Black Dog Watershed Management Commission

AGENDA
Wednesday, April 16, 2025
5:00 P.M.

COMMISSIONERS:
Curt Enestvedt, Chair
Mike Hughes, Vice Chair
Scott Thureen, Secretary/Treasurer
Rollie Greeno
Greg Helms, Alternate
Paul Below, Alternate

I. Approval of Agenda

II. Approval of Minutes – March 19, 2025

III. Approval of Accounts Payable

IV. Review Budget Performance Reports

V. Review 2024 Management Level Monitoring for Orchard Lake

VI. Miscellaneous

VII. Adjournment

BLACK DOG
Watershed Management Organization

Agenda Background
April 16, 2025

I. Approval of Agenda

Agenda enclosed.

Action Requested: A motion be considered to approve the Agenda.

II. Approval of Minutes from the March 19, 2025, Meeting

Minutes enclosed.

Action Requested: A motion be considered to approve the Minutes from the March 19, 2025, meeting.

III. Approval of Accounts Payable

Accounts payable list enclosed.

Action Requested: A motion be considered to approve the accounts payable list as submitted by staff.

IV. Review of Budget Performance Reports

Current Budget Performance Reports enclosed.

Action Requested: No formal action required

V. Review 2024 Management Level Monitoring for Orchard Lake

In 2024 Barr Engineering performed increased monitoring on Orchard Lake. Staff from Barr will review the monitoring performed and the results of the monitoring at the meeting. Enclosed in your packet is a copy of the report.

Action Requested: Consider a motion accepting the report with any edits suggested at the meeting.

VI. Miscellaneous

VII. Adjournment

BLACK DOG
Watershed Management Organization

DRAFT
Meeting Minutes
March 19, 2025

MEMBERS PRESENT
Curt Enestvedt, Chair
Mike Hughes, Vice Chair
Scott Thureen, Secretary/Treasurer
Paul Below, Alternate
Greg Helms, Alternate

MEMBERS ABSENT
Rollie Greeno

OTHERS PRESENT
Greg Williams – Barr Engineering
Brian Hartman – City of Apple Valley
Joe Barten – Dakota County Soil & Water Conservation District
Daryl Jacobson – BDWMO Administrator
Tammi Carte – BDWMO Secretary

Curt Enestvedt, Chair, called the March 19, 2025, meeting to order at 5:00pm.

I. Approval of Agenda

Motion by Thureen, second by Hughes, to approve the March 19, 2025, Agenda as presented.

Ayes – Enestvedt, Hughes, Thureen, Below, Helms
Nays – None

Motion Carried Unanimously

II. Approval of Minutes from the February 19, 2025, Meeting

Motion by Hughes, second by Helms, to approve the February 19, 2025, Minutes as presented.

Ayes – Enestvedt, Hughes, Thureen, Below, Helms
Nays – None

Motion Carried Unanimously

III. Approval of Accounts Payable

Motion by Thureen, second by Helms, to approve accounts payable to Barr Engineering in the amount of $5,645.50 for services from February 1, 2025, through March 7, 2025; and, to Campbell Knutson in the amount of $35.00 for February 2025 general services.

Ayes – Enestvedt, Hughes, Thureen, Below, Helms
Nays – None

Motion Carried Unanimously

IV. Review Budget Performance Reports

Daryl Jacobson, BDWMO Administrator, shared the auditors have not started in-house yet for the Black Dog audit but should be soon. The WMOs budget is in great shape.

No Formal Action Required

V. Approval of Lakes for CAMP Monitoring in 2025

Staff proposes the BDWMO sponsor monitoring at four of the strategic water bodies identified in the Watershed Plan. Staff recommends the Commission approve enrolling Crystal Lake, Keller Lake, Kingsley Lake, and Lac Lavon in the 2025 CAMP.

Lakeville has not had Kingsley Lake monitored the past couple years. They would like to resume monitoring it this year. Met Council wants to monitor Orchard Lake themselves this year. This would be a more intense monitoring and at no cost to the WMO. Black Dog would receive the results from Met Council.

Motion by Hughes, second by Helms, to approve enrolling Crystal Lake, Keller Lake, Kingsley Lake, and Lac Lavon for 2025 CAMP Monitoring.

Ayes – Enestvedt, Hughes, Thureen, Below, Helms
Nays – None

Motion Carried Unanimously

VI. Review and Approval of 2024 Watershed Annual Report (Newsletter)

A copy of the draft 2024 Annual Watershed Report was provided to the Commission for review prior to tonight's meeting. Barr staff reviewed the report and requested comments from staff and Commissioners.

Motion by Hughes, second by Helms, to approve the 2024 Annual Watershed Report as presented.

Ayes – Enestvedt, Hughes, Thureen, Below, Helms
Nays – None

Motion Carried Unanimously

VII. Miscellaneous

1. Watershed Based Implementation Funding – Black Dog WMOs portion will be awarded to the City of Apple Valley for Keller Lake.
2. The next BDWMO meeting is scheduled for April 16, 2025.
3. Goldfish mitigation could take place anytime and would be funded by Black Dog. The current goldfish population averages 6-7 inches which is far smaller than the previous football sized goldfish found in the lake. Barr hasn't managed this type of mitigation process previously. Their research found Carp Solutions, a potential service provider to use.

VIII. Adjournment

Motion by Thureen, second by Hughes, to adjourn at 5:19pm.

