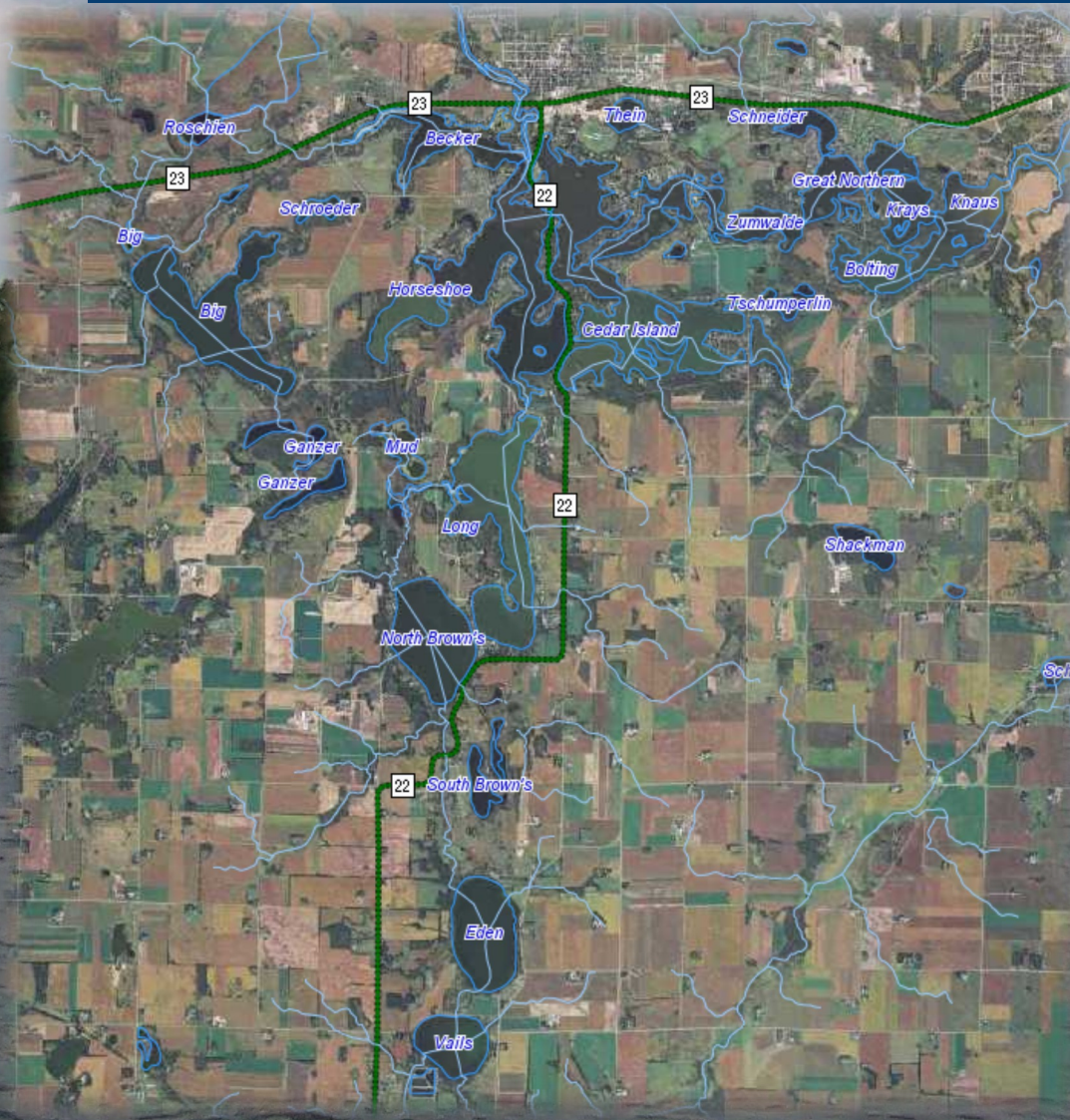


2020 MONITORING SUMMARY

Sauk River Chain of Lakes

Introduction

The Sauk River Watershed District (SRWD) and the Sauk River Chain of Lakes, Inc. (SRCL) have worked together to collect water quality data for a number of years. This monitoring summary provides visual images of the data collected in 2019 and 2020, while also summarizing data collected from 2010-2020.



The Sauk River Chain of Lakes, Inc. has been dedicated to collecting water quality information in their area for years. The time and effort these volunteers have put forth in this ongoing project is greatly appreciated by the Sauk River Watershed District staff, as well as local residents.

"It is the vision of the Sauk River Watershed District to protect and enhance our natural resources by increasing public awareness and involvement....The District will be wise stewards of our natural resources and will work alongside our partners to leave the water quality better for future generations."

Cedar Island, Horseshoe, Knaus, Krays, Schneider, Zumwalde

Created January 2021

Water Quality Standards

There are numerous methods for collecting and analyzing water quality data. To provide a consistent grading rubric, state standards for water quality were created and implemented within Minnesota State Statute.

