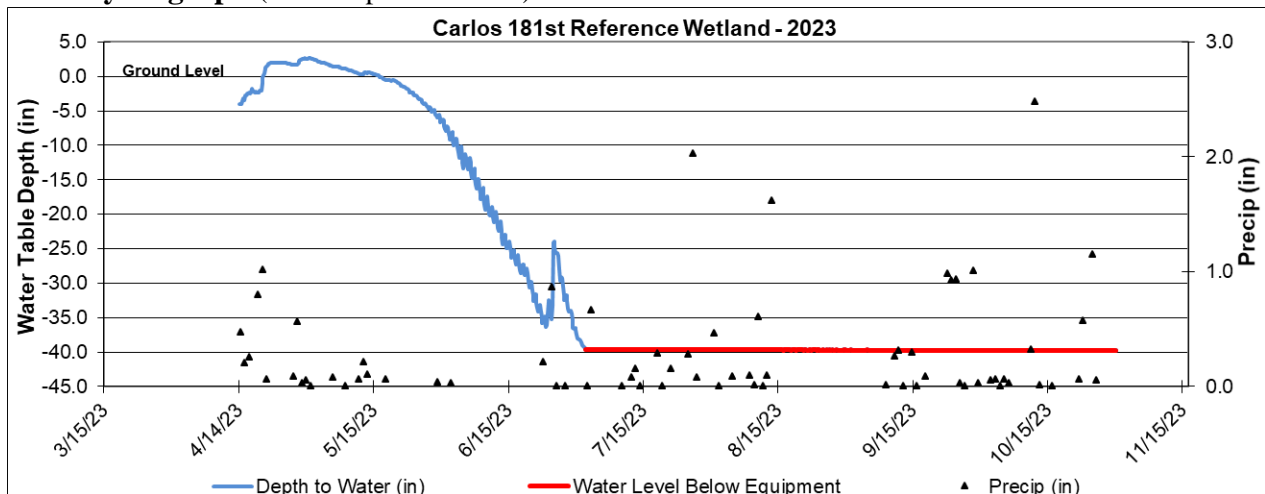
Horizon	Depth	Color	Texture	Redox
Oa	0-3	N2/0	Sapric	-
A	3-10	N2/0	Mucky Fine Sandy Loam	-
Bg1	10-14	10yr 3/1	Fine Sandy Loam	-
Bg2	14-27	5Y 4/3	Fine Sandy Loam	-
Bg3	27-40	5y 4/2	Fine Sandy Loam	-

Vegetation at Well Location:

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

Other Notes: This site is managed by the Minnesota DNR. In 2023, Anoka County was in a state of drought most of the growing season.

2023 Hydrograph (Well Depth 40 inches)

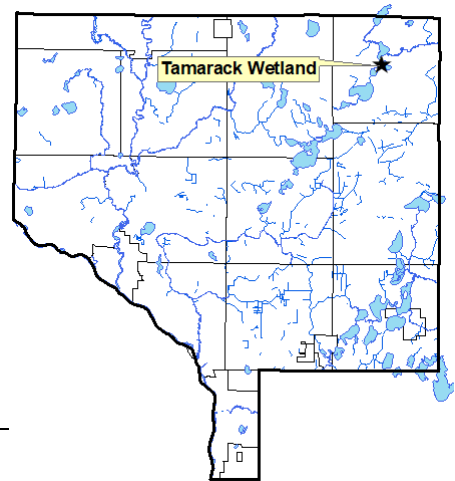


TAMARACK REFERENCE WETLAND

Carlos Avery Wildlife Management Area, City of Columbus

Site Information

Monitored Since: 1999
Wetland Type: 6
Wetland Size: Approx. 1.9 acres
Isolated Basin: Yes
Connected to Ditch: No
Surrounding Soils: Sartell fine sand



Soils at Well Location:

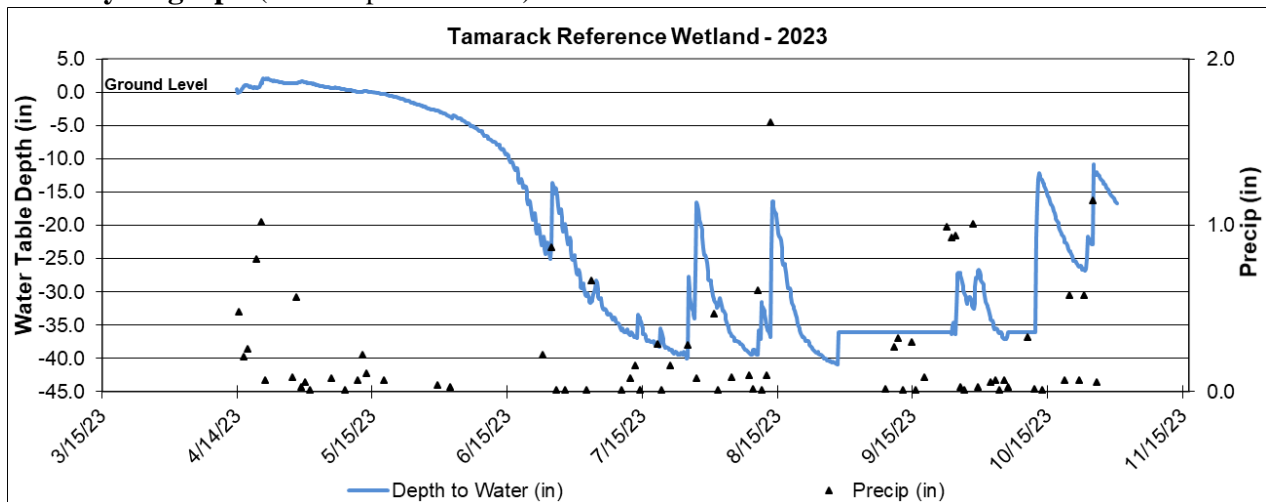
Horizon	Depth	Color	Texture	Redox
A	0-6	N2/0	Mucky Sandy Loam	-
A2	6-21	10yr 2/1	Sandy Loam	-
AB	21-29	10yr3/2	Sandy Loam	-
Bg	29-40	2.5y5/3	Medium Sand	-

Vegetation at Well Location:

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

Other Notes: The site is managed by Anoka County Parks with the boring located on the edge of the wetland. Anoka County was in a state of drought most of the growing season.

2023 Hydrograph (Well Depth 42 inches)



SRWMO Water Quality Grant Funds

Description: The Sunrise River Watershed Management Organization (SRWMO) offers cost share grants to encourage projects that will benefit water quality in local lakes and streams. These types of projects include lakeshore restorations, rain gardens, erosion control practices, and others. These ACD administered grants offer cost sharing for implementing projects. The landowner is responsible for a portion of expenses. ACD assists interested landowners with design, materials acquisition, installation, and maintenance.

Purpose: To improve water quality in area lakes, stream, and rivers.

Locations: Throughout the watershed.

Results: Projects reported in the year they were installed.

SRWMO Cost Share Fund Summary

2021 Year-End Balance	\$3,024.24
2022 SRWMO contribution	\$1,500.00
2023 SRWMO contribution	\$1,500.00
Fund Balance	\$6,024.24

Projects Funded Since Inception:

- 2006 – Coon Lakeshore restoration - Rogers
- 2008 – Martin Lakeshore restoration - Moos
- 2012 – Linwood Lakeshore restoration, Gustafson
- 2012 – Transfer to Martin – Typo Lakes Carp Barriers
- 2016 – Coon Lake Rain Garden - Voss
- 2018 – Coon Lakeshore Restoration - Gunnink
- 2020 – Coon Lakeshore Restoration - Scheiderich
- 2021 – Linwood Elementary Rain Garden

Water Quality Improvement Projects

The following water quality projects were installed in 2023 in the Sunrise River WMO.

Enhanced street sweeping - *Linwood and Martin Lakes*

Linwood Township revised their street sweeping in 2023 in response to a 2022 enhanced street sweeping study. That study identified specific streets where more frequent sweeping would be especially beneficial to lakes. An additional 3 curb-miles will be swept four times annually (i.e. 12 curb-mi additional sweeping per year). The pollutant reduction in 17.9 lbs/yr of phosphorus.