Ayes – Enestvedt, Hughes, Thureen, Below, Helms
Nays – None

Motion Carried Unanimously

BLACK DOG
Watershed Management Organization

Accounts Payable April 16, 2025 Meeting

Barr Engineering - Services from March 8, 2025 through March 28, 2025

Engineering	$	1,223.00
Special Projects: General Fund - 2024 Reporting - Orchard Lake	$	533.00
Special Projects: General Fund - Water Quality Monitoring: Crystal Lake 2025	$	415.00
Water Quality Monitoring: Trend Analysis	$	950.00
Public Education: Watershed Annual Report (Newsletter)	$	294.50
Public Education: Annual Activity Report (BWSR)	$	962.00
	$	**4,377.50**

Campbell Knutson

General Services - March 2025	$	85.00
	$	**85.00**

Dakota County Soil & Water Conservation District - Services for Jan 2025 - Mar 2025

Education & Assistance Outreach: Website Updates & Maintenance	$	300.00
Education & Assistance Outreach: Website Hosting	$	900.00
Winter Salt Week Partner Contribution	$	300.00
	$	**1,500.00**

Accounts Payable Total $ 5,962.50

resourceful. naturally.
engineering and environmental consultants

BARR

Remittance address:
Lockbox 446104
PO Box 64825
St Paul, MN 55164-0825

April 8, 2025

Black Dog Watershed Management Commission
City of Burnsville
13713 Frontier Court
Burnsville, MN 55337-4720

Attn: Mr. Daryl Jacobson

RE: Engineering & Environmental Consulting Services

Invoice of Account with
BARR ENGINEERING COMPANY

For professional services during the period of March 8, 2025 through March 28, 2025

TOTAL PAYABLE THIS INVOICE:	**$ 4,377.50**
Allocation:	
Engineering	**$ 1,223.00**
Special Projects: General Fund	
• **Orchard Lake 2024 Reporting**	**$ 533.00**
• **Crystal Lake 2025 WQ Monitoring**	**$ 415.00**
Water Quality Monitoring	
• **Trend Analysis**	**$ 950.00**
Public Education	
• **Watershed Annual Report (Newsletter)**	**$ 294.50**
• **Annual Activity Report (BWSR)**	**$ 962.00**

OK

4-8-25

Barr declares under the penalties of law that this account, claim, or demand is just and that no part of it has been paid.

Karen L. Chandler

Karen L. Chandler
Vice President

BUDGET SUMMARY - 2025 FY
Black Dog Watershed Management Commission
March 8, 2025 through March 28, 2025

Work Description	2025 Barr Budget	Current Invoice	Spent This Year	Balance
Engineering	34,000.00	1,223.00	7,203.00	26,797.00
Special Projects: General Fund				
Reporting on Orchard Lake 2024 Water Quality Monitoring	7,500.00	533.00	2,501.00	4,999.00
Crystal Lake 2025 Management Level Monitoring	22,300.00	415.00	599.00	21,701.00
Subtotal -- Special Projects: General Fund	29,800.00	948.00	3,100.00	26,700.00
Water Quality Monitoring				
Update Trend Analyses	2,200.00	950.00	1,530.00	670.00
Subtotal -- W.Q. Monitoring	2,200.00	950.00	1,530.00	670.00
Public Education				
Watershed Annual Report	5,100.00	294.50	4,891.50	208.50
Annual Activity Report (BWSR)	3,600.00	962.00	962.00	2,638.00
Subtotal -- Public Education	8,700.00	1,256.50	5,853.50	2,846.50
Total Services	74,700.00	4,377.50	17,686.50	57,013.50

INVOICE

Barr Engineering Co.
4300 MarketPointe Drive, Suite 200
Minneapolis, MN 55435
Phone: 952-832-2600; Fax: 952-832-2601
FEIN #: 41-0905995 Inc: 1966

Remittance address:
Lockbox 446104
PO Box 64825
St Paul, MN 55164-0825

Mr. Daryl Jacobson
Black Dog WMO
City of Burnsville
13713 Frontier Court
Burnsville, MN 55337-4720

April 08, 2025
Invoice No: 23190374.25 - 3

Total this Invoice $2,479.50

Regarding: BDWMO 2025 Engineering Services

This invoice is for professional services related to the above project.

Professional Services from March 08, 2025 to March 28, 2025

Job: 2025 Engineering Services

Task: 001 Attend BDWMO Meetings

Labor Charges

	Hours	Rate	Amount	
Engineer / Scientist / Specialist IV				
Williams, Sterling	1.50	185.00	277.50	
	1.50		277.50	
Subtotal Labor				**277.50**
			Task Subtotal	**$277.50**

Task: 002 Miscellaneous Consulting

Labor Charges

	Hours	Rate	Amount	
Vice President				
Chandler, Karen	1.40	225.00	315.00	
Engineer / Scientist / Specialist IV				
Williams, Sterling	2.50	185.00	462.50	
Support Personnel II				
Nypan, Nyssa	1.40	120.00	168.00	
	5.30		945.50	
Subtotal Labor				**945.50**
			Task Subtotal	**$945.50**

Task: 003 Annual BWSR Activity Report

Terms: Due upon receipt. 1 1/2% per month after 30 days. Please refer to the contract if other terms apply.

Labor Charges

	Hours	Rate	Amount	
Engineer / Scientist / Specialist IV				
Williams, Sterling	5.20	185.00	962.00	
	5.20		962.00	
Subtotal Labor				**962.00**
			Task Subtotal	**$962.00**

Task: 004 Newsletter/Watershed Report

Labor Charges

	Hours	Rate	Amount	
Support Personnel I				
Kaul (Contracted), Karen	3.10	95.00	294.50	
	3.10		294.50	
Subtotal Labor				**294.50**
			Task Subtotal	**$294.50**
			Job Subtotal	**$2,479.50**
			Total this Invoice	**$2,479.50**

	Current	Prior	Total	Received	AR Balance
Invoiced to Date	**2,479.50**	**7,782.50**	**10,262.00**	**7,782.50**	**2,479.50**

Thank you in advance for the prompt processing of this invoice. If you have any questions, please contact Greg Williams, your Barr project manager, at (952) 832-2945 or email at gwilliams@barr.com.

INVOICE

Barr Engineering Co.
4300 MarketPointe Drive, Suite 200
Minneapolis, MN 55435
Phone: 952-832-2600; Fax: 952-832-2601
FEIN #: 41-0905995 Inc: 1966

Remittance address:
Lockbox 446104
PO Box 64825
St Paul, MN 55164-0825

Mr. Daryl Jacobson
Black Dog WMO
City of Burnsville
13713 Frontier Court
Burnsville, MN 55337-4720

April 08, 2025
Invoice No: 23190375.25 - 3

Total this Invoice $948.00

Regarding: Management Level Water Quality Monitoring

This invoice is for professional services related to the above project.

