



CLFLWD
WATERSHED DISTRICT

EOR water
ecology
community



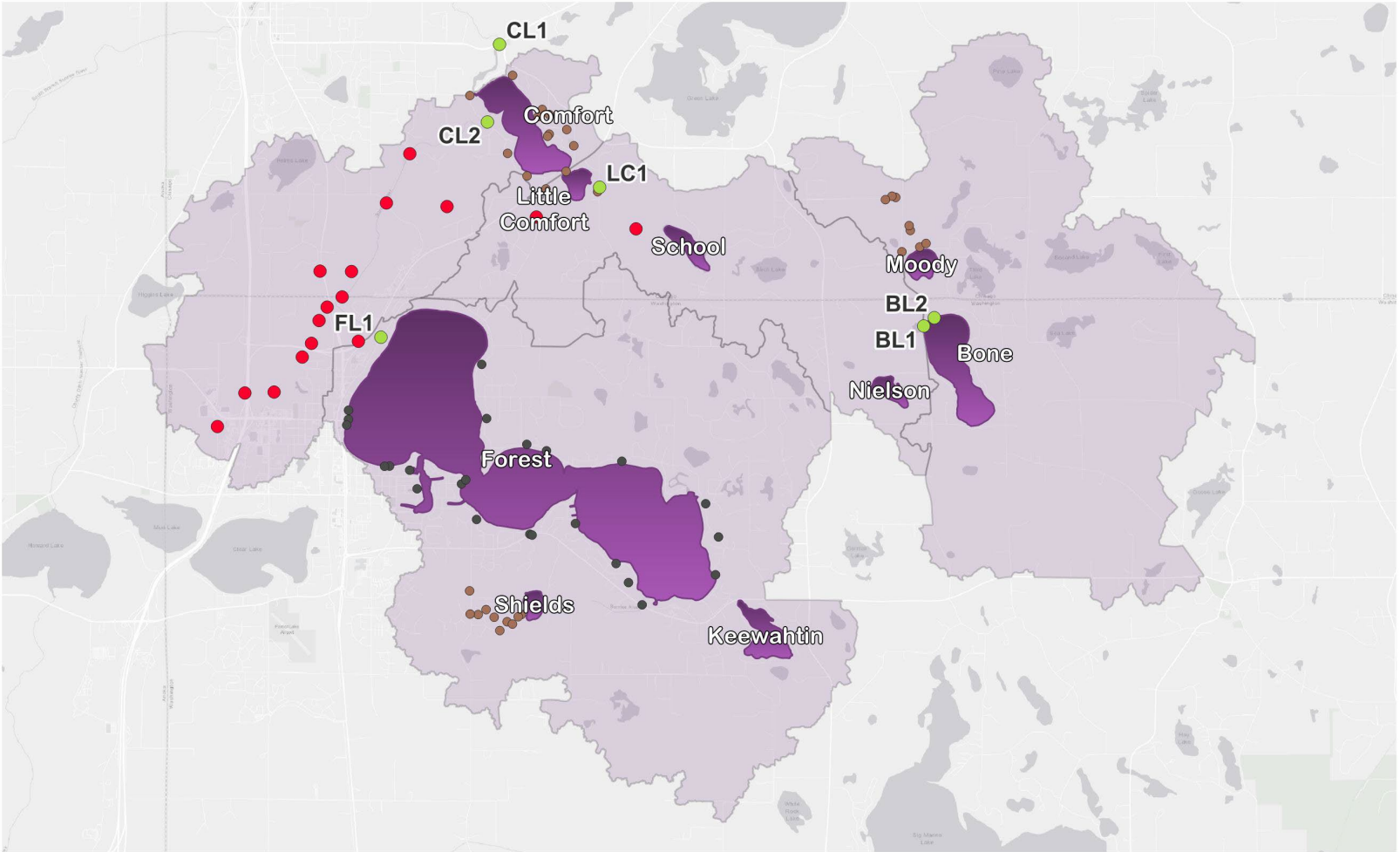
03.26.2026 Board Meeting
2025 Monitoring Report



- **Introduction to 2025 Monitoring**
- **2025 Climate trends**
- **Lake Management Districts**
 - **Lakes**
 - **Streams**
 - **Diagnostic Monitoring**
 - **Recommendations**
- **Conclusions**

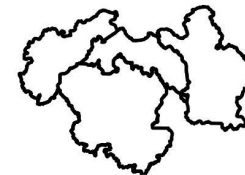
Introduction to Monitoring

Date: 2026-03-13T14:34:21.722 Author: All Stone Layout: RM_2022_CLFLWD_Monitoring
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2025 Monitoring Locations

- | | |
|---------------------|----------------------------|
| ● Monitored Streams | ● CAT Monitoring Locations |
| ● Legacy | ● DIY Monitoring Locations |
| ● Diagnostic | ■ Monitored Lakes |

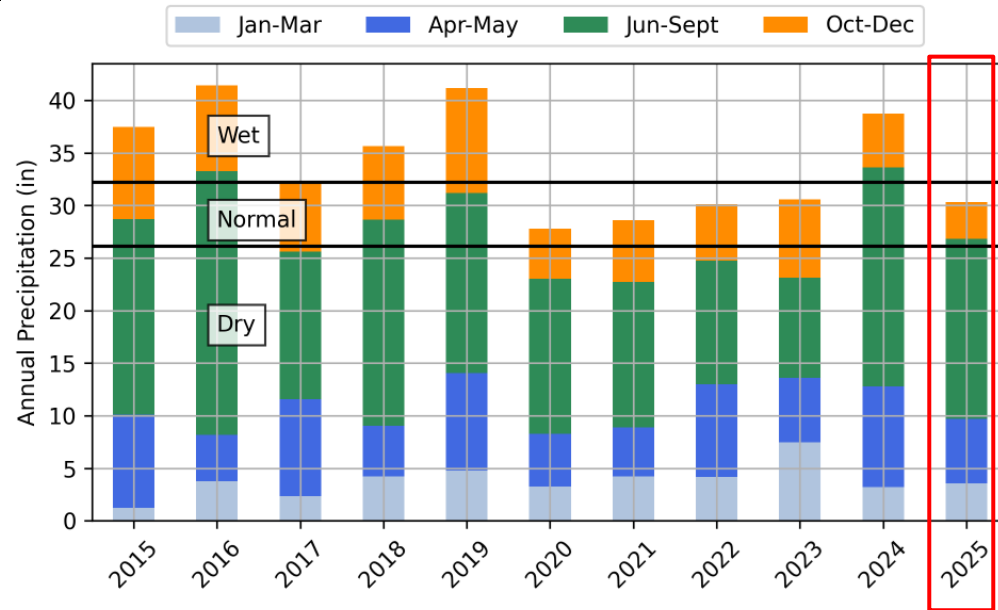


CLFLWD 2025 Water Monitoring

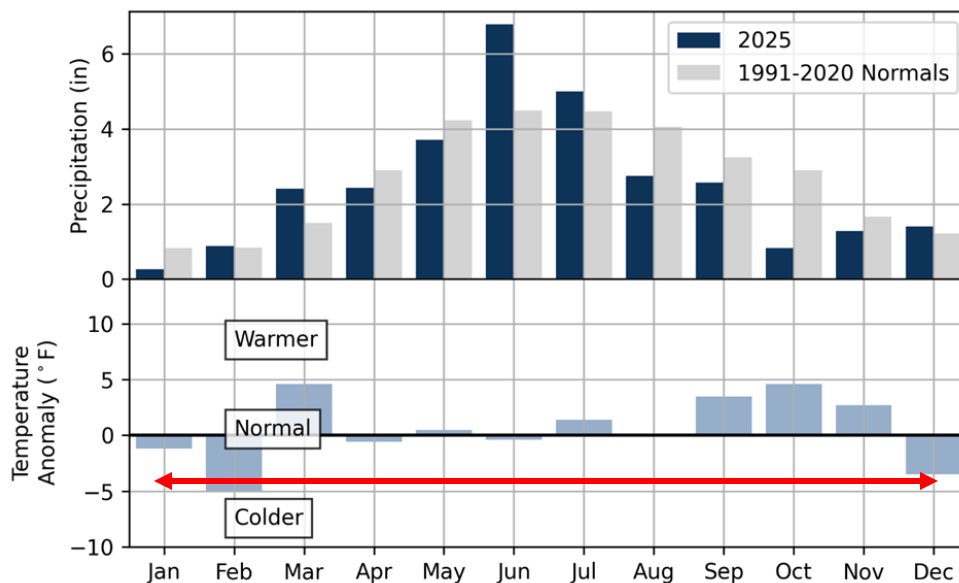
Monitoring Locations



2025 Climate Trends

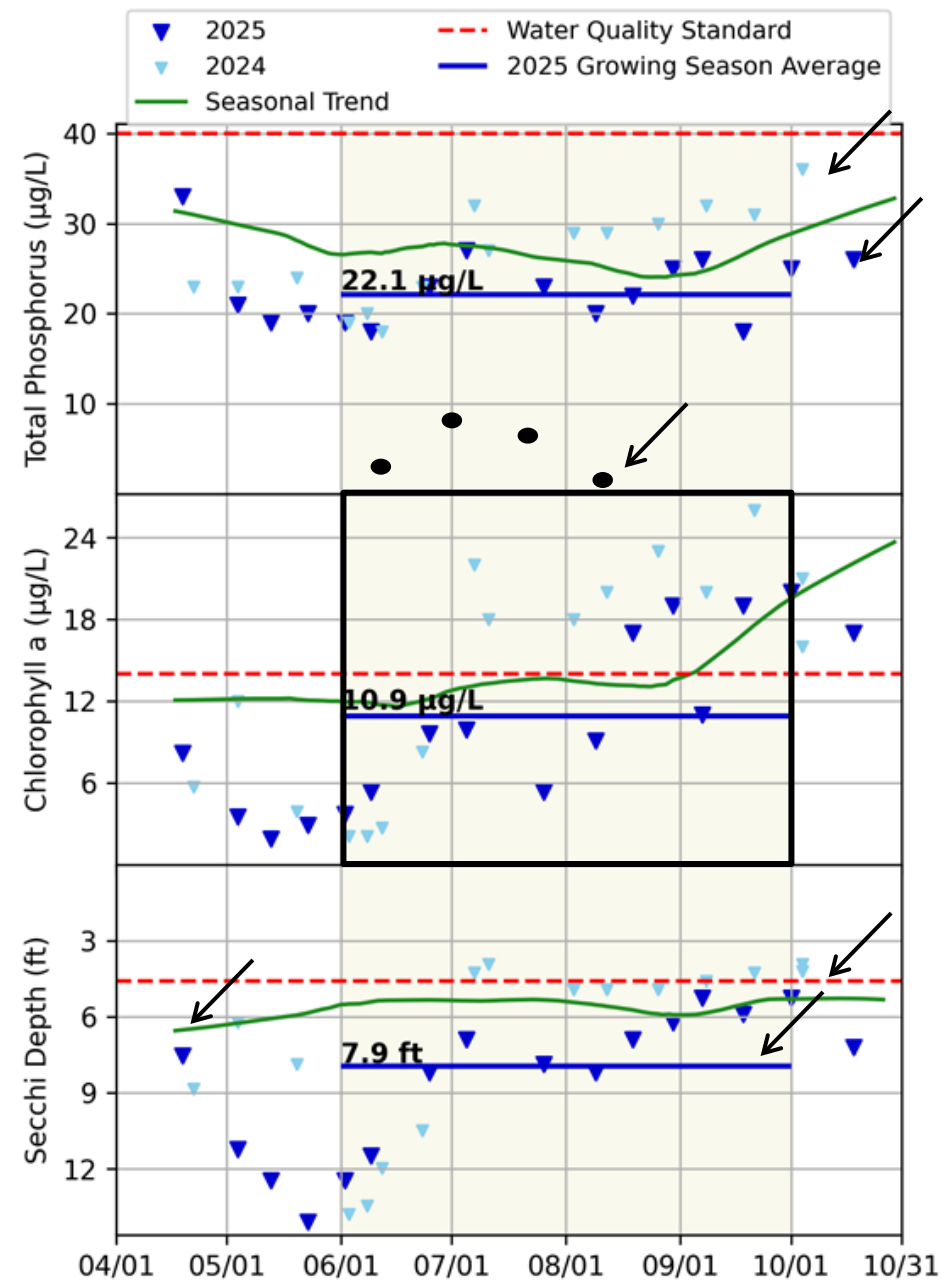


- 2025 represents a normal precipitation year following a wet year in 2024 and several years of generally normal to dry conditions, 2020-2023.



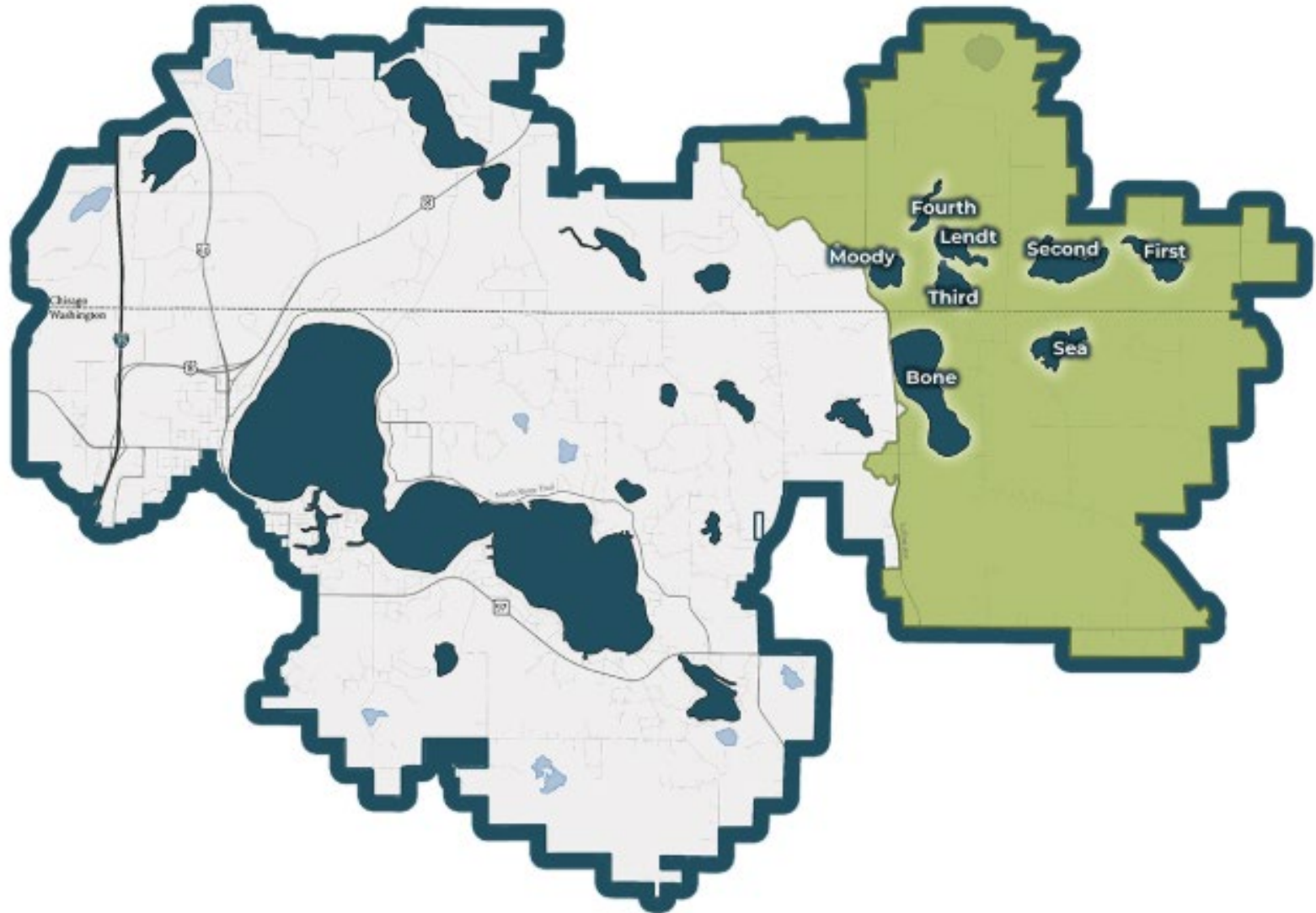
- The early summer months were wet and dry fall
- Winter through spring were warm, leading into a warm fall