In 2023, weather prevented the first spring sweeping, so three sweepings were done.

Partial funding is from a grant from the Lower St. Croix Partnership using Clean Water Land and Legacy grant funds



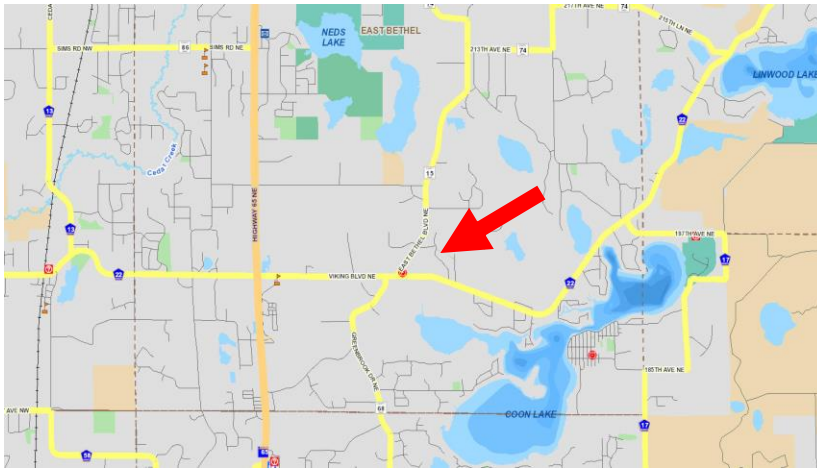
Adopt a drain – *Martin and Coon Lakes*

In 2023, ACD expanded promotion of Adopt a Drain. In this program, volunteers clean storm drains. Outreach focused on drains leading directly to Coon and Martin Lakes. Presently 11 of 22 priority drains have been adopted at Martin Lake. None are formally adopted at Coon Lake, but residents have stated that they do clean certain drains.



Pollinator planting – 19515 Jamestown St NE (near Coon Lake)

The homeowners planted a 0.6-acre pollinator planting for habitat and water quality benefits. Partial funding was from ACD using Clean Water Land and Legacy grant funds.



Lakeshore restorations – Martin and Coon Lakes

ACD, in collaboration with the Sunrise River WMO, secured a 2023 state Clean Water Fund grant for shoreline stabilizations. In 2023, twenty-two landowners expressed interest at the target waterbody (Martin Lake) and funding was sufficient for the top eight priority projects. Designs, landowner agreements, and construction contracting are complete. Construction will take place in 2024. Additional funding is provided from landowners and ACD.