Professional Services from March 08, 2025 to March 28, 2025

Job: CHR Crystal Lake 2025 Water Qual Monitoring

Task: 100 Monitoring Data Mgmt & Proj Mgmt

Labor Charges

	Hours	Rate	Amount
Engineer / Scientist / Specialist III			
Olson, Terri	.20	170.00	34.00
Engineer / Scientist / Specialist I			
Schneider, Anna	2.00	110.00	220.00
Technician II			
Melmer, David	1.40	115.00	161.00
	3.60		415.00

Subtotal Labor **415.00**

Task Subtotal **$415.00**

Job Subtotal **$415.00**

Job: ORC Orchard Lake 2024 Reporting

Task: 100 Report

Labor Charges

	Hours	Rate	Amount
Engineer / Scientist / Specialist II			
Menken, Kevin	2.00	145.00	290.00

Terms: Due upon receipt. 1 1/2% per month after 30 days. Please refer to the contract if other terms apply.

Technician I				
Palumbo, James	2.70	90.00	243.00	
	4.70		533.00	
Subtotal Labor				**533.00**
			Task Subtotal	**$533.00**
			Job Subtotal	**$533.00**
			Total this Invoice	**$948.00**

	Current	Prior	Total	Received	AR Balance
Invoiced to Date	**948.00**	**1,603.00**	**2,551.00**	**1,603.00**	**948.00**

Thank you in advance for the prompt processing of this invoice. If you have any questions, please contact Greg Williams, your Barr project manager, at 952.932.2945, or email gwilliams@barr.com.

INVOICE

Barr Engineering Co.
4300 MarketPointe Drive, Suite 200
Minneapolis, MN 55435
Phone: 952-832-2600; Fax: 952-832-2601
FEIN #: 41-0905995 Inc: 1966

Remittance address:
Lockbox 446104
PO Box 64825
St Paul, MN 55164-0825

Mr. Daryl Jacobson
Black Dog WMO
City of Burnsville
13713 Frontier Court
Burnsville, MN 55337-4720

April 08, 2025
Invoice No: 23190375.99 - 16

Total this Invoice	**$950.00**

Regarding: Trend Analysis

This invoice is for professional services related to the above project.

Professional Services from March 08, 2025 to March 28, 2025

Job:	2025	2023 Data
Task:	100	Trend Analysis 2023 Data

Labor Charges

	Hours	Rate	Amount	
Engineer / Scientist / Specialist IV				
Williams, Sterling	2.00	185.00	370.00	
Engineer / Scientist / Specialist II				
Menken, Kevin	4.00	145.00	580.00	
	6.00		950.00	
Subtotal Labor				**950.00**
			Task Subtotal	**$950.00**
			Job Subtotal	**$950.00**
			Total this Invoice	**$950.00**

	Current	Prior	Total	Received	AR Balance
Invoiced to Date	**950.00**	**8,715.00**	**9,665.00**	**8,715.00**	**950.00**

Thank you in advance for the prompt processing of this invoice. If you have any questions, please contact Greg Wilson, your Barr project manager, at (952) 832-2672 or email at gwilson@barr.com.

Terms: Due upon receipt. 1 1/2% per month after 30 days. Please refer to the contract if other terms apply.

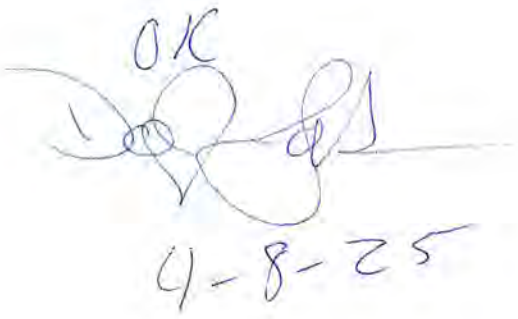
CAMPBELL KNUTSON
Professional Association
Attorneys at Law
Federal Tax I.D. #41-1562130
Grand Oak Office Center I
860 Blue Gentian Rd Ste 290
Eagan, Minnesota 55121
(651) 452-5000

March 31, 2025
Account # 602-0000G
404

Black Dog Watershed Management Organization
Attention: Daryl Jacobson
City of Burnsville
100 Civic Center Parkway
Burnsville MN 55337-3817

RE: GENERAL SERVICES
RENDERED TO DATE:

			HOURS	
03/24/2025	JDS	Review audit letter; email to M. Loo re: same.	0.20	35.00
	MKL	Prepare audit letter; Email copy to Jared for review; Prepare audit letter for mailing; Scan, save and print letter; Email audit letter to Daryl Jacobson.	0.50	50.00
		AMOUNT DUE	0.70	85.00
		TOTAL CURRENT WORK		85.00
		PREVIOUS BALANCE		$35.00
03/28/2025		Payment - thank you		-35.00
		TOTAL AMOUNT DUE		$85.00



Amounts due over 30 days will be subject to a finance charge of .5% per month (or an annual rate of 6%). Minimum charge - 50 cents.

DAKOTA COUNTY
SOIL & WATER CONSERVATION DISTRICT

Dakota County Soil & Water Conservation District
4100 220th Street West, Ste 102
Farmington, MN 55024
(651) 480-7777
DakotaSWCD.Accounting@CO.Dakota.MN.US

Invoice

DATE	INVOICE #
4/1/2025	3452

BILL TO

Black Dog WMO
Daryl Jacobson, Administrator
13713 Frontier Court
Burnsville, MN 55337

AGREEMENT	BILLING PERIOD	TERMS
2025 Agreement	Jan - Mar 2025	Net 30 Days

DESCRIPTION	HRS/COUNT	RATE	AMOUNT
EDUCATION AND ASSISTANCE OUTREACH			
Website Updates and Maintenance	3	100.00	300.00
Fee: Website Hosting	1	900.00	900.00
Landscaping for Clean Water Intro Class	0	4,000.00	0.00
Landscaping for Clean Water Design Course	0	8,000.00	0.00
Landscaping for Clean Water Maintenance Workshop	0	2,000.00	0.00
TECHNICAL ASSISTANCE			
Landscaping for Clean Water Technical Assistance	0	600.00	0.00
COST SHARE			
Landscaping for Clean Water Grant:	0	250.00	0.00
Winter Salt Week Partner Contribution	1	300.00	300.00

OK
4-8-25

It's been a pleasure working with you!