Data Explained

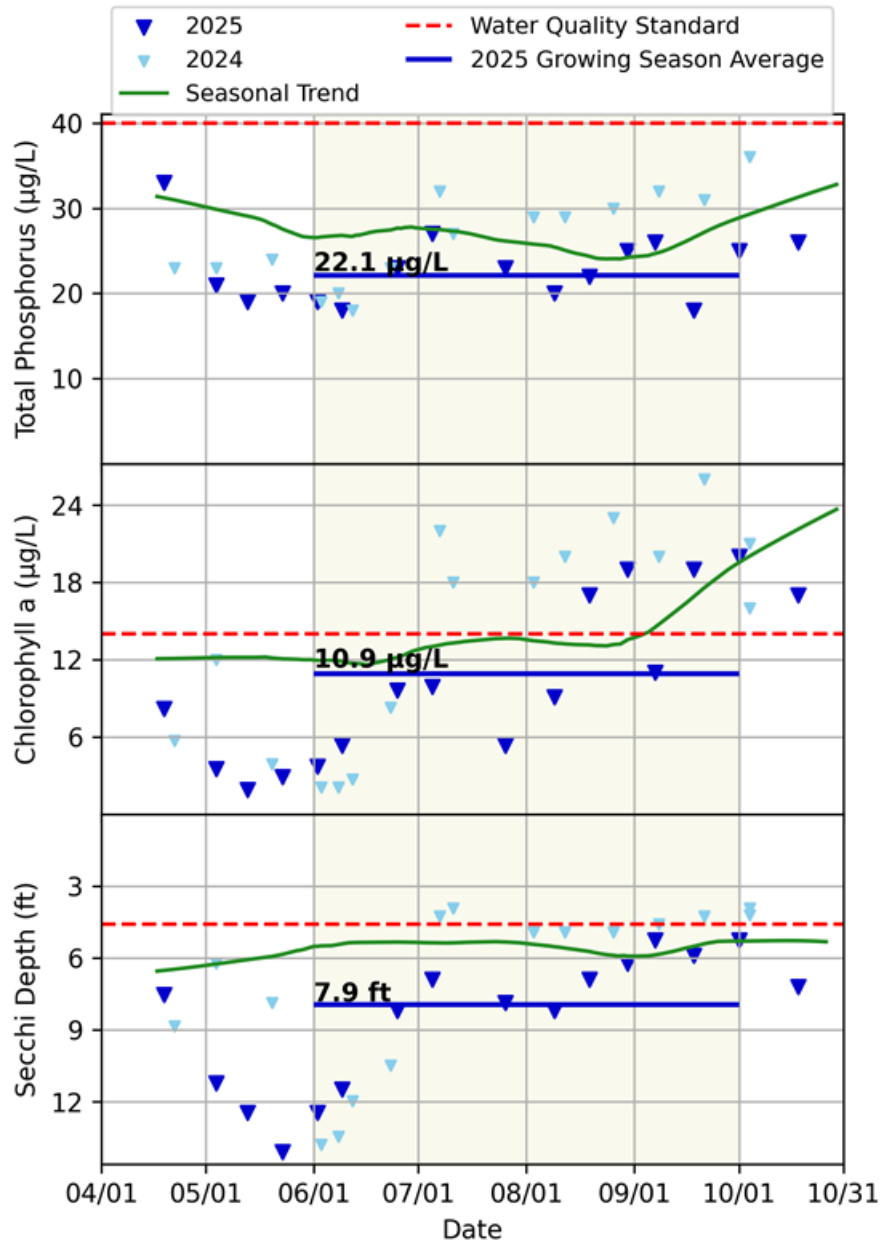


- Each dot represents one sample date. Navy triangles were collected from surface water in 2025
- Light blue triangles were collected in 2024
- Black dots were collected from bottom water and correspond to the secondary axis.
- The growing season (June-September) is shaded in tan.
- The navy line represents the 2025 seasonal average
- The green line represents the 10-year seasonal average.
- The red line represents the State water quality standard for each parameter.

Bone LMD



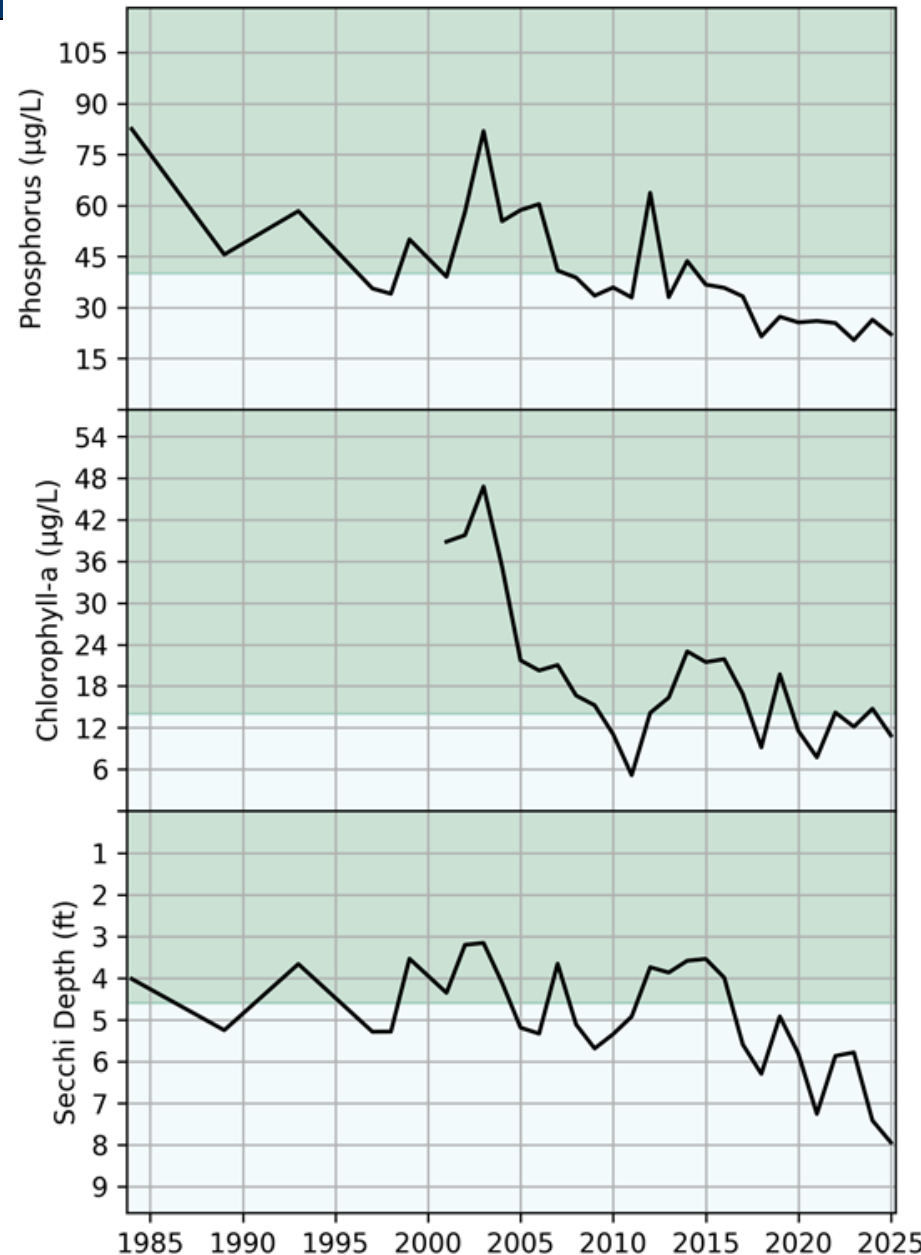
Bone 2025 Lake Water Quality



- TP, Chl-a, Secchi depth were meeting the standard.
- Water Quality improved from 2024

Bone Lake Trends

- Improving trends
- TP and Chl-a and Secchi has improved from 2024
- The 5 year WQ averages are meeting state standards
- The 5 year TP average is meeting District goals
 - Secchi is within 0.1 ft of meeting the goal
- The 5 year WQ average is better than the 10 year WQ average for all of the water quality parameters.

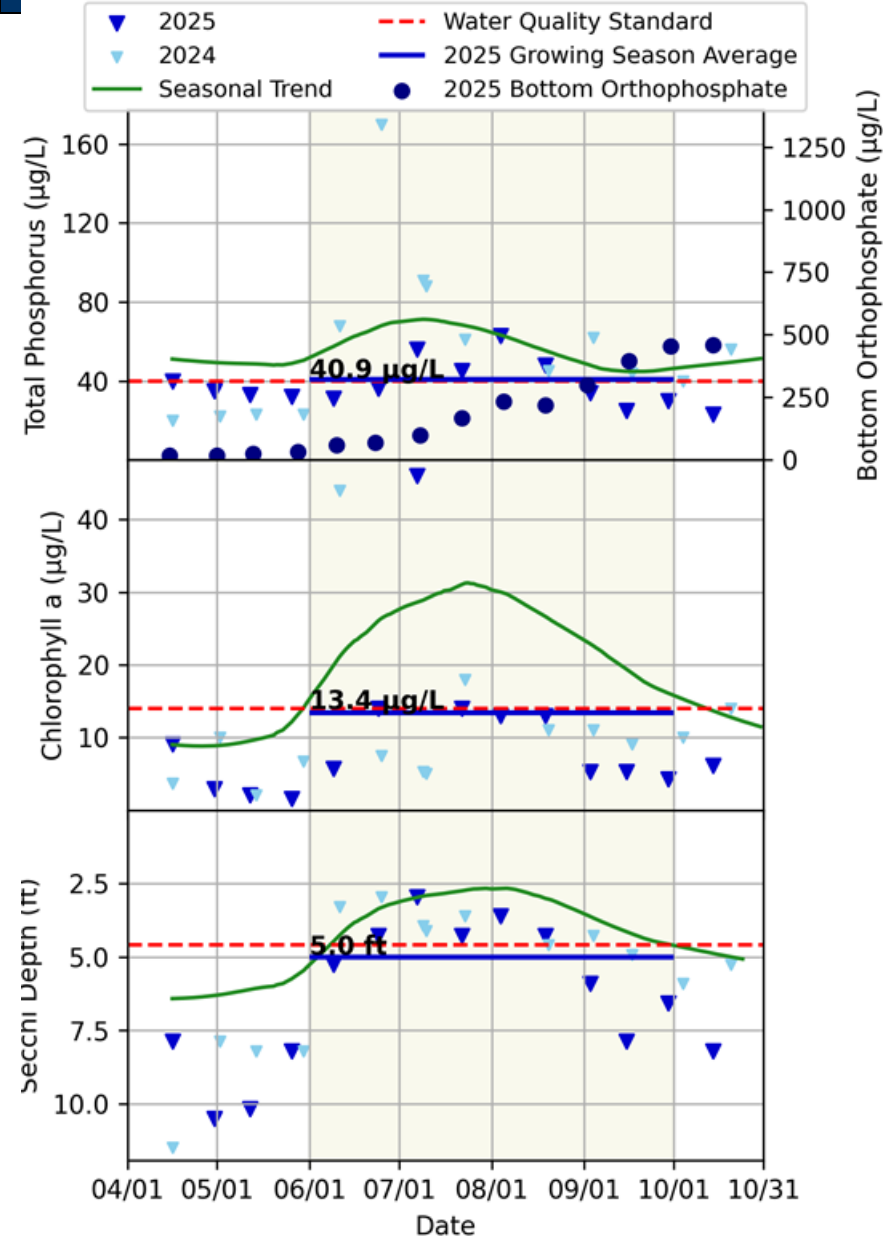


2025 Bone Lake Stream Water Quality

Monitoring Site		Volume (ac-ft)	Total Phosphorus		Total Suspended Solids	
			FWMC ($\mu\text{g/L}$)	Load (lbs.)	FWMC (mg/L)	Load (lbs.)
Central Region Reference FWMC			<100		< 30	
Long-term Sites						
Bone Lake North Inlet	BL1*	242	119	79		
Bone Lake Outlet	BL2	906	209	546	61	158,670

- The TP and TSS FWMC exceeded the standard.
- Loads at BL inlet are less than 2024 and similar at the outlet