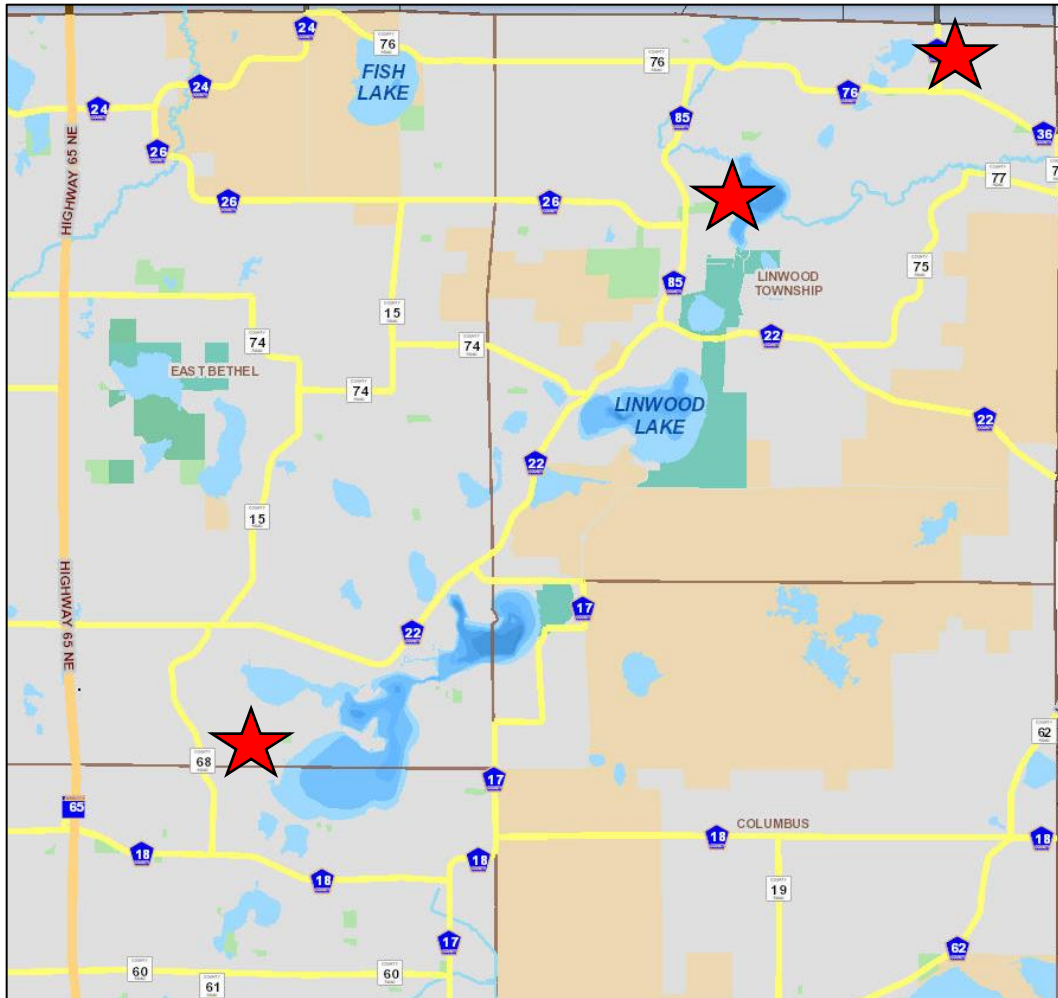


One of the 2024 lakeshore stabilization sites.

Septic System Fix Ups –

Three non-compliant septic systems were replaced in 2023 using grant funds for low income households. The SSTS Fix-Up Program is administered by ACD, which prioritizes projects near priority lakes and streams. Funding was from the MN Pollution Control Agency and the Board of Water & Soil Resources. 2023 projects were near Fawn, Martin, and Coon Lakes.

Locations of 2023 septic system fix ups



Coon Lake Beach Community Center Rain Garden Rehab

ACD staff led a local Boy Scout group in an effort to rehabilitate the rain garden which was constructed in 2015. It has become overgrown with black locust trees and a variety of weeds, which were removed. The inlet had also become clogged, and was cleared. Finally, a fresh layer of mulch was installed. The rain garden captures and infiltrates road runoff which otherwise would be directly into Coon Lake.



On-call Administrative Services

Description: ACD provides 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.

Location: Watershed-wide

Results: Administrative assistance provided to the SRWMO commonly includes:

- Assist the SRWMO Board with day-to-day operational items
- Prepare and distribute board meeting materials
- Prepare budgets
- Advise or represent the SRWMO on water management issues
- Annual MN Campaign Finance Board documents
- Joint powers agreement updates
- Respond to public inquiries about SRWMO programs, permitting, and grants
- Respond to board member and member community questions
- Process resident requests for SRWMO cost share grant funds
- Complete annual risk assessments required by the SRWMO's insurer
- Prepare meeting minutes in the Recording Secretary's absence
- Prepare materials for State performance reviews of the SRWMO
- Order annual audits and prepare related information

Annual Written Communication to Member Communities

- Description:** ACD provides a summary of activities completed in the preceding years.
- Purpose:** To create a summary for board members to use during annual reporting.
- Location:** Watershed wide
- Results:** A short summary of SRWMO activities for the preceding years was prepared by ACD. This summary included work accomplished, finances, leveraged funds, and current events. Board members will use it during annual reporting to their city councils and town boards in January-March.