Total $1,500.00

BLACK DOG WMO
CASH ACTIVITY REPORT 2025

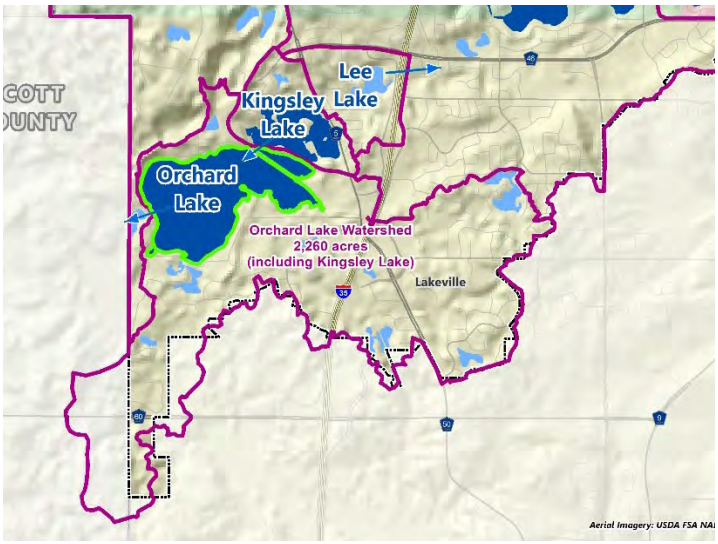
Date	Description	Deposits		Check #	Check Amount	Monthly Cash Balance	Expenditures: General Engineering Support	Special Projects (General)	Special Projects (Capital)	Special Projects (Gen. Reserve)	Insurance	Legal & Audit	Admin Support	Public Education	Water Quality Monitoring	Conf Public	Contin-gency
	Balance as of 12/31/24					**622,861.73**											
15-Jan	Barr Engineering Co (2024)			1844	2,170.00		2,053.50	116.50									
15-Jan	Campbell Knutson (2024)			1845	157.50							157.50					
15-Jan	Metropolitan Council (2024)			**1846**	3,040.00										3,040.00		
15-Jan	Dakota County Soil&Water Cons Dist (2024)			1847	12,025.00			11,050.00						975.00			
31-Jan	Interest Income	2,304.21															
	01/31/25 Balance	2,304.21			17,392.50	**607,773.44**	2,053.50	11,166.50	-	-	-	157.50	-	975.00	3,040.00	-	-
19-Feb	Barr Engineering Co			**1848**	4,320.00		2,685.00	870.00						185.00	580.00		
19-Feb	Campbell Knutson			**1849**	245.00							245.00					
19-Feb	City of Burnsville (2024)			**1850**	24,412.80								24,412.80				
28-Feb	Interest Income	2,001.71															
	02/28/25 Balance	2,001.71			28,977.80	**580,797.35**	2,685.00	870.00	-	-	-	245.00	24,412.80	185.00	580.00	-	-
19-Mar	Barr Engineering			**1851**	5,645.50		1,647.50	549.00						3,265.00	184.00		
19-Mar	Campbell Knutson			**1852**	35.00							35.00					
31-Mar	Interest Income	2,115.65															
	03/31/25 Balance	2,115.65			5,680.50	**577,232.50**	1,647.50	549.00	-	-	-	35.00	-	3,265.00	184.00	-	-
	Total Revenue	6,421.57	**Total Expense**		52,050.80		6,386.00	12,585.50	-	-	-	437.50	24,412.80	4,425.00	3,804.00	-	-
	Less: 2024 A/R	-	**Less: 2024 A/P**		(41,805.30)		(2,053.50)	(11,166.50)	-	-	-	(157.50)	(24,412.80)	(975.00)	(3,040.00)	-	-
	December LMC insurance reclass	-			-												
	Total YTD 2025 Revenue	6,421.57	**Total YTD 2025 Exp**		10,245.50		4,332.50	1,419.00	-	-	-	280.00	-	3,450.00	764.00	-	-
			2025 Budget		155,100.00		34,000.00	46,000.00	-	-	2,500.00	11,000.00	25,000.00	25,700.00	5,400.00	500.00	5,000.00
			Budget Remaining		144,855.00		29,668.00	44,581.00	-	-	2,500.00	10,720.00	25,000.00	22,250.00	4,636.00	500.00	5,000.00
	YTD Interest Income	*6,421.57*															