The Sauk River Watershed District (SRWD) falls within the North Central Hardwood Forest (NCHF) Ecoregion of the state, and therefore uses the standards provided for the bodies of water within that ecoregion.

In 2012, the Minnesota Pollution Control Agency (MPCA) and the SRWD proposed what are known as “Site Specific Standards” for the Sauk River Chain of Lakes (SRCL). This proposal was created in response to several issues that arose during the development of the Total Maximum Daily Load (TMDL) study for the SRCL.

The issues that prompted the MPCA and the SRWD to propose site specific standards include, but are not limited to:

1. The SRCL is a reservoir system and the lake eutrophication standards (ch. 7050) allow for development of site-specific standards for reservoirs;
2. Lakes directly on the flowage of the river have very short water residence time and their water quality is largely driven by the Sauk River; and
3. Several of the deep lake basins, just off channel from the Sauk River and flowage lakes, are influenced to varying degrees by their connection to the river and flowage lakes and their water quality standards may need [to be examined] to ensure that a comprehensive set of water quality standards are developed to ensure that aquatic recreational and aquatic life uses are met for the SRCL (“Sauk River Chain of Lakes Proposed Site-Specific Standards”, pg. 1).

The table below provides a breakdown of lake classification (such as flowage or non-flowage) and the corresponding standards for each lake within the Sauk River Chain of Lakes.

For TP (total phosphorus) and Chl-a (chlorophyll-a), the units are identified as “ppb” or “parts per billion”. For the purposes of this monitoring summary, “µg/L” (micrograms per liter) has been used in the charts and graphs. One part per billion is equal to one microgram per liter (1ppb = 1µg/L).

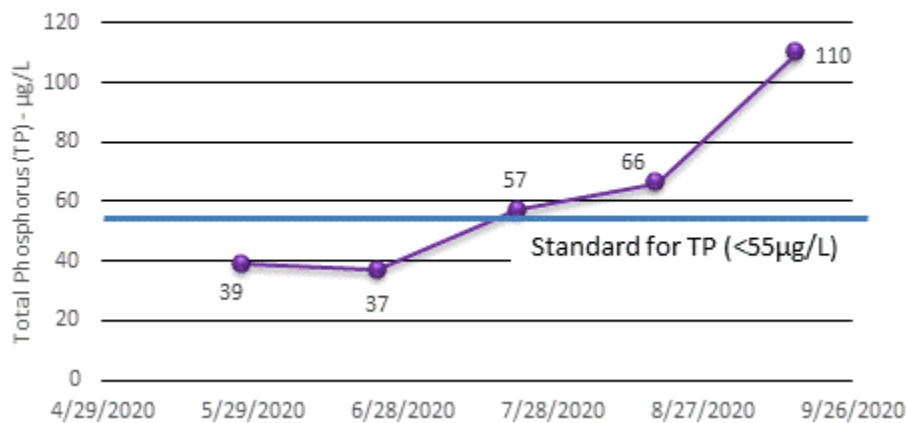
The lakes monitored in 2020 (and for the past few years) have been distributed throughout the chain, as well as throughout the different lake classifications. In 2020, the lakes monitored were: Cedar Island (non-flowage), Horseshoe (south - non-flowage), Knaus (flowage), Krays (flowage), Schneider (NCHF Ecoregion Standards), and Zumwalde (flowage).

Lake Eutrophication Standards, MN Rule 7050.0222, Subpart 4, Northern Central Hardwood Forests (NCHF) Ecoregion and Site Specific Standards.

Lake Type	TP (ppb)	Chl-a (ppb)	Secchi (m)
NCHF General: Eden	< 40	< 14	> 1.4
NCHF Shallow Lakes: Vails	< 60	< 20	> 1.0
Site Specific Standards, Sauk River Chain of Lakes			
Flowage: Horseshoe North, East Lake, Koetter Lake, Zumwalde, Great Northern, Krays, Knaus, Bolfing	< 90	< 45	> 0.8
Non-Flowage: Horseshoe West, Horseshoe South, Bolfing, Cedar Island Main	< 55	< 32	> 1.4
Becker	< 60	< 20	> 1.0
Schneider	< 40	< 14	> 1.4
Long & North Browns	< 40	< 14	> 1.4

Cedar Island (non-flowage lake)