INFO FOR CITY COUNCILS AND TOWN BOARDS
ABOUT THE SUNRISE RIVER WATERSHED MANAGEMENT ORGANIZATION

SRWMO BOARD
City of Oshtemo
Alec Heggen (chair)
Tim Meador
City of East Bethel
Tim Wamgler (chair)
Leon Mayer
City of Ham Lake
Troy Stoen
Jeff Dunninger
Linwood Township
Sandra Kester (chair)
Alicia Matsumi
Joan Doon (alternate)

About the SRWMO
The Sunrise River Watershed Management Organization (SRWMO) is a joint powers board of four communities collaborating to manage water resource issues. The area includes all of Linwood and portions of East Bethel, Columbus, and Ham Lake. Contributions from these communities, plus any secured grants, make up the annual budget. The organization and its partners have secured nearly \$1.2M in grants in the last 9 years for area water resource projects, while requesting ~\$50k/yr from member communities.

Priorities
SRWMO priorities are detailed in a 10-year state-approved plan. The plan is founded upon input from the member communities and other stakeholders such as lake groups. Some top priorities are:

- Get Martin & Linwood Lakes removed from the state "impaired" water list.
- Manage carp to below 89 B/c in Martin, Linwood, & Typo Lakes.
- <20% of lake shoreline is mowed to the edge.
- >50% of expenditures come from grants & communities contribute ~\$50k/yr. Drive to always have match funds available to take advantage of grants.

JPA Status
The SRWMO board recommended joint powers agreement (JPA) amendments to member communities in 2021. Meetings with community administrators & elected officials were held in 2022, resulting in agreement on most edits. Additionally, the group attempted to work through concerns, particularly from the City of Ham Lake, regarding the funding formula & budget approval process. As of March 2023, the funding formula, unanimous budget ratification (which appears prohibited by MN Statute 10.3B211 Subcl. 1(c) & requirement to assign a councilmember to the board remain as points of disagreement with Ham Lake. Please speak with your community administrator or council liaison for more detail.

Lower St. Croix Partnership
The Sunrise River WMO has left the Lower St. Croix Partnership effective November 2022. The partnership is a joint powers collaboration of 15 counties, watershed organizations, & soil and water conservation districts. The SRWMO left due to concerns about lack of operational policies leading to increased risk exposure.

SRWMO Annual Report to BWSR and State Auditor

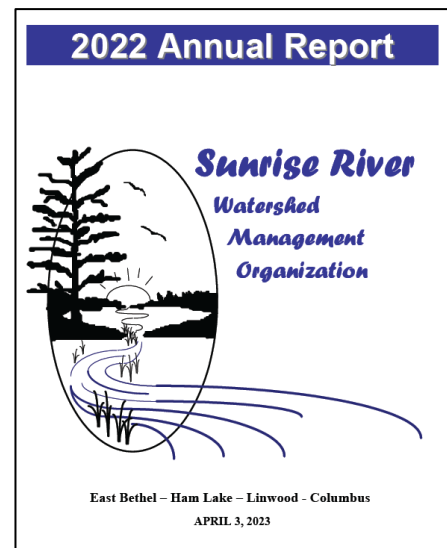
Description: The SRWMO is required by law to submit an annual report to the Minnesota Board of Water and Soil Resources (BWSR). This report consists of an up-to-date listing of SRWMO Board members, activities related to implementing the SRWMO Watershed Management Plan, the status of municipal water plans, 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 30th).

The SRWMO must also submit an annual financial report to the State Auditor. They accept unaudited financial reports for financial districts with annual revenues less than \$272,000. The SRWMO was below this threshold.

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

Location: Watershed-wide.

Results: ACD assisted the SRWMO with preparation of the annual SRWMO Annual Report. After SRWMO Board review, the final draft was forwarded to BWSR. The report is also shared with SRWMO communities’ staff and elected officials, and is publicly available on the SRWMO website.



Grant Search and Applications

Description: ACD partners with the SRWMO for 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 2022 and 2023 the SRWMO and ACD pursued a State Clean Water Fund grant for shoreline stabilizations. Both were awarded in the amounts of \$78,500 and \$107,000. Each grant expires in three years. Work will be focused at Martin Lake for the first grant, and Martin, Coon, or Linwood for the second grant. ACD is the grant recipient.