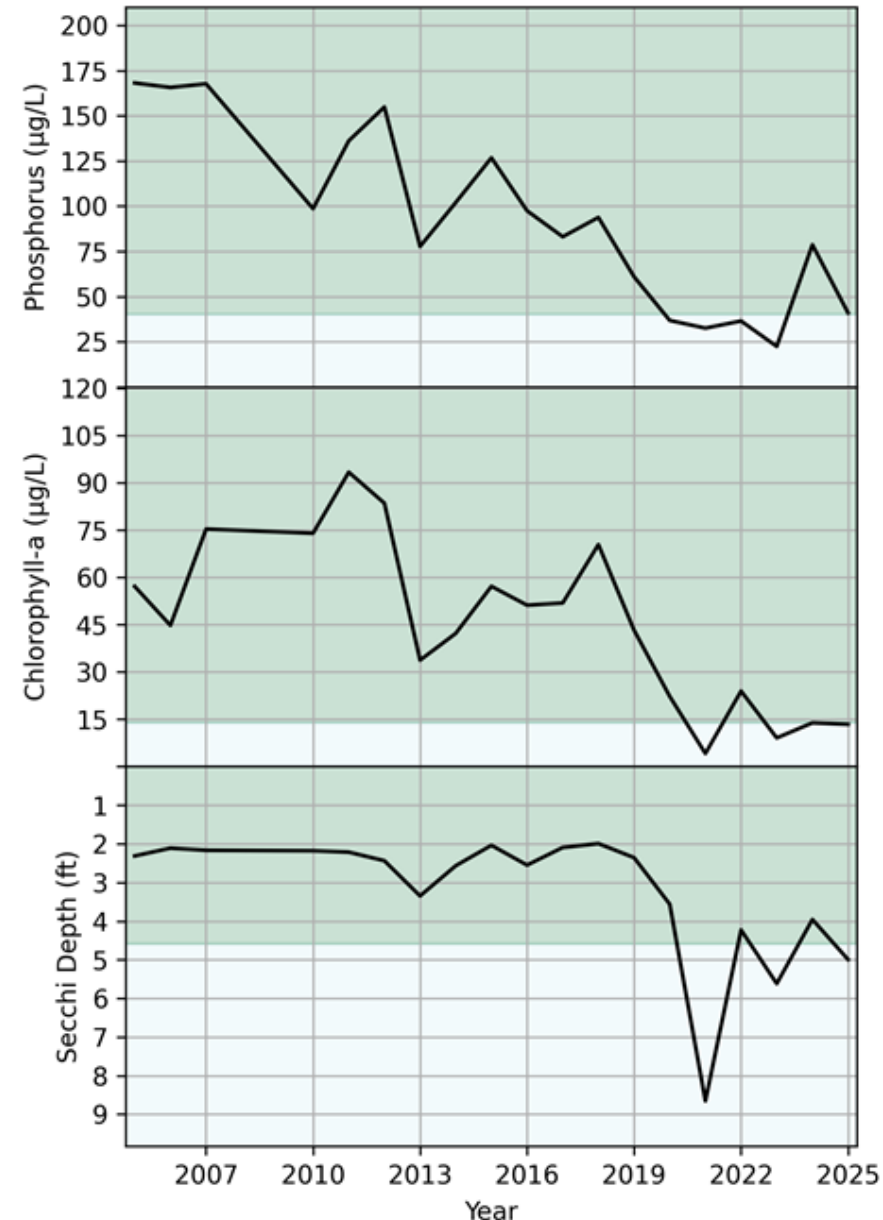
Moody 2025 Lake Water Quality



- TP is exceeding the standard by less than 1 µg/L
- Chl-a and Secchi meeting the standard throughout the growing season.
- Moody Lake alum treatments continue to work.
 - However, hypolimnion orthoP concentrations have increased and are similar to 2024

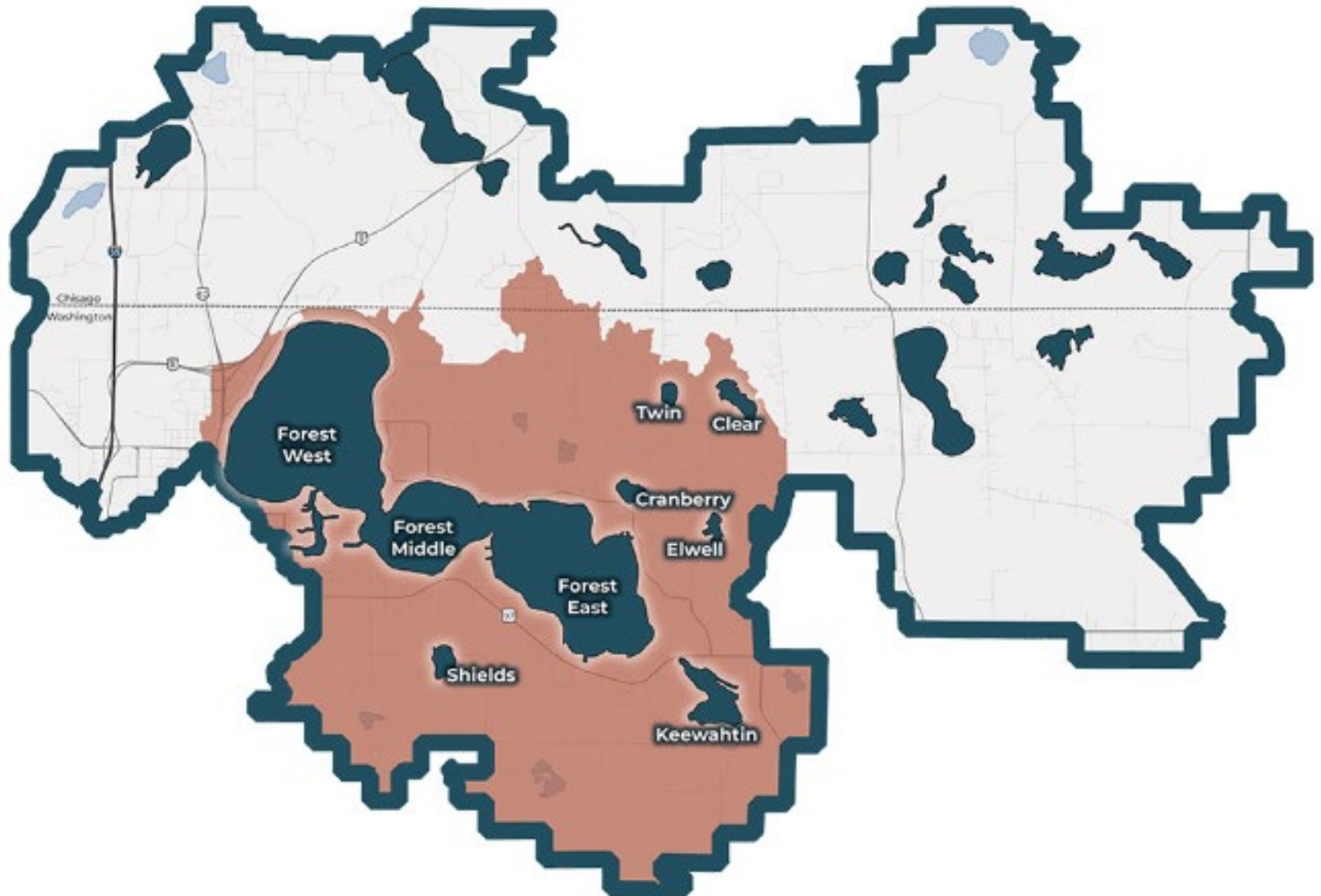
Moody Lake Trends

- Long term trends are significantly improving
- The 5 year averages water quality improved compared to the 10 year averages
- 5 year water quality averages for Chl-a and Secchi depth are meeting state standards
 - TP is very close to meeting the standards

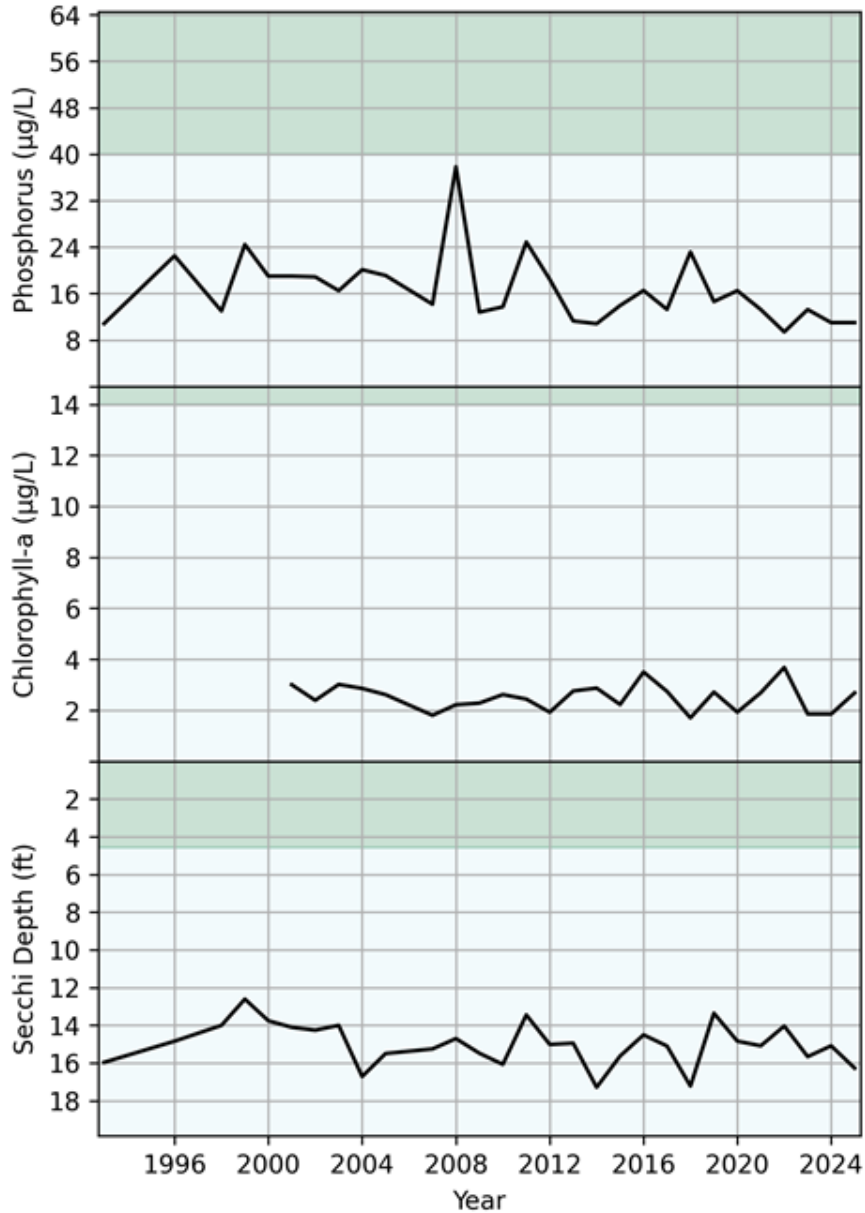


- **Continue monitoring the major lakes of the District using the Met Council CAMP Program. Rotate monitoring of the smaller lakes of the district as per the 10-year monitoring plan.**
- **Collect bottom water samples on Moody Lake to further evaluate internal P loading**
- **Collect follow up sediment cores for Moody Lake alum treatment to evaluate effectiveness**

Forest LMD

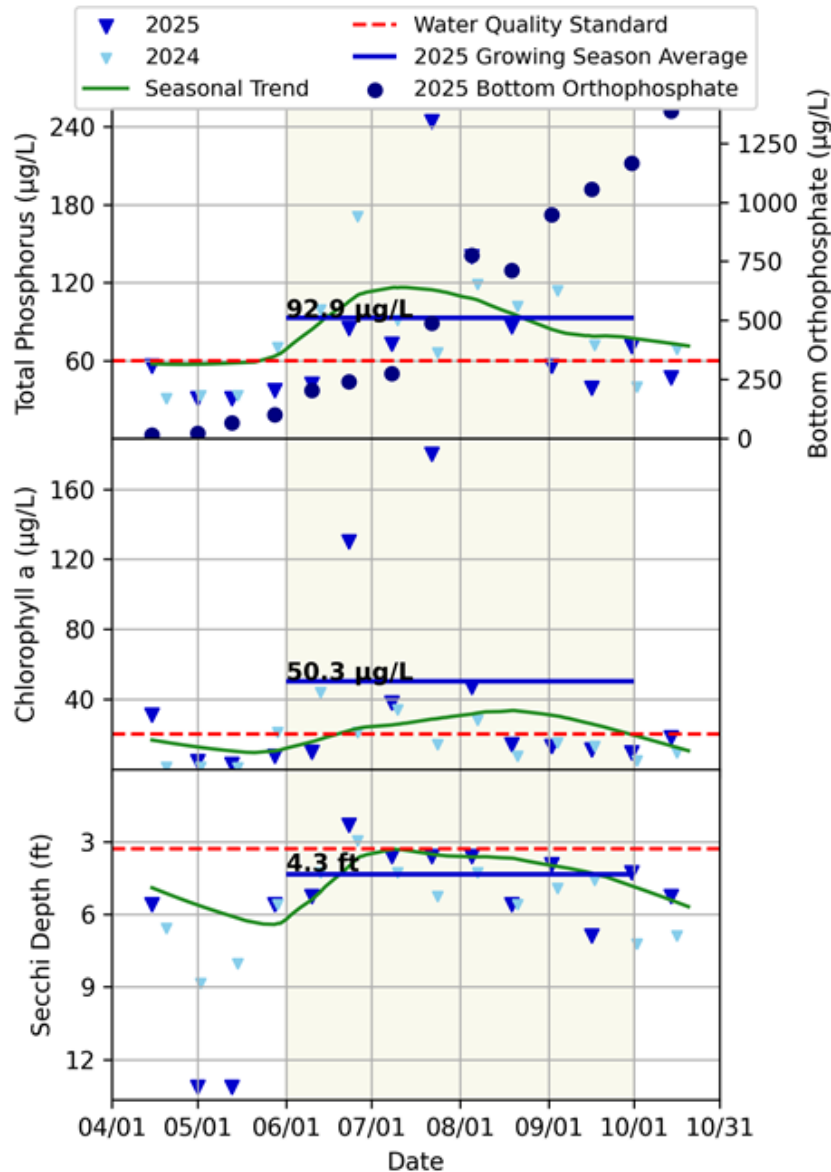


Keewahtin 2025 Lake Water Quality



- Long term trends are improving
- Historic water quality averages are meeting state standards and District goals
- The 5 year averages show improved water quality compared to the 10 year

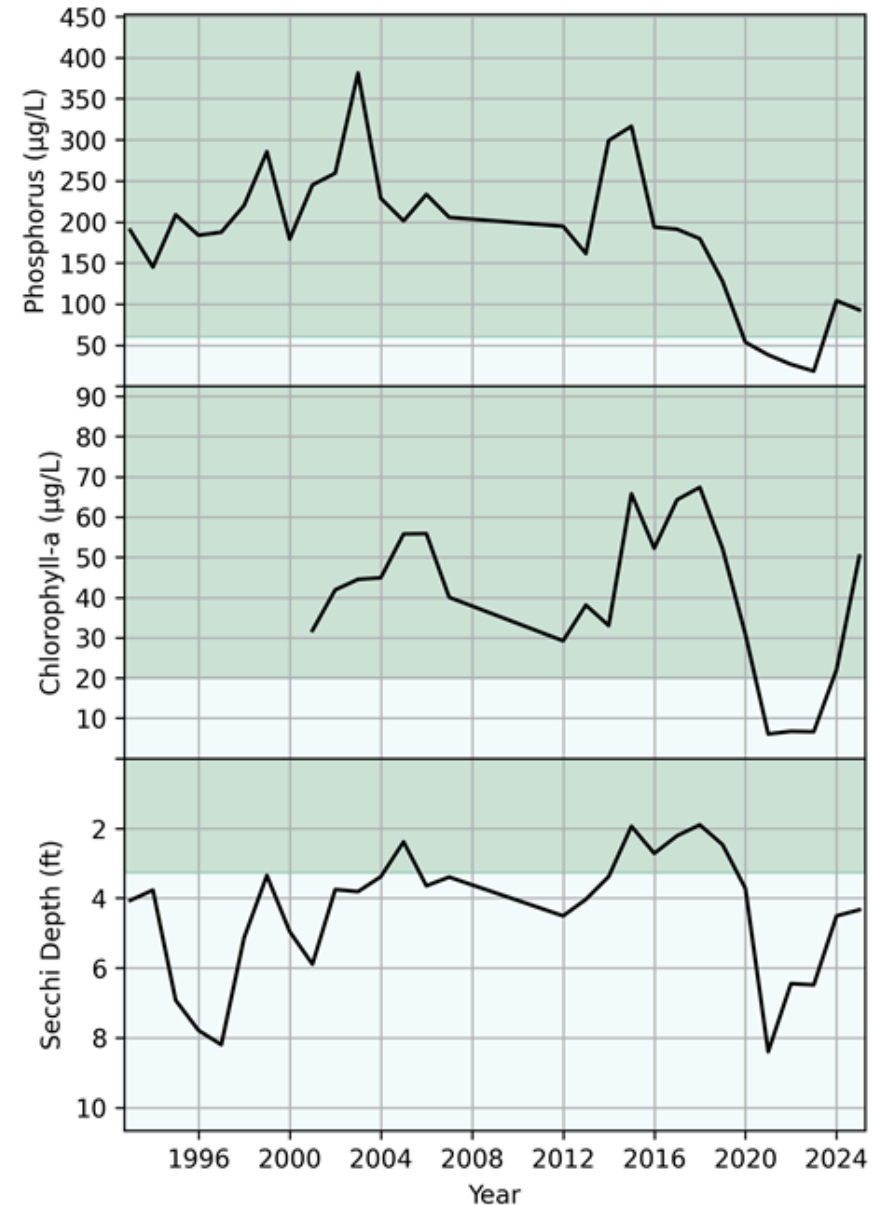
Shields 2025 Lake Water Quality EOR water ecology community