Total Phosphorus - Cedar Island 2020



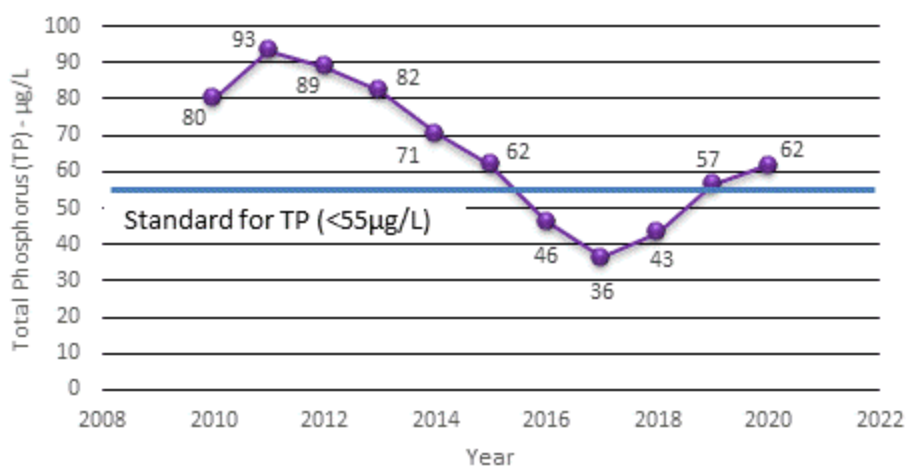
Total Phosphorus (TP)

Total phosphorus is made up of both organic and inorganic (ortho-phosphorus) phosphorus. It can be found suspended in the water or in the bottom sediments of the lake.

The site specific standard for TP in non-flowage lakes, such as Cedar Island, within the SRCL is < 55µg/L.

The figure to the left shows the TP results for Cedar Island during the 2020 monitoring season. Three of the five samples collected during the 2020 monitoring season on Cedar Island Lake exceeded the standard for TP.

Total Phosphorus - Yearly Averages - Cedar Island



The figure to the left shows the yearly averages for total phosphorus samples collected in Cedar Island from 2010 to 2020.

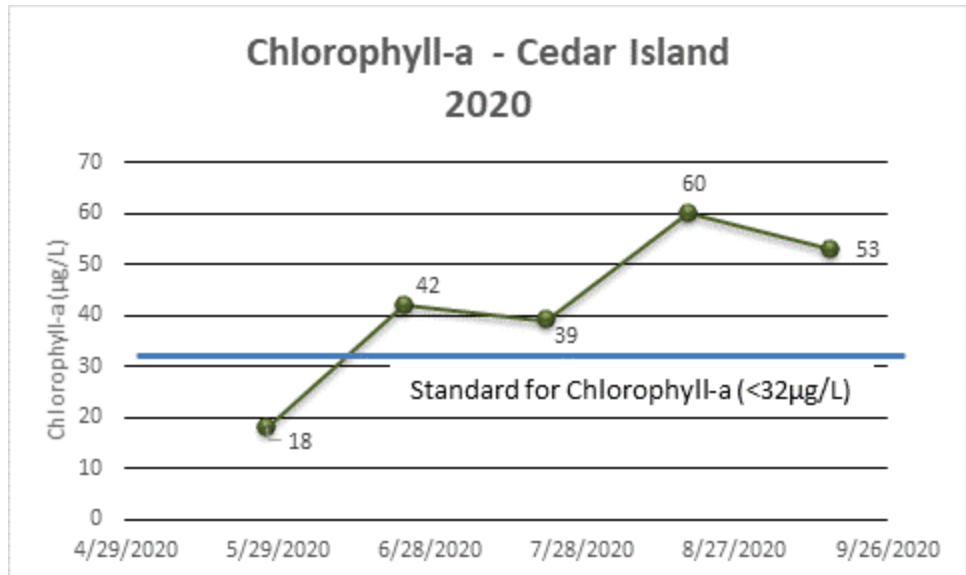
All of the yearly averages exceeded the standard with the exception of the averages for 2016, 2017 and 2018. There has been a steady increase in average total phosphorus since 2016, which was the low point in a six year decreasing trend in averages.

Chlorophyll-a (Chl-a)

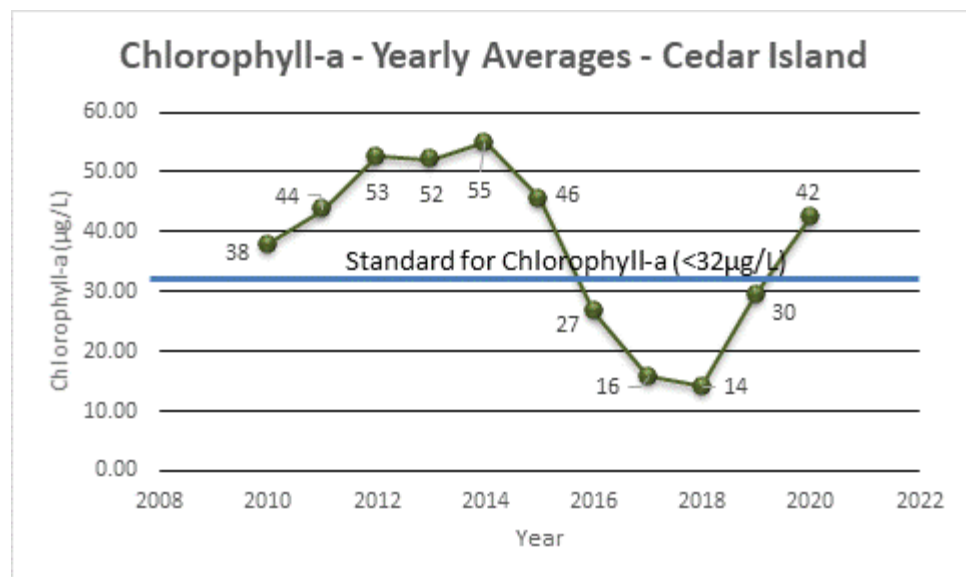
Chlorophyll-a samples are used to measure the amount of algae in the water. Algae grows as the water warms and the amount of growth is dependent on the amount of phosphorus available. Other environmental factors, such as wind and water temperature, can impact the amount of algae growth as well.