In 2023, \$10,000 was requested and received from the Lower St. Croix Partnership for soil health practices. The grant funds various agricultural practices that benefit water quality. Promotion to landowners will begin in early 2023. ACD is the grant recipient.

Since 2014, the following grants have been secured for SRWMO projects through the assistance of ACD:

Project	Grant Source	Amount
2014 Martin and Typo Lake Carp Barriers, site 2	MN DNR CLP	\$35,770
2014 Martin and Typo Lake Carp Barriers, sites 1,3,4	MN DNR CLP	\$399,983
2014 Coon Lake Area Stormwater Retrofits	BWSR CWF	\$42,987
2015 Ditch 20 Wetland Restoration Feasibility Study	BWSR CWF	\$72,400
2017 Martin and Typo Lake Carp Harvests	MN DNR CLP	\$99,000
2017 Septic System Fix Up Fund*	MPCA	\$23,040
2018 Watershed Based Funding – stormwater retrofits & more	BWSR WBIF	\$156,750
2018 Septic System Fix Up Fund*	MPCA	\$27,055
2019 Septic System Fix Up Fund*	MPCA	\$40,000
2019-20 Surface Water Monitoring Grant, Sunrise R	MPCA	\$5,102
2019 Sunrise River Chain of Lakes Carp Mgmt	BWSR CWF	\$148,000
2020 Septic System Fix Up Fund*	MPCA	\$25,447
2021 Lower St. Croix WBIF –internal loading analyses	BWSR WBIF	\$0
2021 Septic System Fix Up Fund*	MPCA	\$34,876
2022 Septic System Fix Up Fund*	MPCA	\$34,876
2022 Street Sweeping study – Linwood and Martin Lakes	Lower St. Croix Partnership	\$2,000
2023 Septic System Fix Up Fund*	MPCA	\$33,418
2023 Sunrise Chain of Lakes Shoreline Stabilizations	BWSR CWF	\$78,500
2023 Soil Health grant	Chisago SWCD, Lower St. Croix Partnership	\$10,000
2023 Septic System Fix Up Fund*	MPCA	\$33,418
2024 Sunrise Chain of Lakes Shoreline Stabilization – Phase 2	BWSR CWF	\$107,000
TOTAL		\$1,308,506

*Countywide Grant

Outreach and Education

Description: ACD conducted public outreach and education including newsletter articles, workshops, community events, and others. Topics included lakeshore stewardship, financial assistance for fixing failing septic systems, agricultural soil health practices, pollinator planting, native aquatic plants, and the goals of the SRWMO.

Purpose: To provide information and education to the public, especially information that will result in behavioral changes beneficial to natural resources.

Location: Watershed-wide

Results: Outreach efforts are collaborative. Some tasks are exclusively performed by ACD for the SRWMO. The SRWMO also provides funding to support the Anoka County Water Resources Outreach Program which uses funds pooled from various watersheds and grants to perform regional outreach or produce materials used in multiple watersheds. Finally, the SRWMO area benefits from outreach by the Lower St. Croix Partnership without SRWMO funding.

2023 accomplishments included:

City newsletter content

- Local waters and SRWMO goals.
- Septic system fix-up grants.
- Aquatic invasive species.

Lake association newsletter content:

- Lakeshore stewardship.

Workshops promotion

- “Living Large on a Small Lake” – a workshop for owners and prospective buyers of property on smaller lakes. It discussed practical and legal expectations, and how to find a lake that fits you. Led by the Lower St. Croix Partnership.
- Realtor Workshop about Lakeshore – A continuing education course about laws and landowner expectations for lakeshore. Led by the Lower St. Croix Partnership.
- Smart Salting – Distributed information to community public works departments about this training and certification program from the MN Pollution Control Agency. All SRWMO communities are now certified.