BLACK DOG WATER MANAGEMENT COMMISSION

Budget Performance Report
March 31, 2025

	CURRENT MONTH	YEAR TO DATE			
	ACTUAL	GENERAL FUND BUDGET	CAPITAL IMPROVEMENT FUND BUDGET	ACTUAL	VARIANCE FAVORABLE (UNFAVORABLE)
Opening Fund Balance		$ 452,567	$ 128,489	$ 581,056	
REVENUES :					
Member Contributions:					
City of Apple Valley	$ -	$ 9,362	$ 972	$ -	$ (10,334)
City of Burnsville	-	85,489	9,204	-	(94,693)
City of Eagan	-	534	-	-	(534)
City of Lakeville	-	23,615	2,324	-	(25,939)
Total Member Contributions	-	119,000	12,500	-	(131,500)
Other Revenues:					
Interest	$ 2,116	$ 15,000	$ -	$ 6,423	$ (8,577)
Grant (State of MN BWSR)	-	-	-	-	-
Total Other Revenue	2,116	15,000	-	6,423	(8,577)
Total Revenues	$ 2,116	$ 134,000	$ 12,500	$ 6,423	$ (140,077)
EXPENDITURES :					
General Engineering Support	$ 1,648	$ 34,000	$ -	$ 4,333	$ 29,668
Special Projects - General Fund	549	46,000	-	1,419	44,581
Special Projects - Capital Improvement Fund	-	-	-	-	-
Special Projects - General Fund Reserve	-	-	-	-	-
Insurance	-	2,500	-	-	2,500
Legal and Audit	35	11,000	-	280	10,720
Administrative Support	-	25,000	-	-	25,000
Public Education	3,265	25,700	-	3,450	22,250
Water Quality Monitoring	184	5,400	-	764	4,636
Conference/Publications	-	500	-	-	500
Contingency	-	5,000	-	-	5,000
Total Expenditures	5,681	155,100	-	10,246	144,855
EXCESS OF REVENUES OVER (UNDER) EXPENDITURES	(3,565)	(21,100)	12,500	(3,823)	
EXCESS OF REVENUES OVER (UNDER) EXPENDITURES PLUS OPENING FUND BALANCE				577,234	

TOTAL CASH AVAILABLE 3/31/2025	577,233
Fund Balance 3/31/2025	$ 577,234



The Black Dog Watershed Management Organization (BDWMO) performs monitoring of its strategic waterbodies on a 5-year rotating basis. BDWMO monitored Orchard Lake in 2024. Monitoring results presented in this report include:

- Water chemistry:
  - Phosphorus
  - Chlorophyll-*a*
  - Secchi Disc Transparency
  - Chloride
- Phytoplankton (algae)
- Water levels
- Aquatic Plants

About Orchard Lake

BDWMO Classification	Strategic waterbody
MDNR ID number	19-0031P
Watershed Area	2,260 acres
Lake Area	243 acres
Average Depth	10 feet
Maximum Depth	33 feet
Ordinary High Water Level	977.6 feet
Normal Water Level	--
100-year Flood Level	979.1 feet
Downstream Resource	Credit River
Location (city)	Lakeville
Public Access	Three city parks
MPCA Classification	Deep lake
MPCA Impairments	Mercury in fish tissue
Aquatic Invasive Species	Curly-leaf pondweed Eurasian watermilfoil

Summary and Recommendations

- Continued good water quality; phosphorus, chlorophyll-*a*, and Secchi disc transparency better than MPCA standards
- Secchi disc transparency has a worsening trend that is not reflected in other parameters
- Chloride is high but generally below Minnesota Standards
- Low amount of phytoplankton (algae) in summer; algal community includes desirable green algae
- Submergent plant community is diverse; non-native invasive curlyleaf pondweed and Eurasian watermilfoil are present
- Recommend continued water quality monitoring and trend analysis, aquatic plant monitoring, and implementation of stormwater best management practices in the watershed as opportunities allow

Introduction

Orchard Lake is a deep lake that lies in the northwest portion of the City of Lakeville. Orchard Lake receives runoff from a 2,260 acre watershed that includes Kingsley Lake. Orchard Lake discharges west towards the Credit River through Murphy-Hanrahan Park Reserve.

The Orchard Lake watershed includes a mix of land uses including residential, commercial, institutional, park, golf course, and some undeveloped areas. Overall, land use is low density, but includes areas along the Interstate 35 corridor that have undergone recent redevelopment.

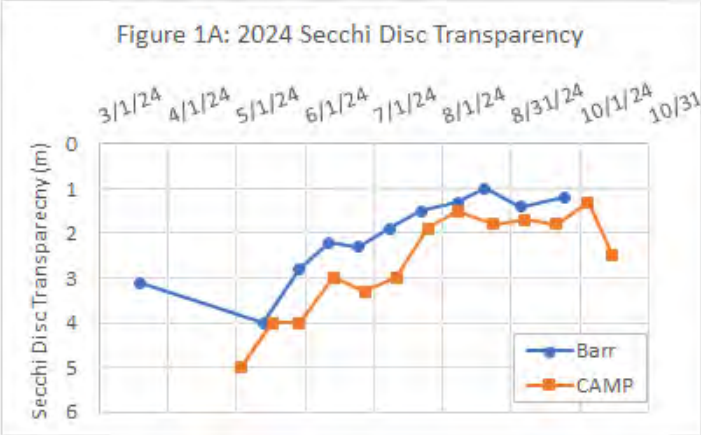
The lake is used primarily for fishing, but swimming, boating and aesthetic and wildlife viewing are also popular recreational uses. Over seventy private homes are located on the lake. Three city parks are located on Orchard Lake: a public boat access on the south shore (Orchard Lake Park), a public beach on the west shore (Orchard Lake Beach), and Wayside Park.