The site specific standard for Chl-a in non-flowage lakes within the SRCL is $< 32\mu\text{g/L}$.

The figure to the right shows the Chl-a results for Cedar Island during the 2020 monitoring season. Four of the five Chlorophyll-a samples collected in 2020 were above the standard.



The figure to the right shows the yearly averages for chlorophyll-a samples collected in Cedar Island from 2010-2020. The averages from 2010 through 2015 all exceed the standard of $32\mu\text{g/L}$, but the averages from 2016-2019 are all below the standard, with the average for 2020 creeping above the standard.



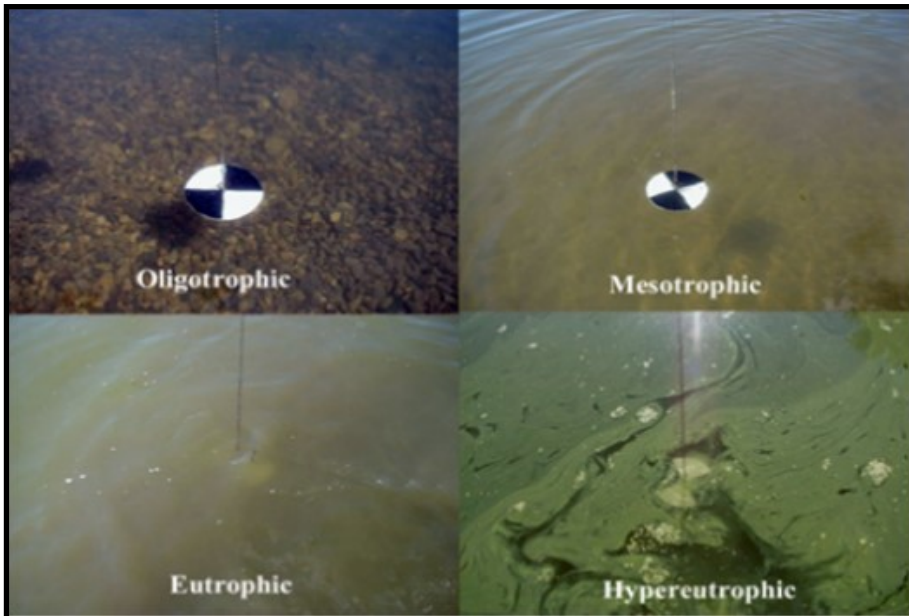


Photo Courtesy of the Minnesota Pollution Control Agency (MPCA)

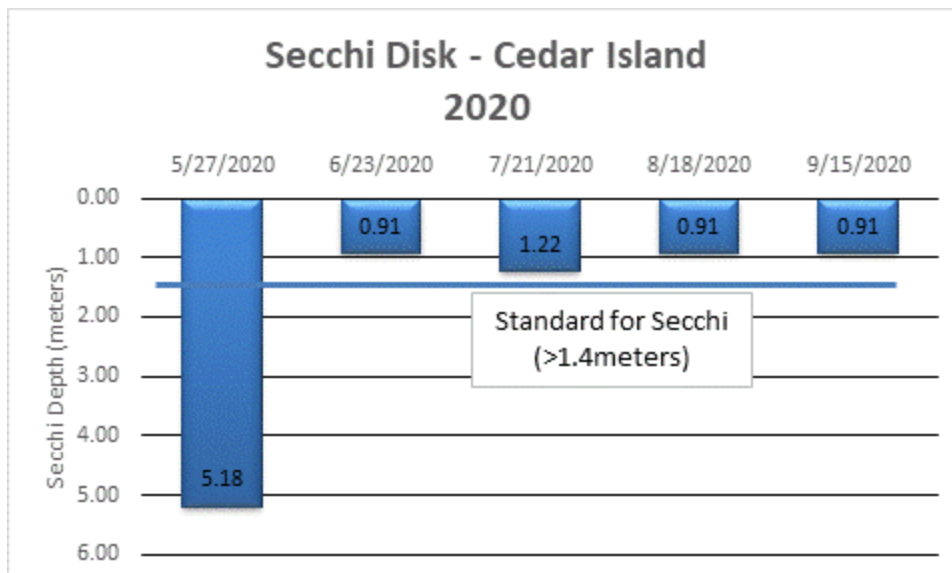
The photo to the left provides examples of what the four main lake classifications (according to Carlson's Trophic Status Index/TSI) would look like during a secchi disk reading.