Community events

- Linwood Family Fun Day - Staffed by SRWMO board members. Booth focused on turf management and groundwater protection.
- Columbus Fall Fest - Staffed by SRWMO board members and University of MN Extension. Booth focused on turf management and groundwater protection.
- City of East Bethel Open House – A SRWMO board member staffed a booth at this indoor community event to share information about SRWMO programs.
- Martin Lakers Association annual meeting. A presentation about SRWMO programs was given by ACD staff. The focus was on recruiting landowners to do shoreline restoration projects. Approximately 60 residents attended.

- Coon Lake Improvement Association – Fall meeting. ACD staff presented about four things (one in each season) residents can do on their own property to protect the lake. Approximately 60 residents attended.
- Coon Lake Beach Community Center Rain Garden Rehab – Approximately 14 Boy Scouts and parents joined ACD staff to remove weeds, clean the inlet, and spread mulch. Many neighbors stopped by to thank us.

Other

- Lakeshore stewardship promotion – Produced a brochure with SRWMO branding that was distributed at workshops and community events. Lower St. Croix Partnership staff gave a presentation at a Martin Lakers Association meeting.
- Adopt a Drain – ACD promoted this program through the Martin and Coon Lake Associations. 11 of 22 drains that go directly to Martin Lake have been adopted.
- Videos – The “Our Waters” video series which the SRWMO contributed to produce received national press. The “Our Groundwater Connection” video was used by Ohio TV news to help explain groundwater contamination from the East Palestine train derailment.
- Land Use Planning – A new video entitled “When Development Comes to Town” was promoted to elected officials and planning/zoning committees. The video was funded by the Lower St. Croix Partnership.

Sampling of outreach and education in 2023 printed materials



Septic system repair & replacement grants

- ✓ Homesteaded single family homes or duplexes in Anoka Co.
- ✓ Must have been inspected and issued a certificate of non-compliance.
- ✓ May NOT be used for tank pumping or other maintenance.
- ✓ Household must meet low income thresholds. Grant covers up to 90% depending on income.
- ✓ Funding is limited and may vary by location. Shoreland areas or projects providing the greatest health and environmental benefits may be preferentially funded.
- ✓ See all program requirements at www.AnokaSWCD.org under “financial assistance.”

Contact Kris Larson at the Anoka Conservation District.
763-434-2030 ext 110 or kris.larson@anokaswcd.org





Mowing to the water's edge increases shoreline erosion and reduces critical habitat. Please leave a buffer!

Be a Lakeshore Steward

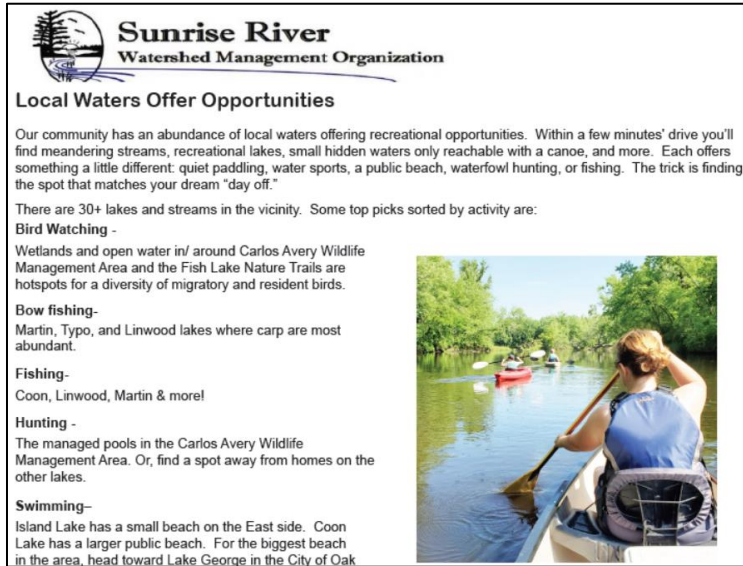
Grants available to correct shoreline erosion and install lakeshore native plant buffers:
www.SRWMO.org




Come Clean Leave Clean

Protect our lakes. Clean your gear.

STOP AQUATIC HITCHHIKERS!