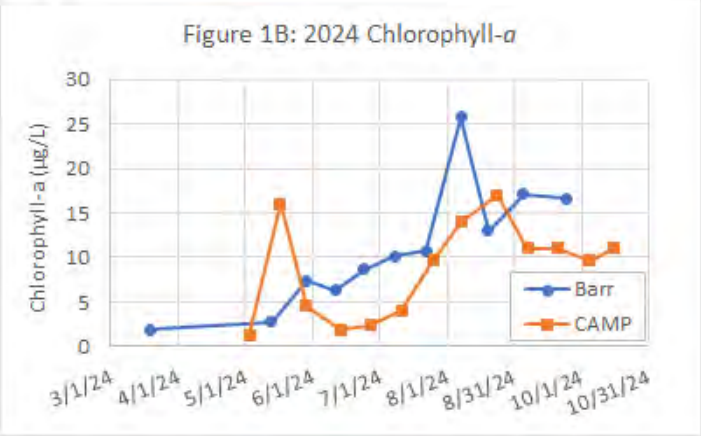
2024 Water Quality Monitoring

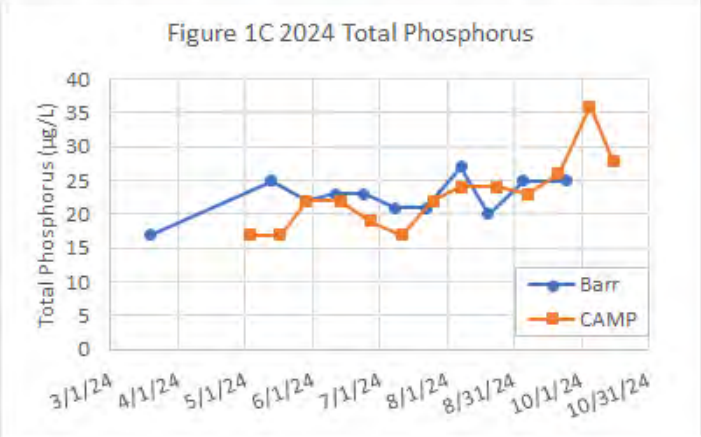
Water quality monitoring performed by BDWMO in 2024 included eleven sampling events between March and September. Measured parameters included:

- Secchi disc transparency
- Chlorophyll-*a*
- Total phosphorus
- Chloride
- Field parameters including:
    - Temperature
    - Dissolved oxygen
    - Specific conductivity
    - pH

A volunteer also collected water samples in 2024 through the Metropolitan Council's Community Assisted Monitoring Program (CAMP). Results of 2024 Barr and CAMP water quality monitoring events are presented in Figure 1A through 1C. Data collected in 2024 show low concentrations of total phosphorus and chlorophyll-*a* in the spring. Chlorophyll-*a* concentrations generally increased throughout the growing season (including a spike in early August). This parallelled a decrease in Secchi disc transparency. Concentrations of total phosphorus, however, remained low throughout 2024 monitoring. The CAMP data is generally consistent with data collected by Barr.







Aquatic plant growth in Orchard Lake observed during the August 19, 2024 water quality sampling event.

Figure 2A. Orchard Lake June-Sept. Secchi Disc Transparency

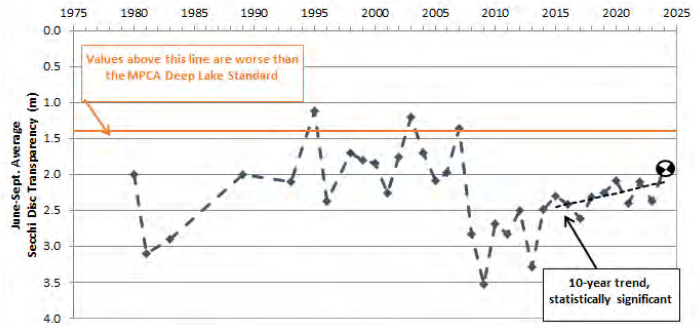


Figure 2B. Orchard Lake June-Sept. Average Chlorophyll *a*

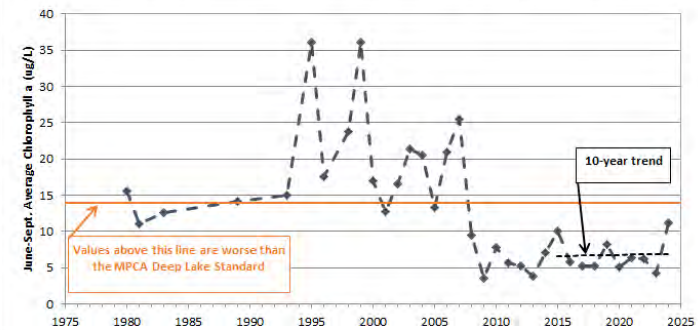
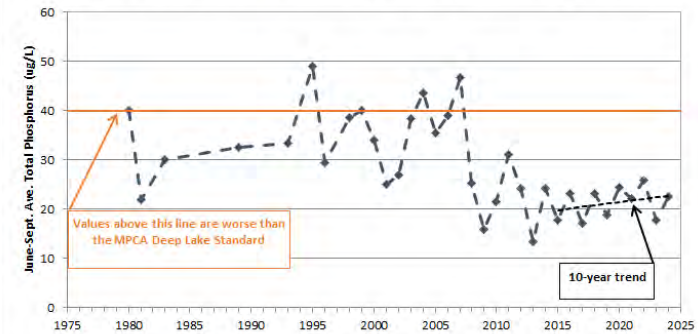


Figure 2C. Orchard Lake June-Sept. Average Total Phosphorus



Parameter	MPCA Standard	BDWMO Goal	2015-2024 June-Sept Average
Secchi Disc Transparency (m)	1.4	2.5	2.3*
Chlorophyll *a* (ug/L)	12	6.2	6.8
Total Phosphorus (ug/L)	40	21	21.3

* Secchi disc data exhibits a declining trend that is statistically significant at a 90% confidence level.

Summer Averages of Water Quality

The 2024 summer (June-September) averages of water quality parameters were calculated for Orchard Lake and plotted with previous years' summer averages (Figure 2).

Orchard Lake's water quality remained good in 2024, and summer averages of total phosphorus (23µg/L), chlorophyll-*a* (11 µg/L), and Secchi disc transparency (1.9 meters [6.2 feet]) were all better than deep lake water quality standards. Orchard Lake monitoring activities in 2024 included management level monitoring as well as routine CAMP level monitoring. Summer average phosphorus concentrations over the past 10 years show annual variability and fluctuate around 20 ug/L, well below the standard of 40 ug/L for deep lakes.