The four stages of lake classification are oligotrophic (clean, clear), mesotrophic (temporary algal and aquatic plant problems), eutrophic (persistent algal blooms and aquatic plant problems), and hypereutrophic (extreme nuisance algal blooms and aquatic plant problems).

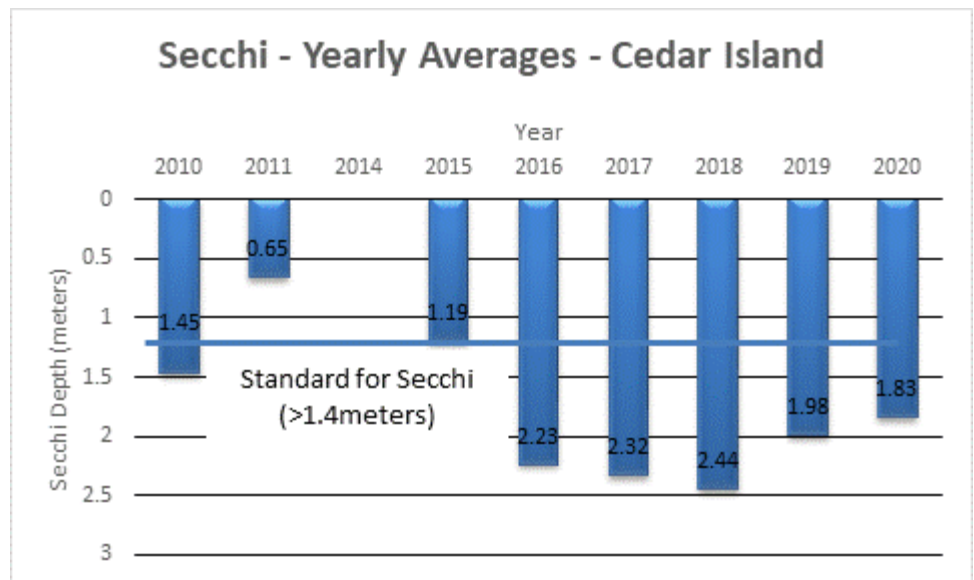
Secchi Disk

Water clarity is measured using a transparency disk (also known as a secchi disk) that is lowered into the water until it can no longer be seen. Ideally, water clarity is measured every time the lake is sampled (if not more). This data, along with phosphorus and chlorophyll-a data, is used to assess the water quality of a lake.

The site specific standard for secchi readings in non-flowage lakes within the SRCL is > 1.4 meters. The figure below shows the secchi readings taken on Cedar Island during 2020, where only one of five measurements met the site specific standard.



The figure to the right shows the yearly averages for secchi disk readings on Cedar Island. In 2016 the average met the standard for the first time since 2010. The yearly averages since 2016 have all met the standard as well.



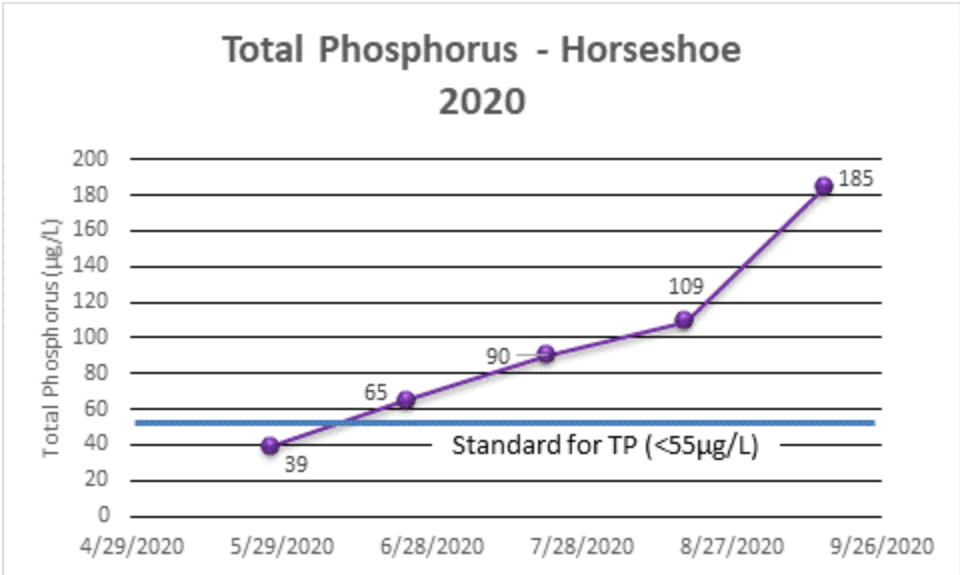
Cedar Island Data Summary

Cedar Island, a non-flowage lake within the Sauk River Chain of Lakes, was sampled five times throughout the 2020 monitoring season. Sampling occurred once per month from May through September.