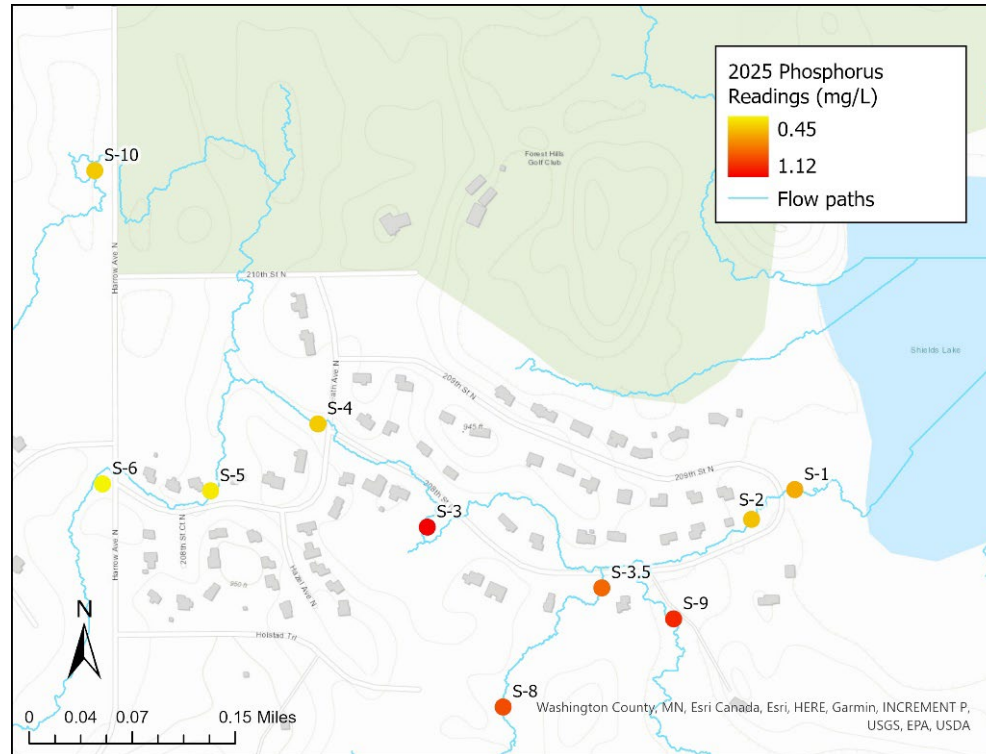
- TP and Chl-a above standard throughout the growing season
- Secchi depth is meeting the standard for the growing season
- Shields Lake alum treatment effectiveness is waning
- The bottom P concentrations have increased

Shields Lake Trends

- Still improving trend
- The 5 year water quality averages improved compared to the 10 year averages
- The 5 year water quality averages are meeting state standards and District goals
- Water Quality in 2024 and 2025 were worse than recent years but improved compared to 2019

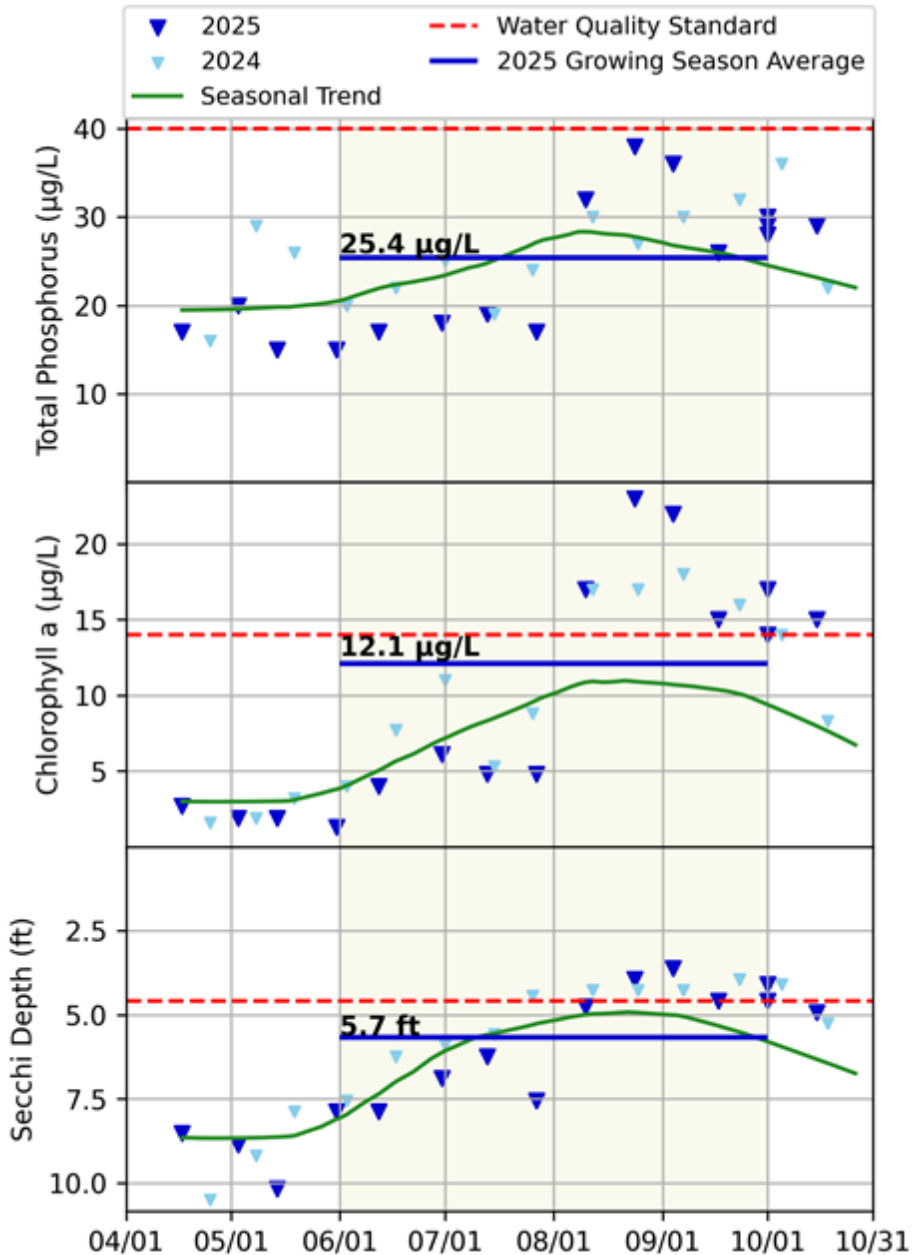


Shields Lake DIY/CAT Monitoring



- Study area added due to concerns of increased TP in Shields Lake in 2024
- Potential loading from the agriculture areas to the south southwest of Shields Lake
- Several wetlands (sites S-3, S-9) adjacent to a housing development may also be contributing

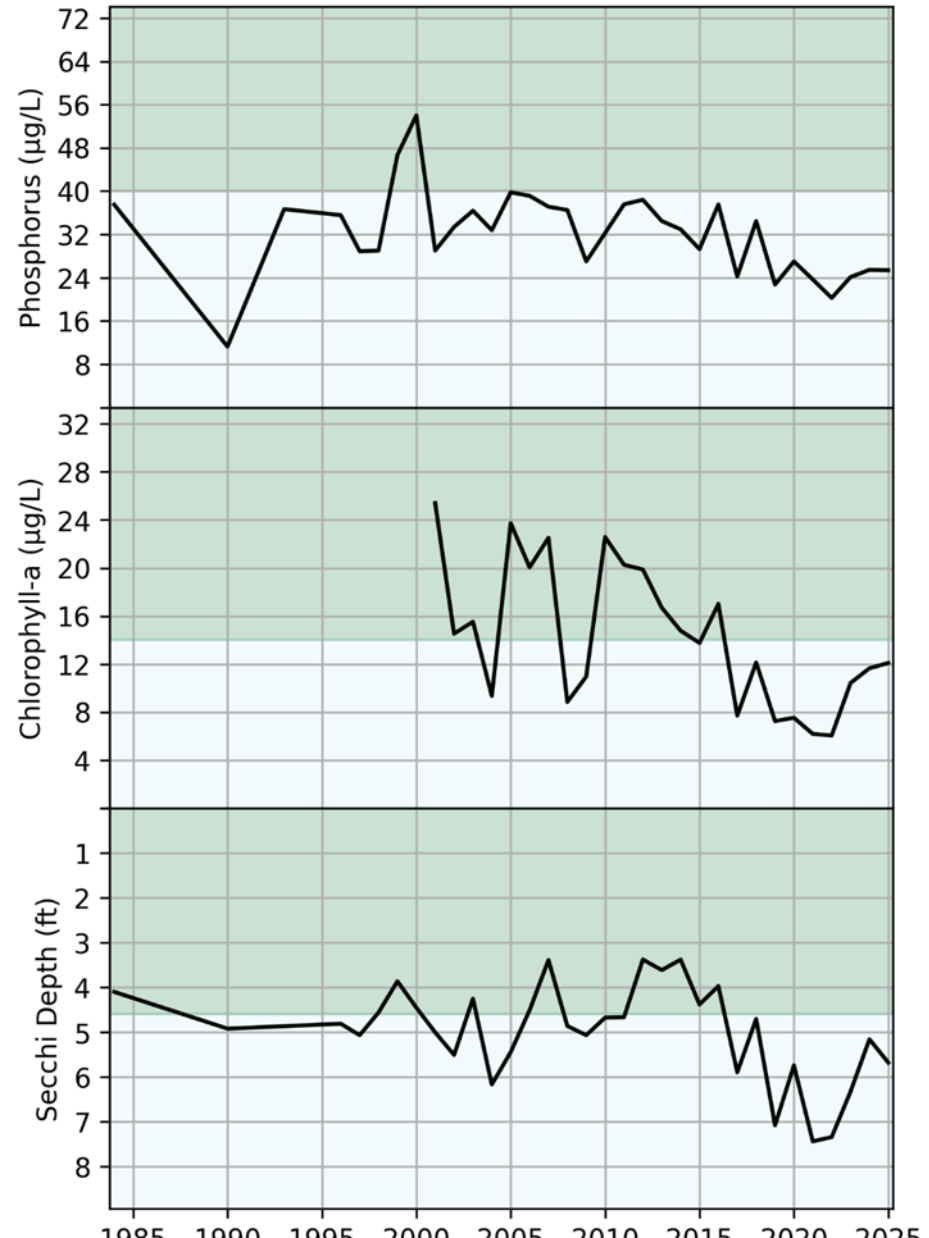
Forest Lake-West 2025 Water Quality



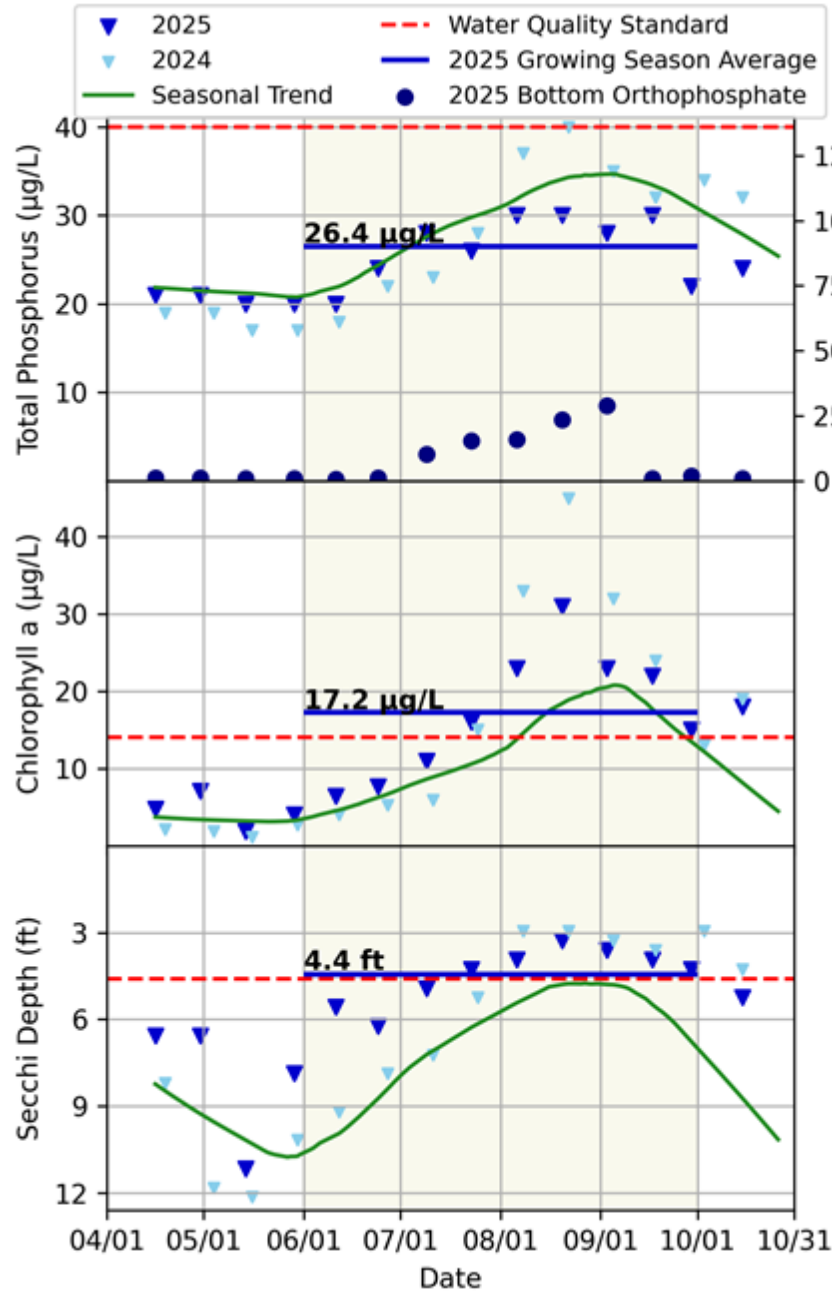
- TP, Chl-a, Secchi depth were below the standard during the monitoring period