Sunrise River Watershed Management Organization

Local Waters Offer Opportunities

Our community has an abundance of local waters offering recreational opportunities. Within a few minutes' drive you'll find meandering streams, recreational lakes, small hidden waters only reachable with a canoe, and more. Each offers something a little different: quiet paddling, water sports, a public beach, waterfowl hunting, or fishing. The trick is finding the spot that matches your dream "day off."

There are 30+ lakes and streams in the vicinity. Some top picks sorted by activity are:


Bird Watching -
Wetlands and open water in/ around Carlos Avery Wildlife Management Area and the Fish Lake Nature Trails are hotspots for a diversity of migratory and resident birds.

Bow fishing-
Martin, Typo, and Linwood lakes where carp are most abundant.

Fishing-
Coon, Linwood, Martin & more!

Hunting -
The managed pools in the Carlos Avery Wildlife Management Area. Or, find a spot away from homes on the other lakes.

Swimming-
Island Lake has a small beach on the East side. Coon Lake has a larger public beach. For the biggest beach in the area, head toward Lake George in the City of Oak




Every Three Years

It's the longest anyone should go between septic system pumpings. Avoid costly repairs. Keep our lakes, rivers, and drinking water clean.

Pump your septic tank

Sunrise River Watershed Management Organization
www.SRWMO.org

Website

Description: The SRWMO contracts ACD to maintain a website on behalf of the SRWMO.

Purpose: To increase awareness of the SRWMO and its programs. The website also provides resources that helps residents better understand water resource issues in the area. The website serves as the SRWMO's alternative to a state-mandated newsletter.

Location: www.srwmo.org

Results: In 2023, ACD maintained the SRWMO website and posted board minutes and agendas.

The screenshot shows the website page for "Cost Share Grants for Water Quality Projects". The page has a teal header with the SRWMO logo and a search bar. The navigation menu includes "Board Members", "Agendas & Minutes", "Videos", "Watershed Plan & Reports", "Projects & News Articles", "Monitoring", "Cost Share Grants", and "Permitting". The main content area features a title "Cost Share Grants for Water Quality Projects" and a sub-header "The SRWMO offers assistance to private individuals or groups for projects that will have public benefits to water resources. Currently, a cost share grant program is available." Below this, there are sections for "Eligible Project Types", "Excluded Project Types", and "Priorities". The "Eligible Project Types" section lists four categories: projects reducing pollutants, enhancing aquatic habitat, conserving groundwater, and educating the public. The "Excluded Project Types" section lists two categories: projects required by a permit or law, and projects required to correct illegal activity. The "Priorities" section lists three categories: projects benefiting SRWMO recreational waterbodies with public access, projects benefiting SRWMO waterbodies without public access, and projects benefiting groundwater. On the right side of the page, there is a vertical stack of four images: a forest with a stream, a stormwater basin, a lake with a boat, and a close-up of a water filter.

srwmo.org/cost-share-grants

sunrise river wmo

Search Home

Board Members Agendas & Minutes Videos Watershed Plan & Reports Projects & News Articles Monitoring **Cost Share Grants** Permitting
Other Nearby Watershed Organizations

Cost Share Grants for Water Quality Projects

The SRWMO offers assistance to private individuals or groups for projects that will have public benefits to water resources. Currently, a cost share grant program is available.

Eligible Project Types

- Projects reducing pollutants to SRWMO waters. Examples include stormwater basins and rain gardens.
- Projects enhancing aquatic habitat or habitat at the water's edge. An example is a vegetated buffer.
- Projects conserving groundwater. An example is "smart" irrigation controllers.
- Projects educating the public in ways that create behavioral changes that will reduce pollutants or enhance aquatic habitat.

Excluded Project Types

- Projects required by a permit or law.
- Projects required to correct illegal activity.

Priorities

1. Projects benefitting SRWMO recreational waterbodies with public access including:
 - a. Lakes: Coon, Linwood, Island, Martin, and Typo.
 - b. Streams: West Branch Sunrise River, South Branch Sunrise River, Data Creek/County Ditch 20.
 - c. Waters directly draining to the above waterbodies.
2. Projects benefitting SRWMO waterbodies without public access.
3. Projects benefitting groundwater.