As shown in the graphs, Cedar Island exceeds the site specific standards three times for Total Phosphorus, four times for chlorophyll -a, and had four secchi disk readings that did not meet standard requirements during the 2020 monitoring season. The seasonal averages reflect this, showing increasing trends for the year. This is a change from the decreasing trends we were seeing through 2017/2018.

In the case of non-flowage lakes, such as Cedar Island, the site specific standards are more lenient than the ecoregion standards (with the exception of the secchi disk standard which is the same).

Horseshoe South (non-flowage lake)

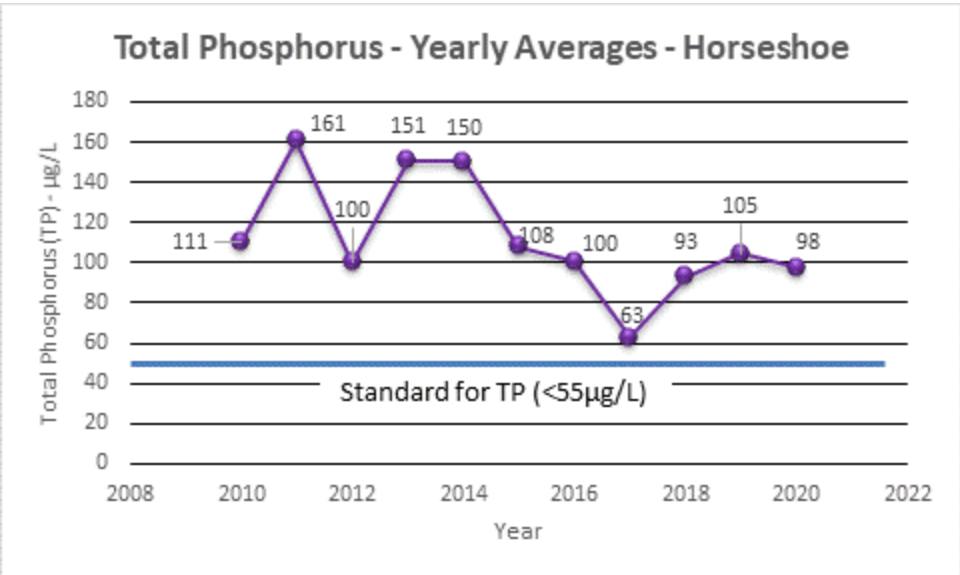


Total Phosphorus (TP)

Total phosphorus is made up of both organic and inorganic (ortho-phosphorus) phosphorus. It can be found suspended in the water or in the bottom sediments of the lake.

The site specific standard for TP in non-flowage lakes within the SRCL is <math><55\mu\text{g/L}</math>.

The figure to the left shows the TP results for Horseshoe during the 2020 monitoring season. In 2020, four out of five samples exceeded the standard.



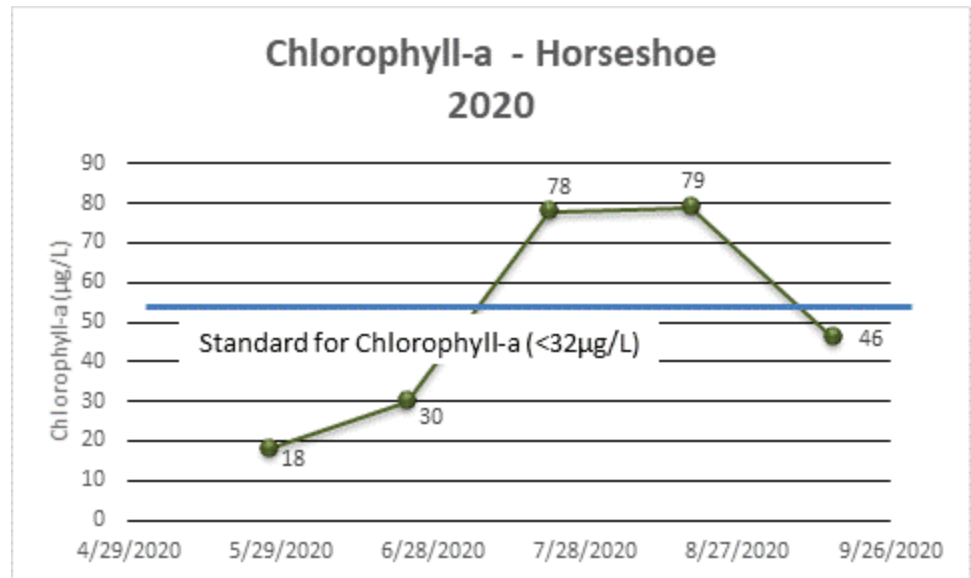
The figure to the left shows the yearly averages for total phosphorus samples collected in Horseshoe from 2010 to 2020. All of the yearly averages for total phosphorus from Horseshoe Lake exceed the standard.