Forest Lake-West

- Long term trends are improving
- For all of the water quality parameters, both the 10 year and 5 year average are meeting state standards and District goals
- The 5 year average is better than the 10 year average for all of the water quality parameters

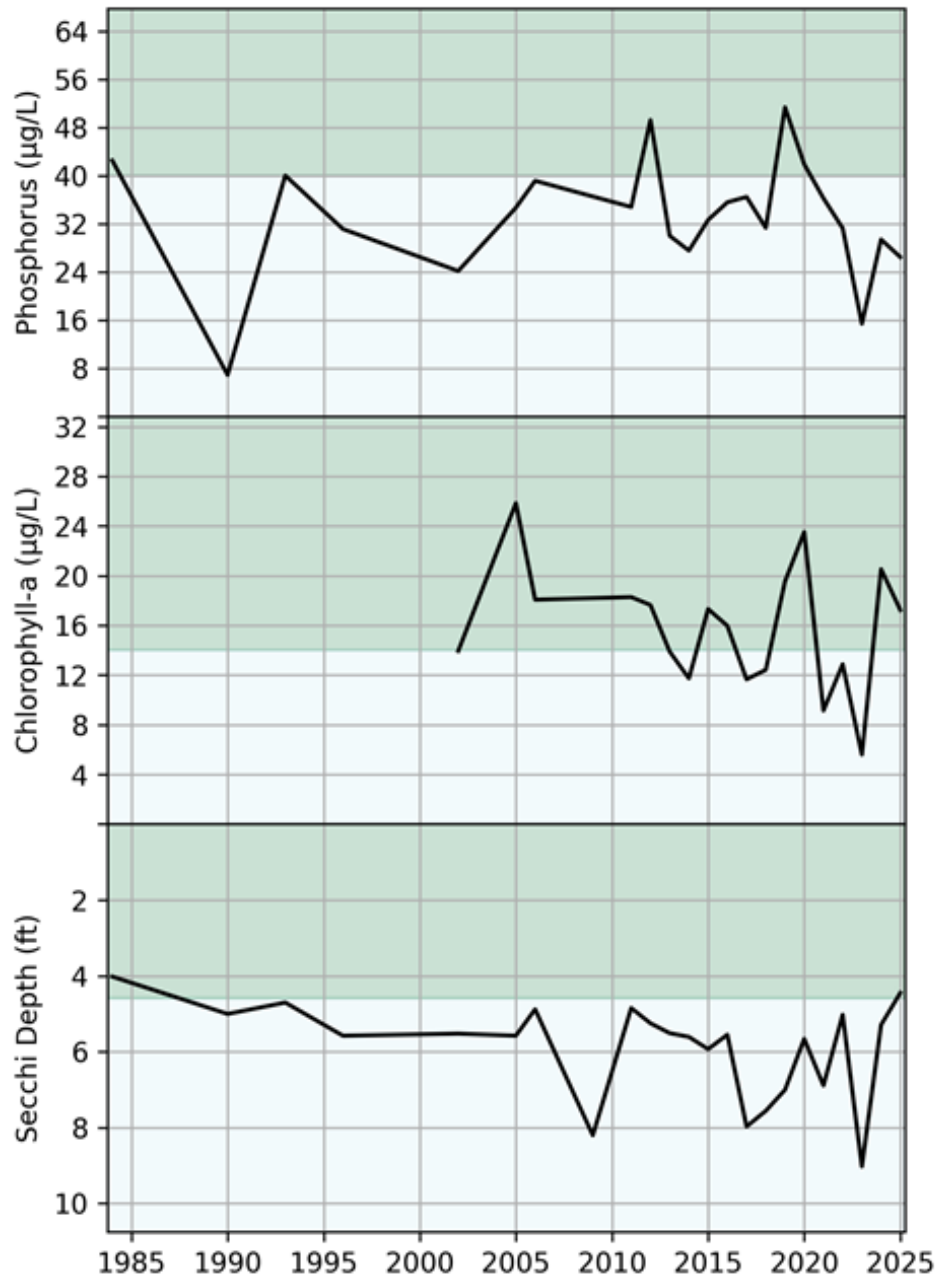


Forest Lake-Middle 2025 Water Quality



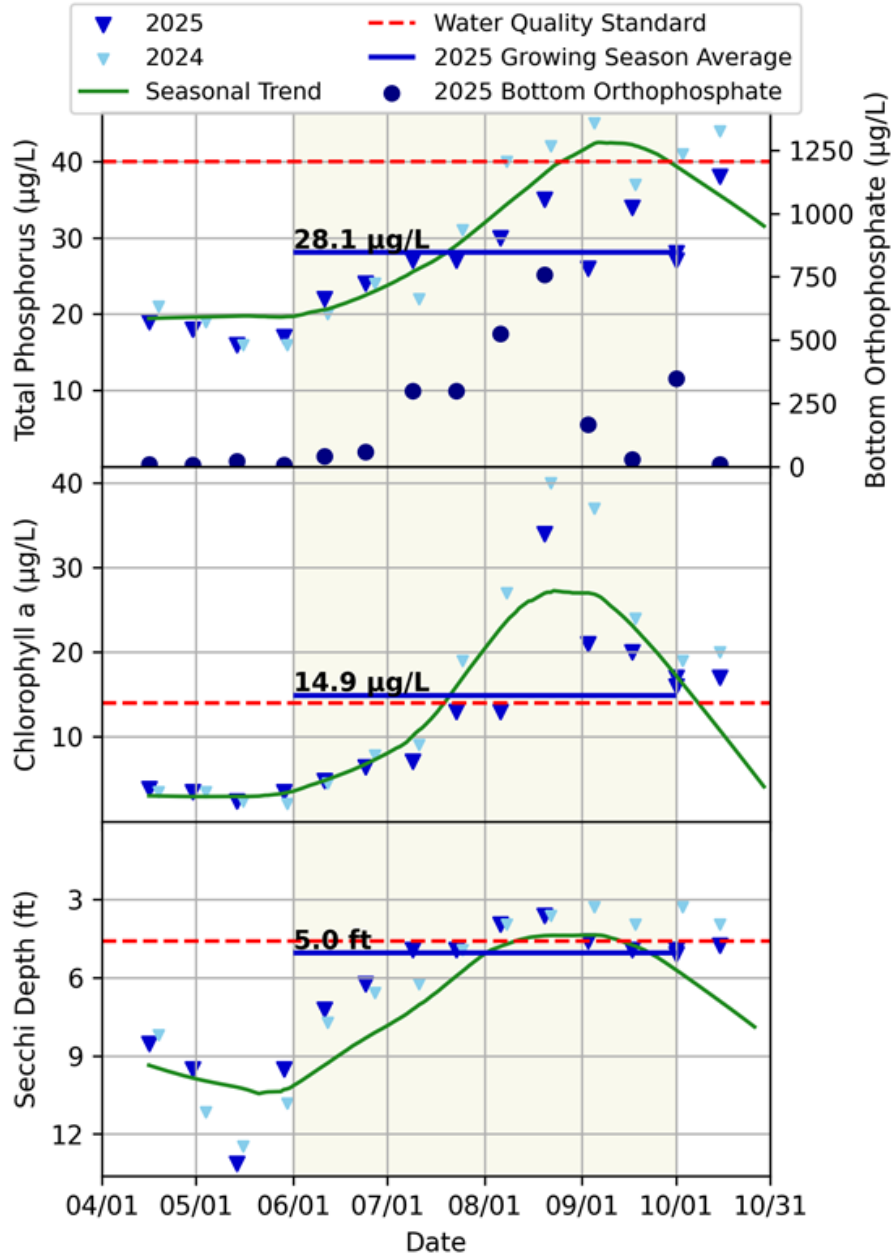
- TP is within the state standard
- Chl-a and Secchi exceeded the standard during the peak
- The first dose of the alum treatment (September 2023) which reduced the hypolimnetic orthoP concentration significantly
- The sediment cores collected in 2024 showed a 60% decrease in the orthoP release rate
- Second alum dose was applied in early October 2025

Forest Lake-Middle



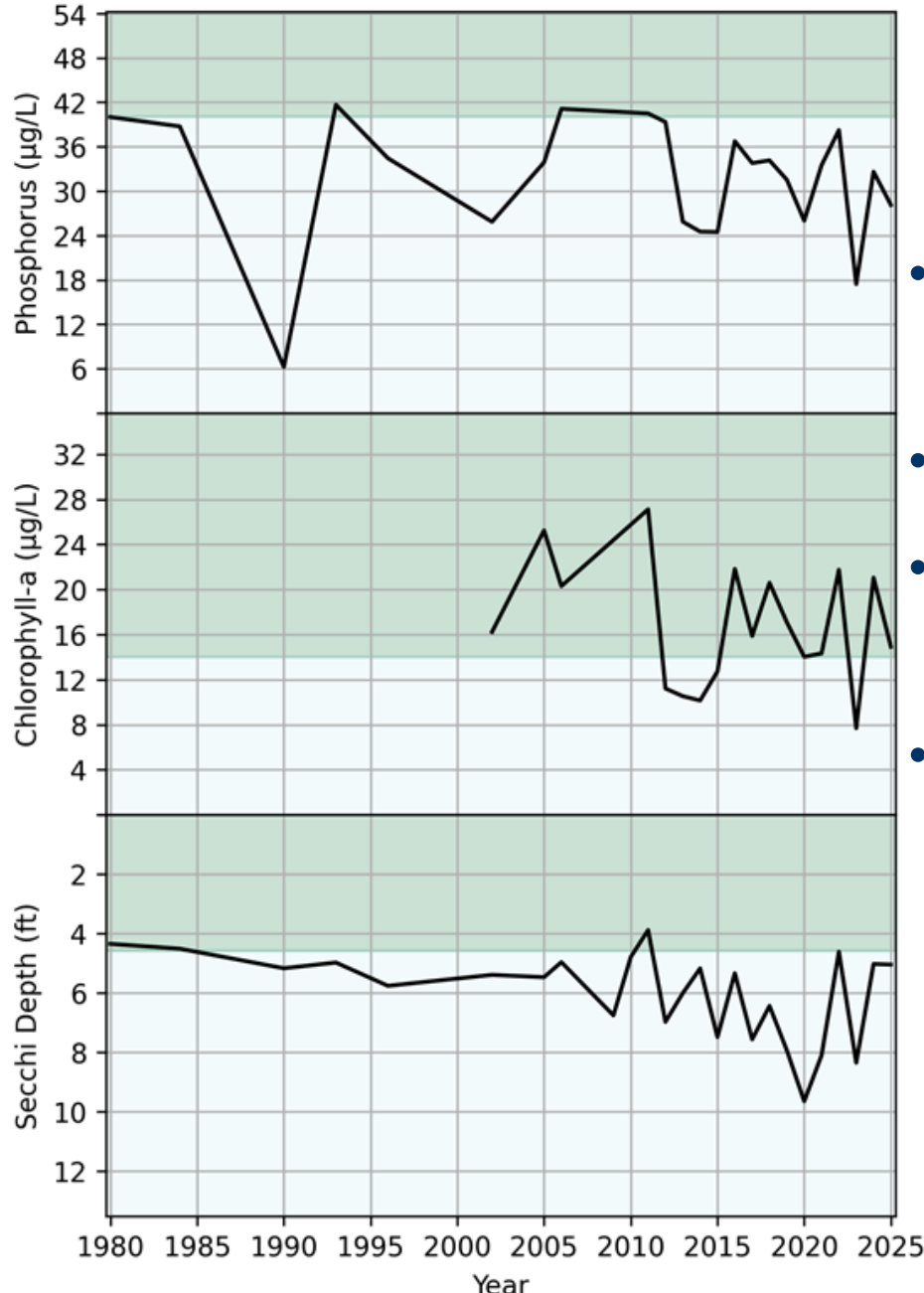
- **10-yr term trends are significantly improving for TP**
- **The 5 year average is slightly better than the 10 year average for all of the water quality parameters**
- **TP 5 year average is meeting state and District standards**
- **The final alum treatment should help improve Chl-a and Secchi depth trends**

Forest Lake-East 2025 Water Quality



- TP and Secchi depth is meeting the standard
- The Chl-a was right near the standard

Forest Lake-East



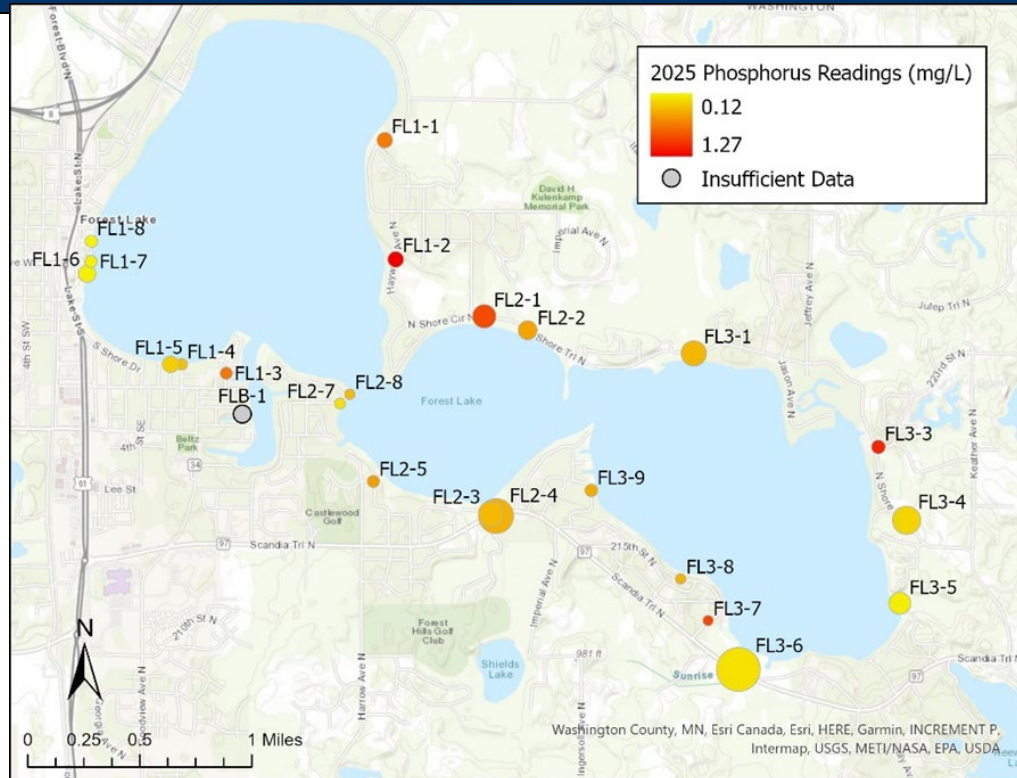
- **10-yr term trends are improving for TP and Chl-a**
- **2025 was better than 2024**
- **The 5 year TP averages is meeting District goals**
- **The 5 year average is better than the 10 year average for all of the water quality parameters**