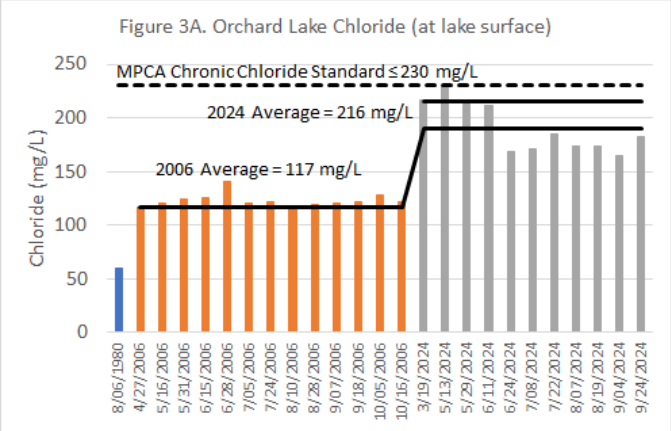
While the 2024 summer average of phosphorus was comparable to or better than other recent years, the summer averages of chlorophyll-*a* and Secchi disc transparency were the worst observed since 2007. Summer average chlorophyll-a data show no significant trend over the past 10-years and the poor (relatively) values observed in 2024 may be an aberration.

Summer average Secchi disc transparency data exhibit a worsening trend over the 2015-2024 period. The trend is mild but is statistically significant at the 90% confidence level. No statistically significant trends were observed in the summer averages of chlorophyll-*a* or total phosphorus. The lack of trends in the chlorophyll-*a* and total phosphorus data suggest that factors might be affecting changes in transparency that are not directly related to changes in the lake's trophic state (e.g., the presence of dissolved organic carbon, subjectivity in reading the Secchi disc). Continued regular monitoring and trend analysis are recommended to assess whether the trend is indicative of a change in Orchard Lake's trophic state.

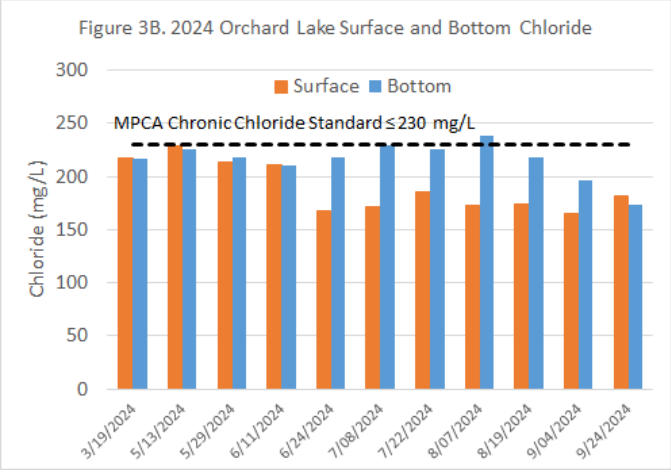
With the addition of the 2024 data, summer averages of water quality in Orchard Lake have been consistently better than the applicable state water quality standards for the last seventeen years (2008-2024). The BDWMO will continue to monitor the water quality of Orchard Lake in in 2025 via CAMP monitoring and management level monitoring scheduled for 2029.

Chlorides

Chloride concentrations in area lakes have increased since the early 1990s due to increased use of road salt in winter. Because high chloride concentrations can harm fish and plant life, the MPCA has established maximum chloride standards. A lake is considered impaired if two or more measurements exceed the chronic standard (230 mg/L) within a 3-year period or if one measurement exceeds the maximum standard (860 mg/L).



Chloride was measured near lake surface and at the lake bottom in Orchard Lake in 2024, and previously in 2006; one sample was taken in 1980. Data from the lake surface illustrates an increase in average chloride concentrations over that time (Figure 3A). One chloride sample exceeded the chronic standard in 2024, although the average lake bottom chloride concentration of 216 mg/L was below the chronic standard.



Surface and bottom chloride concentrations in 2024 were similar through early June and again in September. Bottom chloride samples were consistently higher than surface samples in the interim, during which time Orchard Lake was thermally stratified (Figure 3B).

Phytoplankton (Algae)

Phytoplankton, or algae, are small aquatic plants naturally present in lakes. Phytoplankton derive energy from the sun through photosynthesis and provide food for several types of aquatic organisms, including zooplankton (microscopic animals), which are eaten by fish. Excess phytoplankton can reduce water clarity while low numbers of phytoplankton can negatively impact zooplankton, and consequently, fish populations.

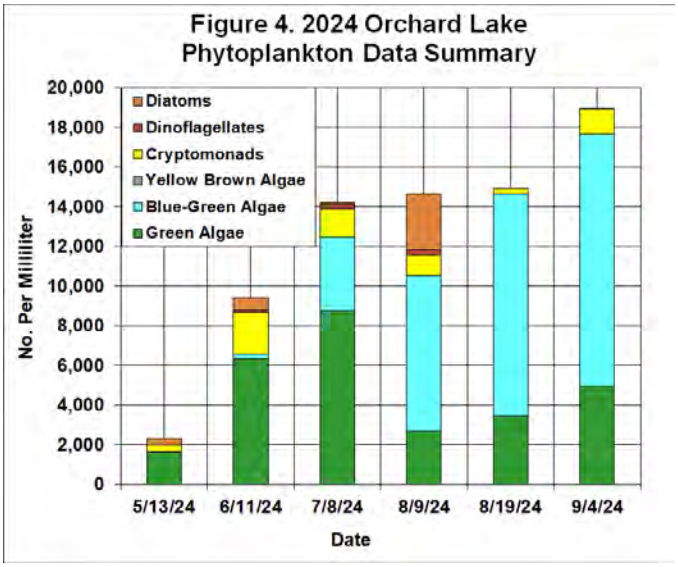


Figure 4 summarizes the number and major groups of phytoplankton observed in Orchard Lake in 2024. Phytoplankton numbers were very low in May. The numbers increased from June through September but remained low to moderate, generally reflecting the lake's good water quality.

Green algae were dominant from may until early July. Green algae are a good source of food for zooplankton and are indicative of healthy aquatic ecosystems. Blue-green algae, diatoms, and cryptomonads were also present in smaller numbers.

Blue-green algae numbers exceeded all other algae types during the August and September sampling events. Blue-green algae thrive in warm, nutrient-rich water and can grow rapidly under certain conditions, causing "blooms." Blue-green algae can produce algal toxins that may be harmful to humans and animals and are also a poor-quality food for zooplankton.