Chlorophyll-a (Chl-a)

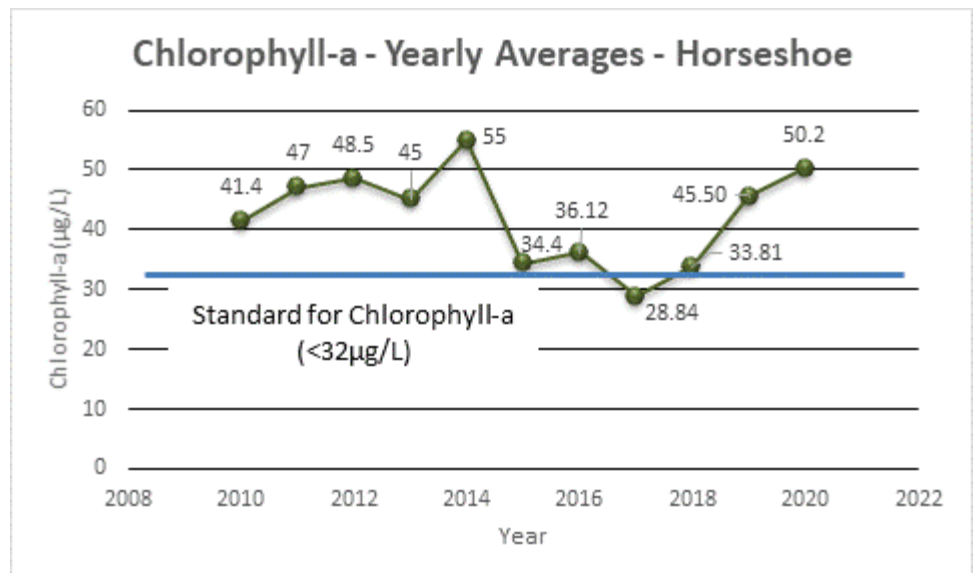
Chlorophyll-a samples are used to measure the amount of algae in the water. Algae grows as the water warms and the amount of growth is dependent on the amount of phosphorus available. Other environmental factors, such as wind and water temperature, can impact the amount of algae growth as well.

The site specific standard for Chl-a in non-flowage lakes within the SRCL is $< 32\mu\text{g/L}$.

The figure to the right shows the Chl-a results for Horseshoe during the 2020 monitoring season. Two of the five samples exceeded the site specific standard.



The figure to the right shows the yearly averages for chlorophyll-a samples collected in Horseshoe from 2010-2020. The yearly average for Chlorophyll-a for Horseshoe Lake in 2017 met the standard for the first time, and only time, in the last 11 years.



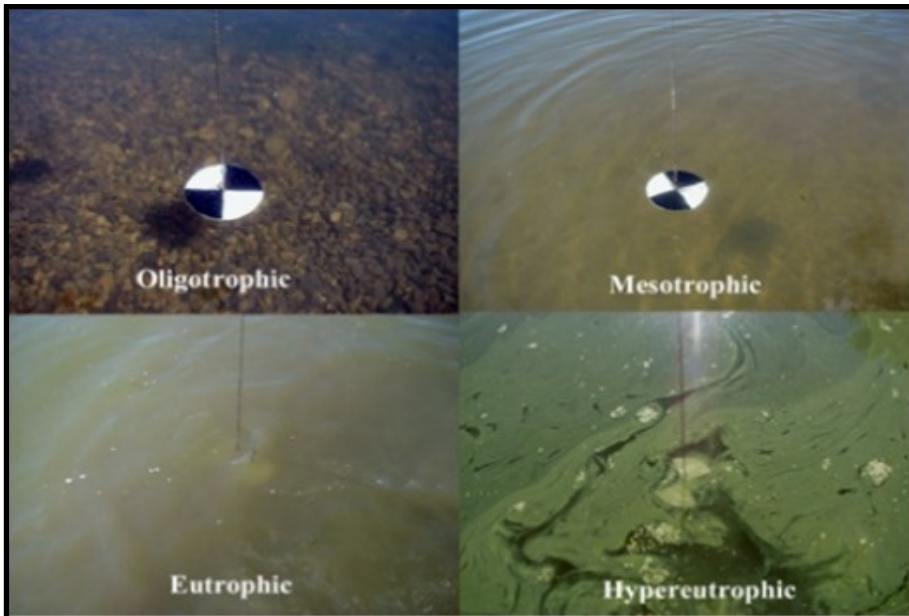


Photo Courtesy of the Minnesota Pollution Control Agency (MPCA)