2025 Forest Lake Stream Water Quality

Monitoring Site		Volume (ac-ft)	Total Phosphorus		Total Suspended Solids	
			FWMC ($\mu\text{g/L}$)	Load (lbs.)	FWMC (mg/L)	Load (lbs.)
Central Region Reference FWMC			<100		< 30	
Forest Lake Outlet	FL1	1,405	31	118	3	12,454

- The TP and TSS FWMC is meeting the standard
- The load is lower than in 2024

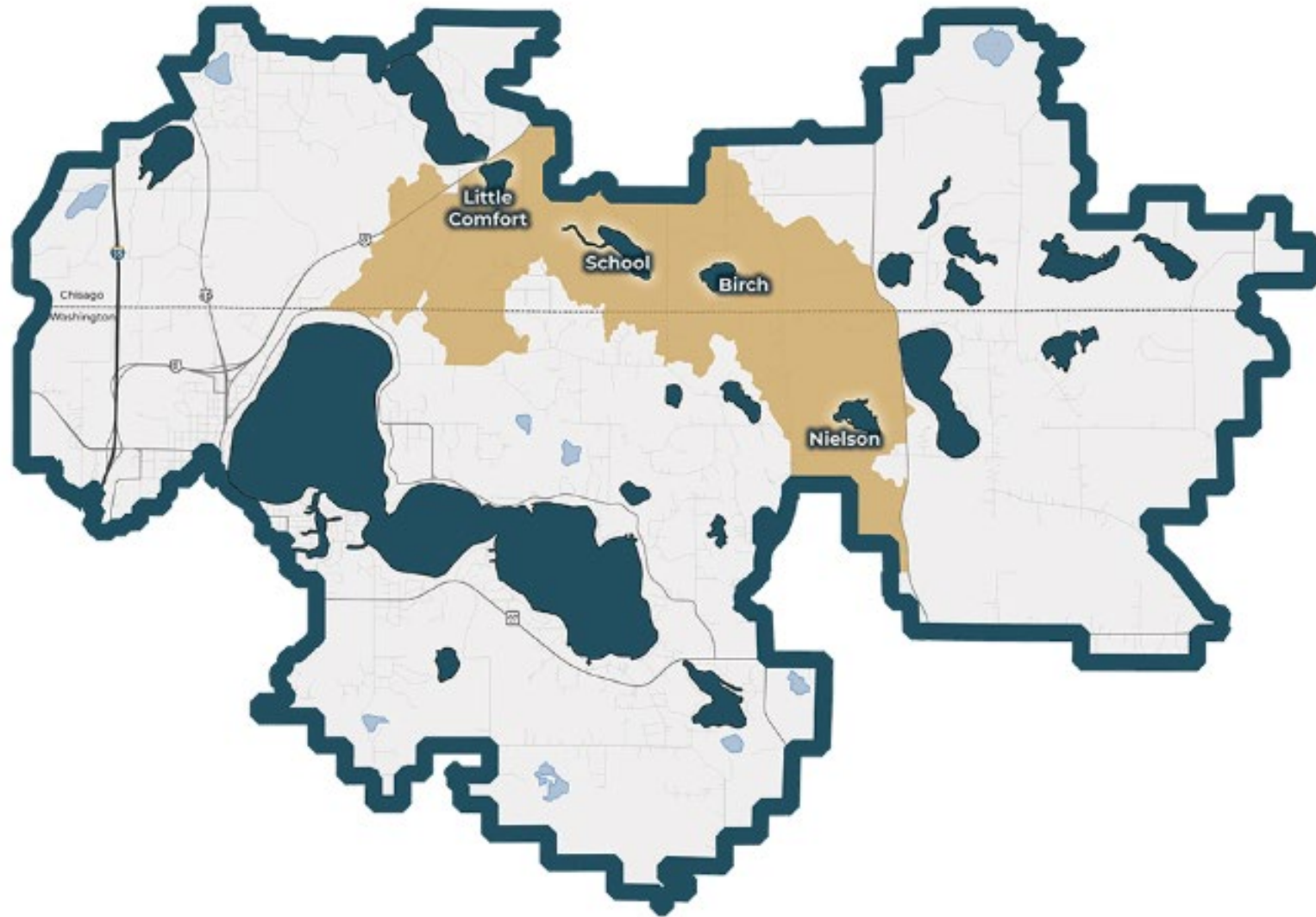
Forest Lake DIY/CAT Monitoring



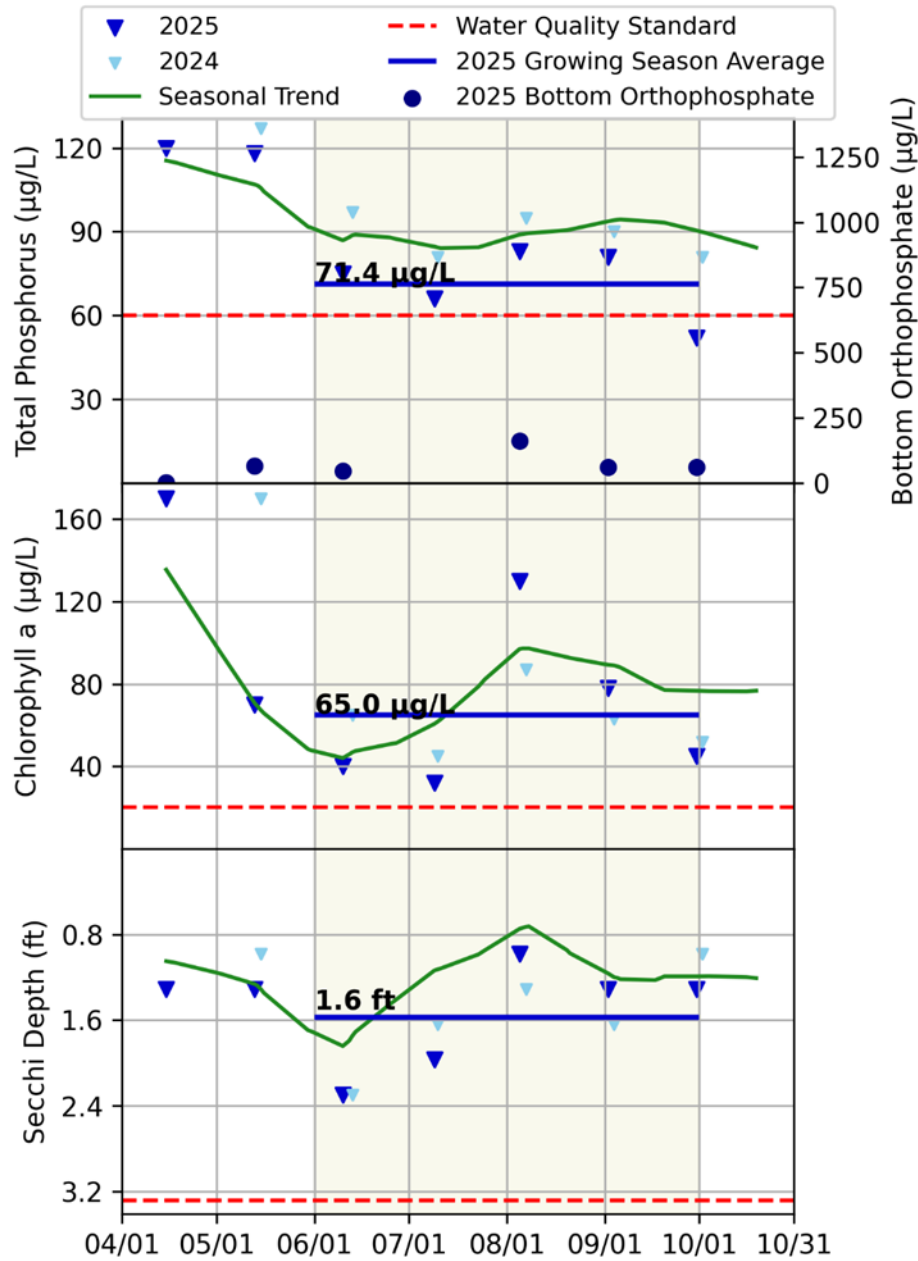
- Three additional sites west of Basin 1 were added to assess runoff from parking lots and roads surrounding Lakeside Park (FL1-6, FL1-7, and FL1-8)
- Sites FL1-2, FL2-1, and FL3-3 will be explored as candidates for additional investigation in 2026

- **Continue monitoring the major lakes of the District using the Met Council CAMP Program. Rotate monitoring of the smaller lakes of the district as per the 10-year monitoring plan**
- **Collect bottom water samples on Forest Middle, and Shields Lakes to further evaluate internal P loading**
- **Collect follow up sediment cores for Shields Lake alum treatment to evaluate effectiveness**
- **Consider diagnostic monitoring in the Shields lake subwatershed to determine possible the sources of high loading**
 - **Planned DIY monitoring for Shields Lake and Forest Lake subwatershed coupled with grab samples as needed**

Little Comfort LMD

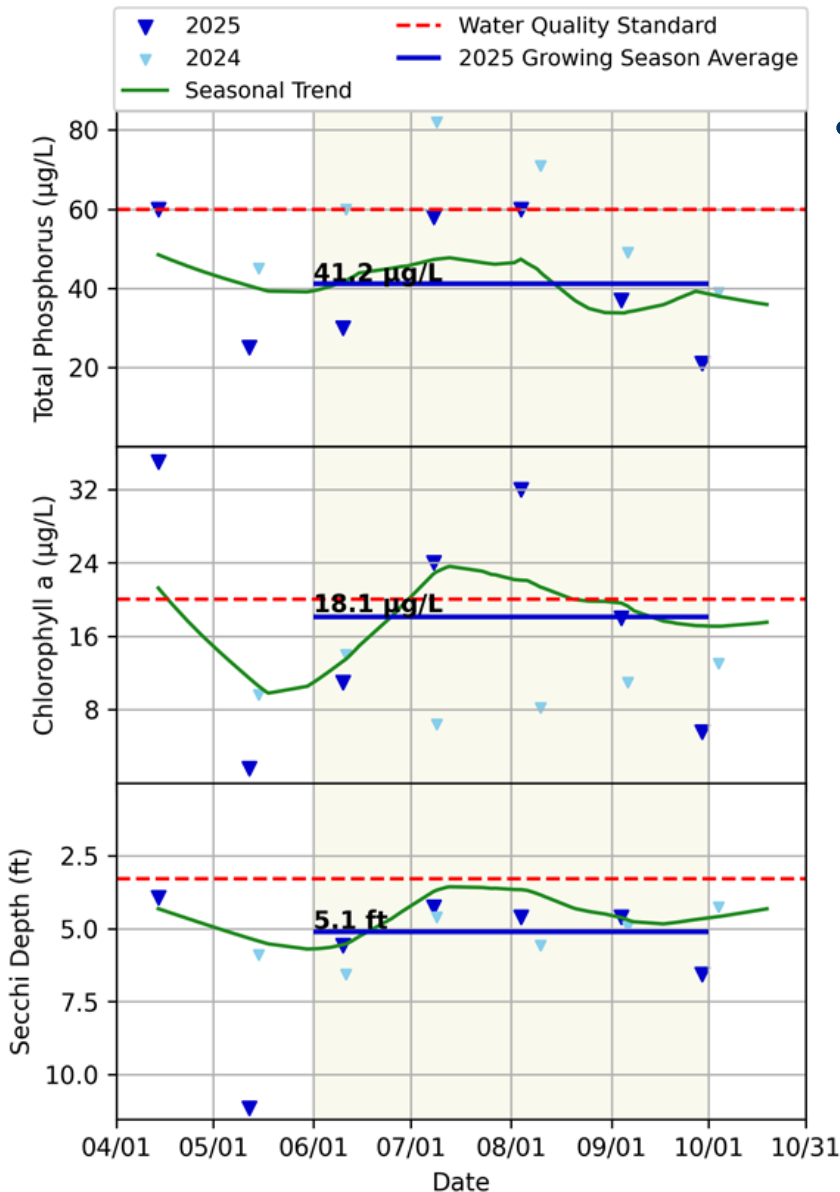


Nielson 2025 Lake Water Quality EOR water ecology community



- Water Quality was exceeding the state standards for all parameters
- It showed some improvement since 2017
- Low bottom P indicates small internal load