Harmful Algal Blooms

During algal blooms, some blue-green algae (cyanobacteria) can produce toxins that can be harmful to humans and animals if ingested. Such algal blooms can occur rapidly under specific aquatic conditions (e.g., high temperatures). Not all blue-green algae produce toxins and laboratory testing is necessary to determine the presence and concentration of algal toxins in lake water.

BDWMO residents should look to their respective Cities for information and communications regarding harmful algal blooms and associated public health guidance (such as beach closures or bodily contact warnings). Additional information is available from the MPCA and MDH.

Macrophytes (Aquatic Plants)

The BDWMO assesses the health of a lake's submerged aquatic plant community based on the number of species present and the "quality" of the species as measured by the Floristic Quality Index (FQI). The FQI considers the number of different species and the sensitivity of each species to disturbance (referred to as a "C-value"). Higher C-values and FQI indicate better lake health. The BDWMO established goals for the number of native species and FQI of strategic waterbodies.

Parameter	BDWMO Goal	2024 Results
Floristic Quality Index (submergent zone)	≥17.8	TBD
Native Species (submergent zone)	≥11	19

Nineteen aquatic plant species were identified in the submergent zone in 2024, including 17 native species and two non-native aquatic invasive species. The 2024 survey found aquatic plants growing in depths of up to 16 feet.

Aquatic Invasive Species

Curly-leaf pondweed (CLP) was found at 41% of sampling points in May, 2024, following a CLP treatment of about 15 acres performed on April 23. In July, 2025, CLP was observed at 1% of sampling points. CLP often out-competes native vegetation early in the growing season and dies off in early to mid-summer, which creates a sudden loss of habitat and releases nutrients into the water that can produce algal blooms and create turbid water conditions. The presence of CLP in Orchard Lake can impact the lake's water quality. This impact has been mitigated through regular CLP treatments performed by Lakeville (from 20XX through 2024).

Eurasian watermilfoil (EWM) can create dense, nuisance growths at the lake surface, and have a negative impact on recreational activities and may also crowd out native plant species. EWM was found at 23% of sampling points in May, 2024, and 52% of sampling locations in July, 2024. The City of Lakeville periodically treats EWM in Orchard Lake but no treatments were performed in 2024.

Native Species

Of the 17 native species present in Orchard Lake, coontail and flatstem pondweed were the most dominant and were observed at 36% and 50% of sampling stations, respectively .

Coontail (*Ceratophyllum demersum*)

Flatstem Pondweed (*Potamogeton zosteriformis*)

Fisheries

A standard fish survey was most recently conducted on Orchard Lake in 2022 (and previously in 2012). Targeted surveys for were performed annually from 2015 through 2017 for gamefish and gamefish prey. The Minnesota Department of Natural Resources stocks Orchard Lake biennially with tiger muskellunge. Previous walleye stocking efforts have been unsuccessful and were discontinued in 2015.

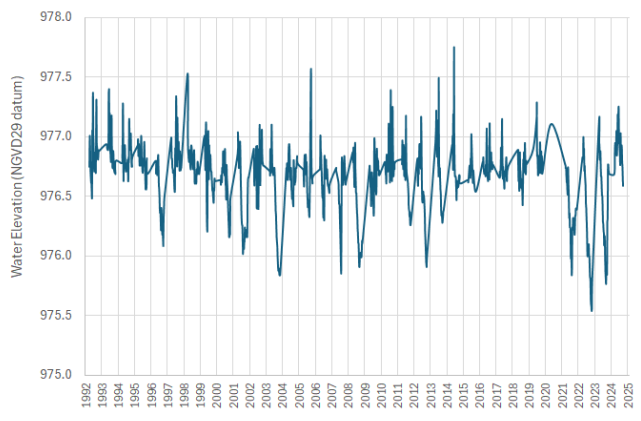
The 2022 survey found bluegill sunfish to be the dominant fish species; hybrid, pumpkinseed, and green sunfish were also present in moderate numbers. Largemouth bass, which prey on bluegill, were the most prevalent game fish. Northern pike, tiger muskellunge, and walleye were also observed in the 2022 survey. Other species observed in the 2022 survey include black and yellow bullhead, yellow perch, and black crappie.

Orchard Lake is listed by the Minnesota Pollution Control Agency as impaired due to concentrations of mercury in fish tissue. To mitigate this risk, the Minnesota Department of Health as published Fish Consumption Guidance.

Water Levels

Orchard Lake drains towards Murphy-Hanrahan Park Reserve over a weir at an elevation of approximately 976.6 feet (NGVD29). Water elevations have been measured dating back to 1992, although there are some gaps in the record (Figure 5). Orchard Lake water levels have been relatively stable, fluctuating within 2.5 feet from a low of about 975.5 feet in late 2022 to a high of about 977.8 feet in 2014.

Figure 5. Orchard Lake Water Levels



Water levels in Orchard Lake over the past 15 years reflect the local climatic record. Water levels remained high during most of the 2010-2019 decade (the wettest decade on record) before decreasing to the lowest recorded elevations during a period of drought that occurred from approximately 2020 through 2023.

Management Recommendations

Orchard Lake continues to demonstrate excellent water quality that meets applicable state standards for transparency, chlorophyll-*a*, and total phosphorus. Based on the 2024 monitoring results, Barr Engineering Co. (Barr) staff recommend that the BDWMO and/or the City perform the following management actions:

- Continue CAMP water quality monitoring annually.
- Continue to monitor trends to determine if the worsening transparency represents a change in Orchard Lake's trophic state.
- Perform BDWMO management level monitoring in 2029.
- Continue aquatic vegetation monitoring and curlyleaf pondweed management.

Ways to Get Involved

Because runoff from stormwater can be generated anywhere, anyone in the watershed can help protect ponds and lakes through their own actions!

The Dakota County Soil and Water Conservation District also offers the Landscaping for Clean Water program which includes free educational classes, garden design courses, natural shoreline and garden maintenance workshops, and grants for homeowners that install a raingarden, native garden, or native shoreline planting.

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