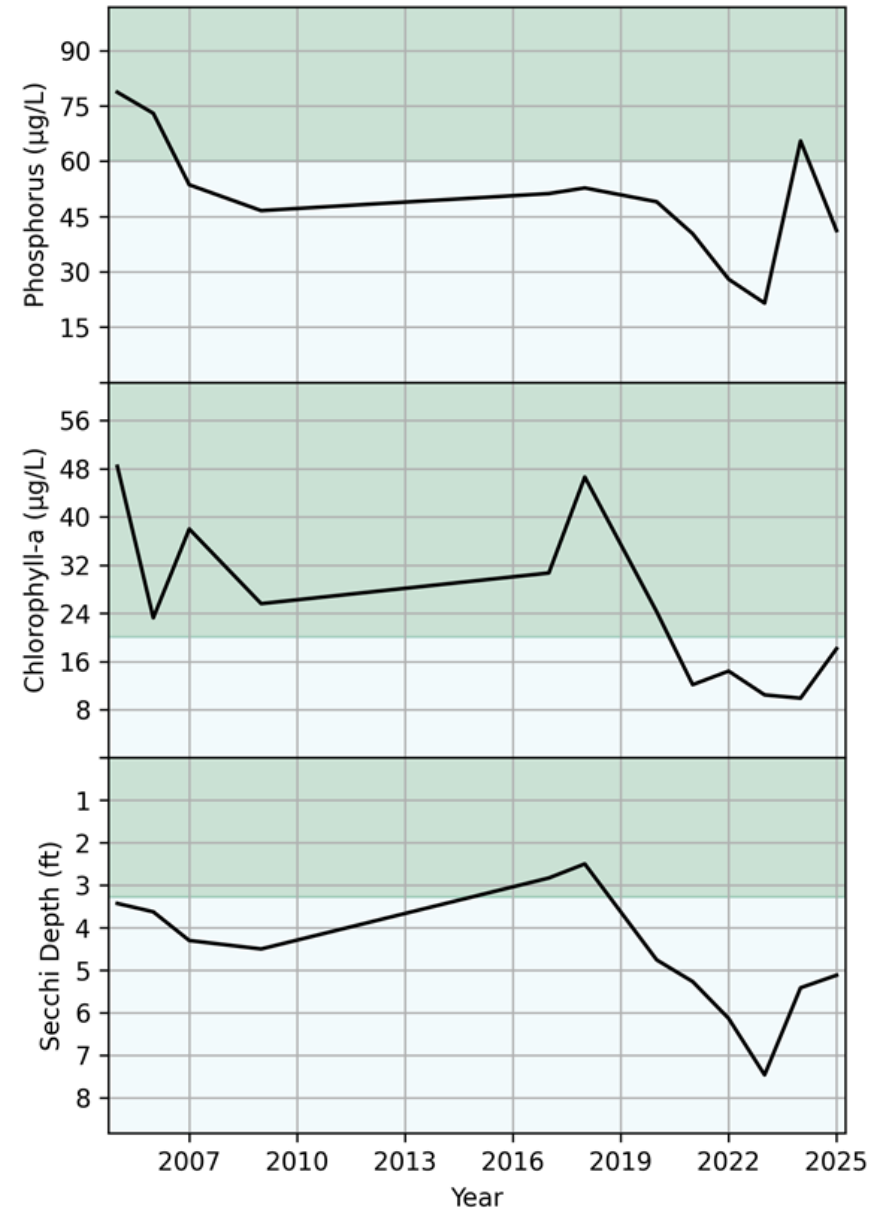
School 2025 Lake Water Quality



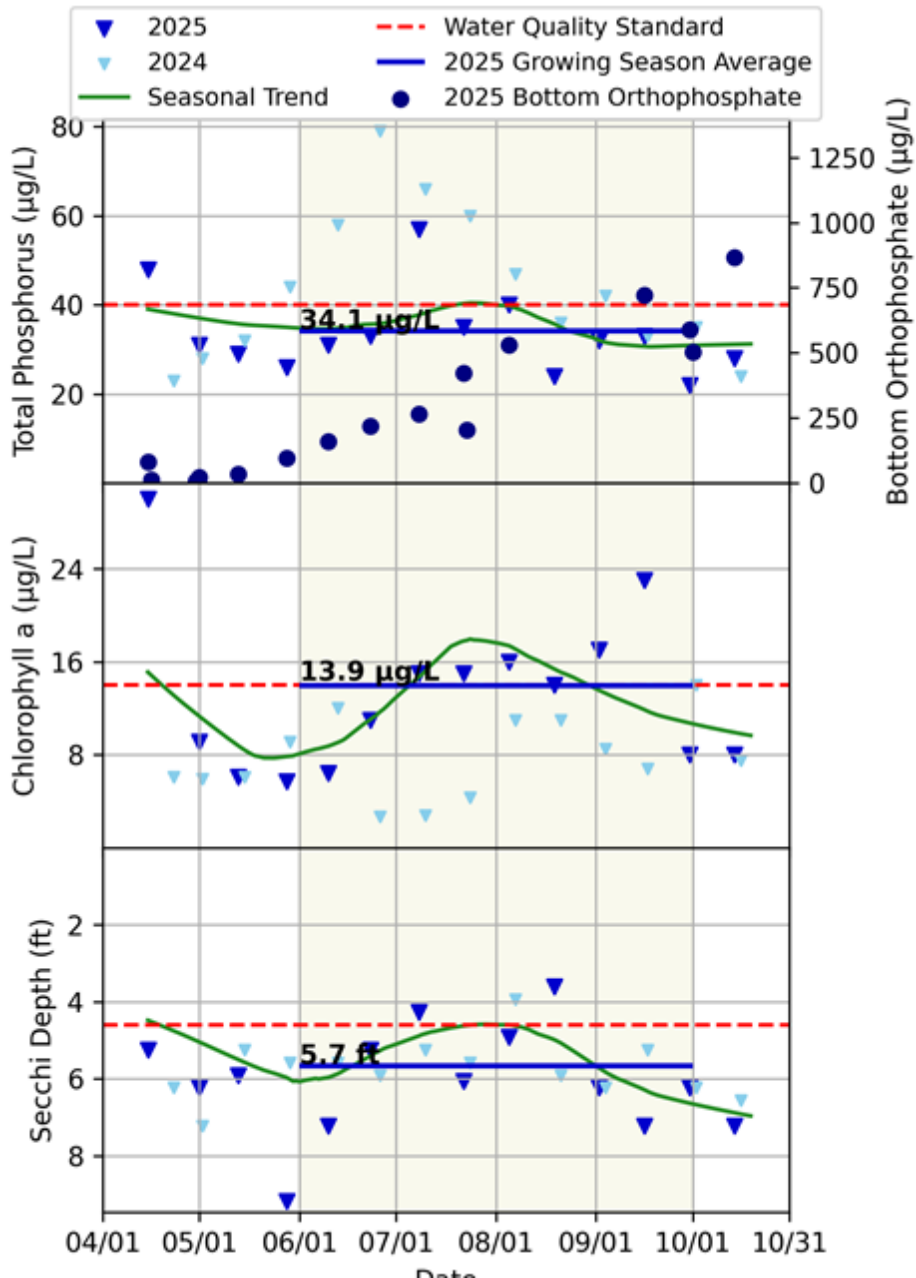
- All parameters are meeting the state standards

School Lake Trends

- 10-yr term trends are improving
- The 5 year historic water quality averages are meeting state standards and District goals
- The 5 year water quality averages improved compared to the 10 year averages



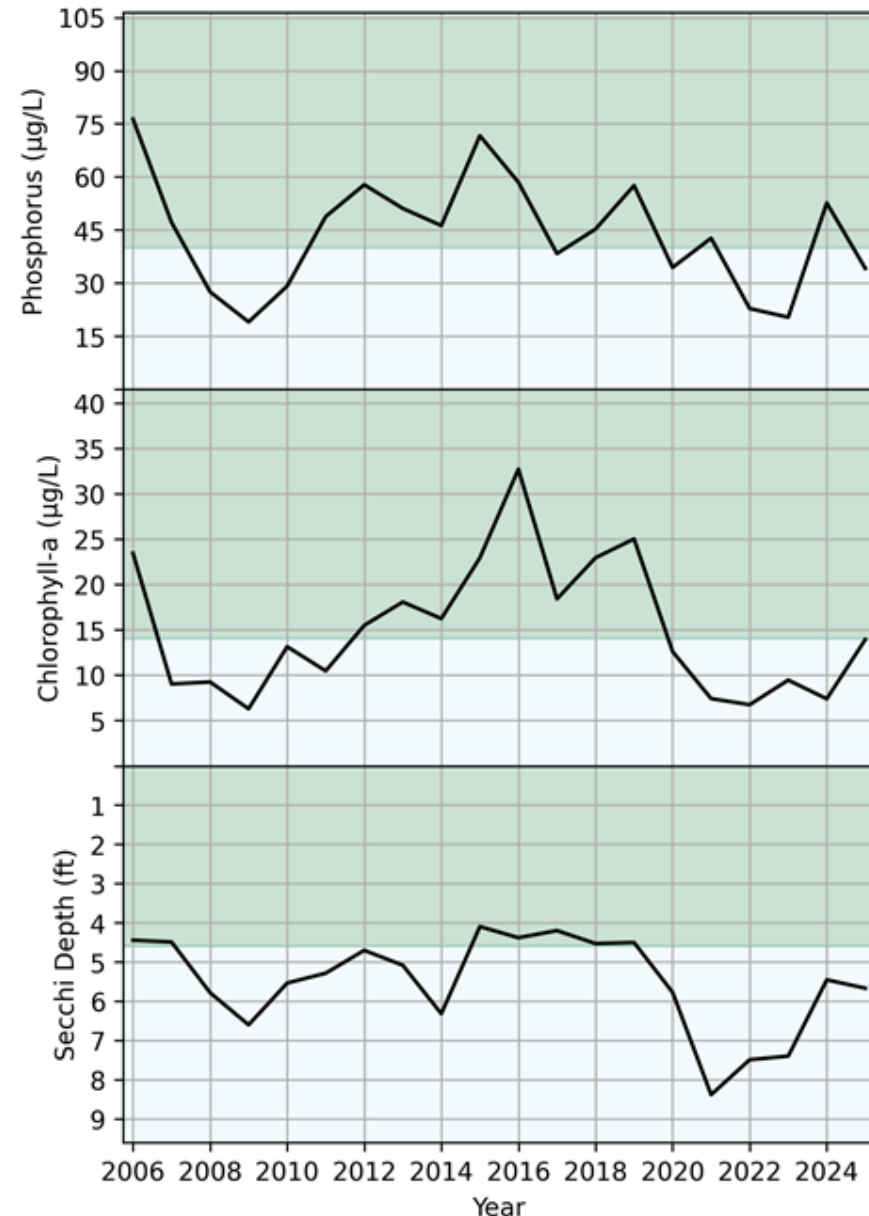
Little Comfort Lake Water Quality



- TP, Chl-a and Secchi are meeting the standard
- Little Comfort Lake showed signs of increasing bottom P concentrations, but this increased P concentration was not enough to impact surface water

Little Comfort Lake Trends

- **10-yr term trends are improving**
- **The 5 year averages show improved water quality compared to the 10 year averages.**
- **The 5 year water quality averages are meeting state standards**
 - **Meeting District goals for TP and within 0.1 ft of meeting for Secchi depth**



2025 Little Comfort Lake Stream Water Quality



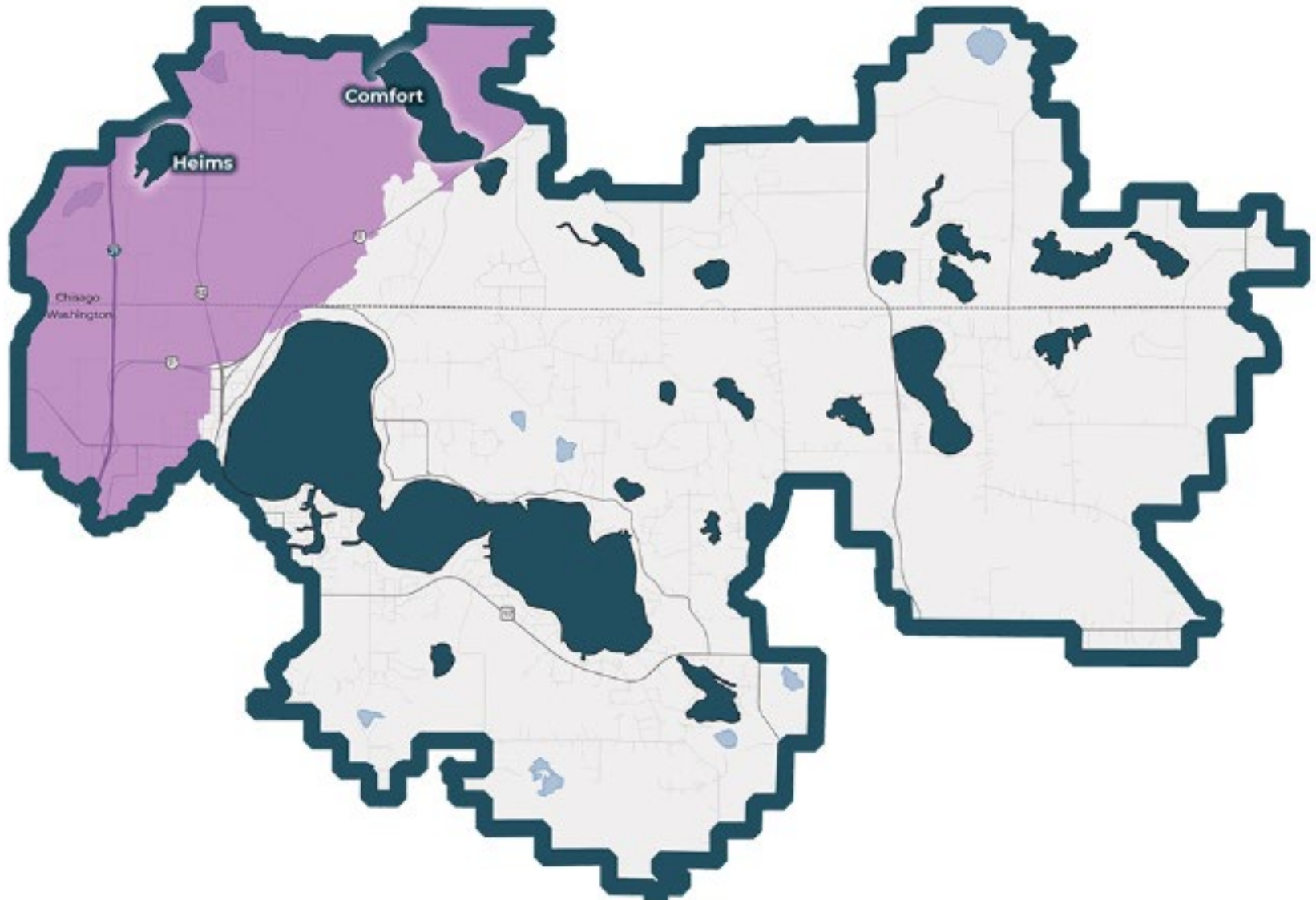
Monitoring Site		Volume (ac-ft)	Total Phosphorus		Total Suspended Solids	
			FWMC ($\mu\text{g/L}$)	Load (lbs.)	FWMC (mg/L)	Load (lbs.)
Central Region Reference FWMC			<100		< 30	
Long-term Sites						
Little Comfort Inlet	LC1	1,507	212	891	240	982,217

- Concentrations at Little Comfort inlet exceeded standards sporadically for TP and TSS
- Little Comfort TP and TSS loads decreased from 2024

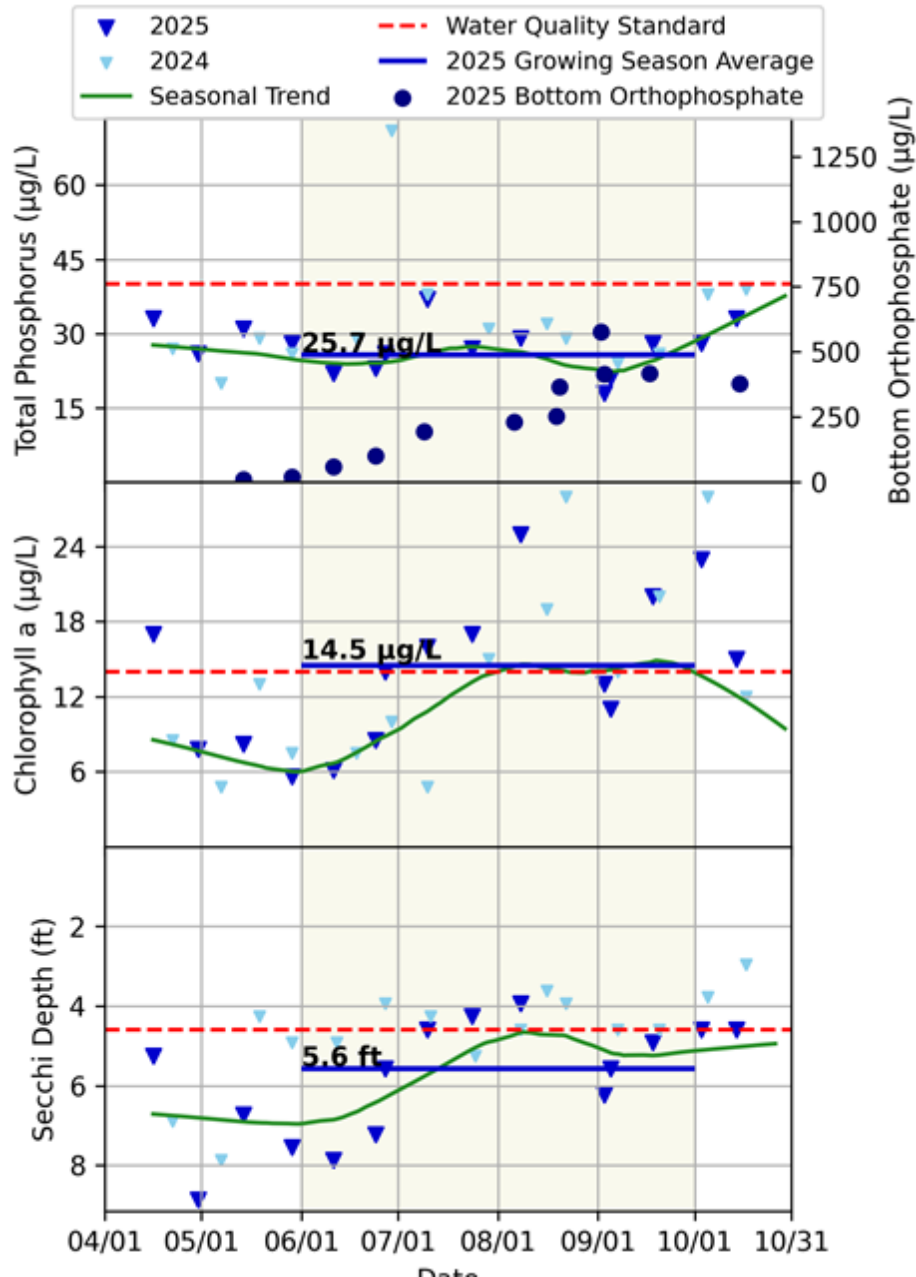
Little Comfort LMD Recommendations

- Continue monitoring the major lakes of the District using the Met Council CAMP Program. Rotate monitoring of the smaller lakes of the district as per the 10-year monitoring plan
- Collect bottom water samples on Little Comfort Lake to further evaluate internal P loading
- The 2024 and 2025 results from Nielson Lake support the continued nutrient impairment and the MPCA should consider it for TMDL development

Comfort LMD



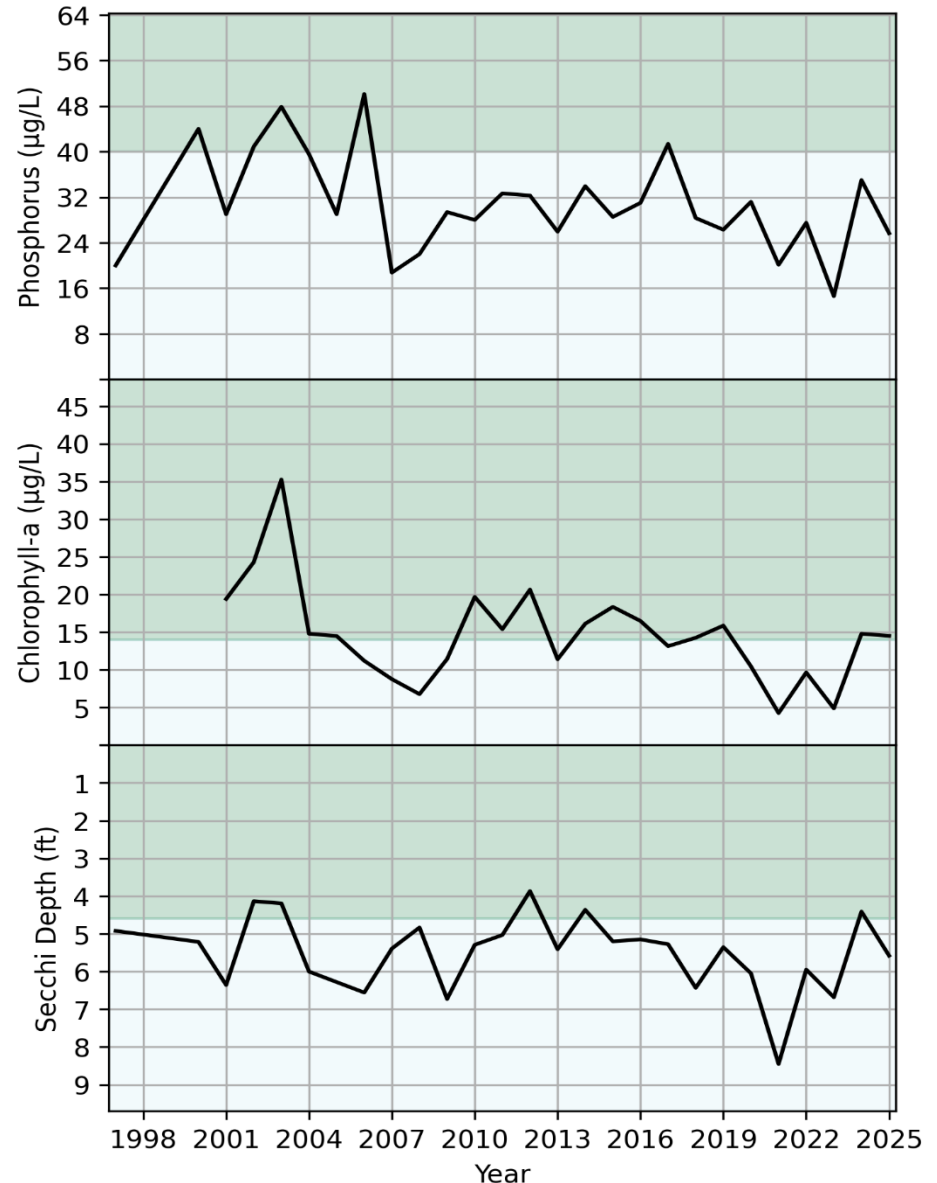
Comfort 2025 Lake Water Quality



- TP and Secchi depth are meeting state standards
- The chlorophyll-a is within a 0.5 ug/L from meeting the state standards
- Comfort Lake showed signs of increasing bottom P concentrations
- No impact surface water quality

Comfort Lake Trends

- Long term trends are improving
- Both the 10 year and 5 year averages are meeting state standards
 - District goals for total phosphorus
- The 5 year average is better than the 10 year average for all of the water quality parameters



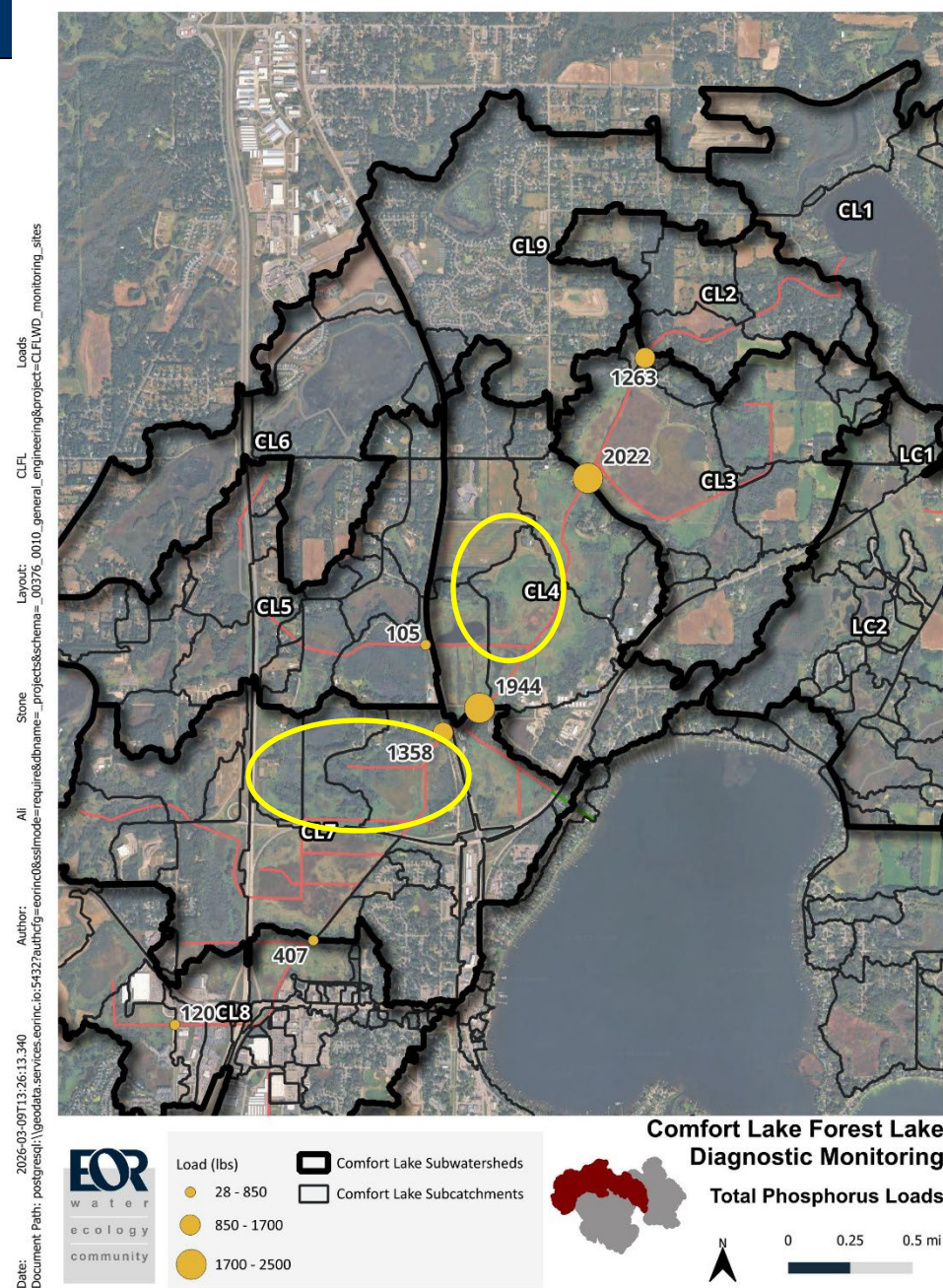
2025 Comfort Lake Stream Water Quality

Monitoring Site		Volume (ac-ft)	Total Phosphorus		Total Suspended Solids	
			FWMC (µg/L)	Load (lbs.)	FWMC (mg/L)	Load (lbs.)
Central Region Reference FWMC			<100		< 30	
Long-term Sites						
Comfort Outlet	CL1	5,874	136	2,173	73	1,171,068

- **Comfort Lake Outlet TP and TSS loads decreased from 2024**
- **The TP and TSS FWMC exceeded Class 2B water quality standards**

Diagnostic Monitoring Results

- There is a significant load reduction over Shallow Pond indicating it is acting as a phosphorus sink
- Bixby park continues to reduce TP load downstream
- The wetlands and ditches in:
 - CL4 downstream of Highway 61 wetland restoration
 - CL7 downstream of Bixby park subwatersheds will be investigated further in the AIG



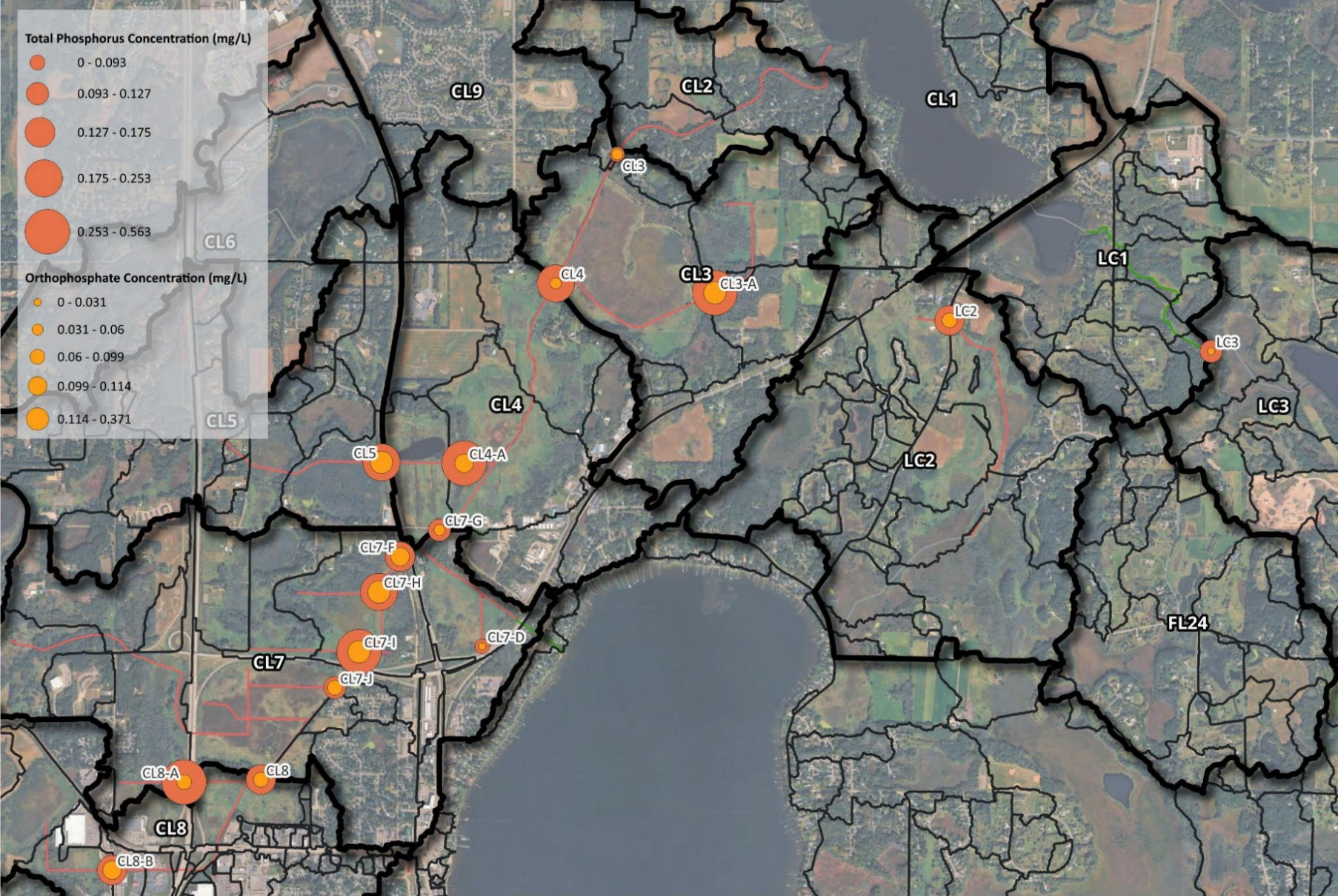
- **Continue monitoring the major lakes of the District using the Met Council CAMP Program. Rotate monitoring of the smaller lakes of the district as per the 10-year monitoring plan**
- **Continue investigation and concept development through Sunrise AIG**

2025 Conclusions

- Most of the lakes monitored in 2025 in the District received B grades
- All of the lakes show an equal or improvement in water quality when comparing the 5-year average and the 10-year average
- All of the lakes were meeting the state standard for the 5-year average for at least one of the water quality parameters
- Overall, every lake experienced better water quality than last year.
- The stream loads in 2025 were less than those observed in 2024 and reflect an average year of loading compared to the most recent years of extremes.
- The Bixby Park and Shallow Pond project continues to reduce TP load downstream.
- The wetlands and ditches in the CL4 and CL7 subwatersheds will be investigated further in the AIG.
- DIY/CAT monitoring confirmed past studies and identified new sources and entering phase 2 focusing on Forest and Shields subwatersheds

Thank you!





- Comfort Lake Subwatersheds
- Comfort Lake Subcatchments

Comfort Lake Forest Lake Diagnostic Monitoring

Phosphorus Concentrations