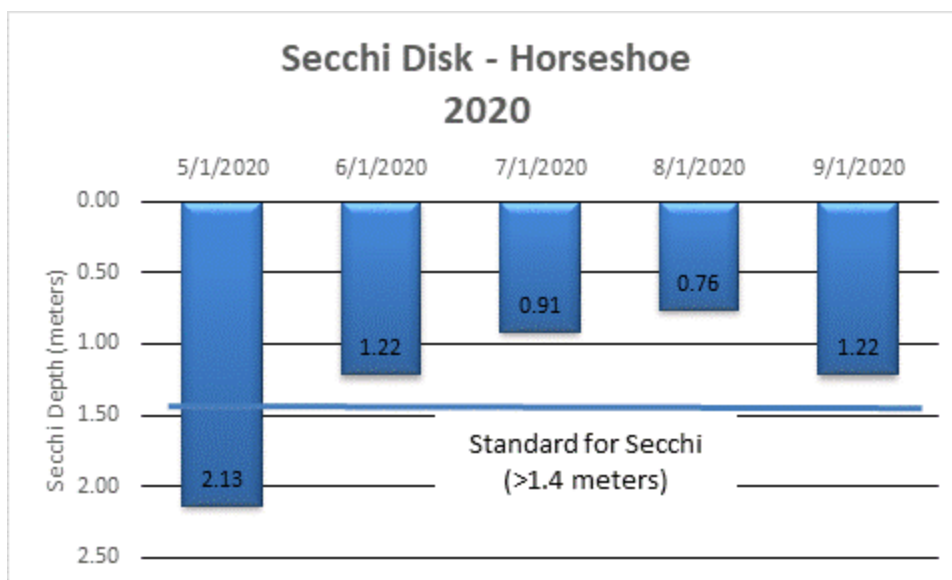
The photo to the left provides examples of what the four main lake classifications (according to Carlson's Trophic Status Index/TSI) would look like during a secchi disk reading.

The four stages of lake classification are oligotrophic (clean, clear), mesotrophic (temporary algal and aquatic plant problems), eutrophic (persistent algal blooms and aquatic plant problems), and hypereutrophic (extreme nuisance algal blooms and aquatic plant problems).

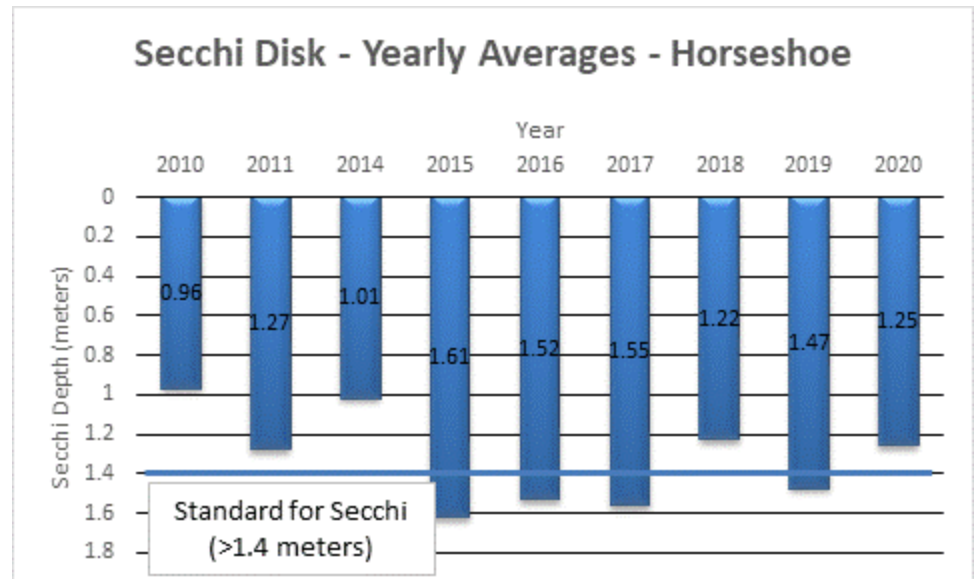
Secchi Disk

Water clarity is measured using a transparency disk (also known as a secchi disk) that is lowered into the water until it can no longer be seen. Ideally, water clarity is measured every time the lake is sampled (if not more). This data, along with phosphorus and chlorophyll-a data, is used to assess the water quality of a lake.

The site specific standard for secchi readings in non-flowage lakes within the SRCL is > 1.4 meters. The figure below shows the secchi readings taken on Horseshoe during 2020, where only one of the five readings met the standard.



The figure to the right shows the yearly averages for secchi disk readings on Horseshoe. The 2018 average did not meet the standard for the first time since 2014.



Horseshoe Data Summary

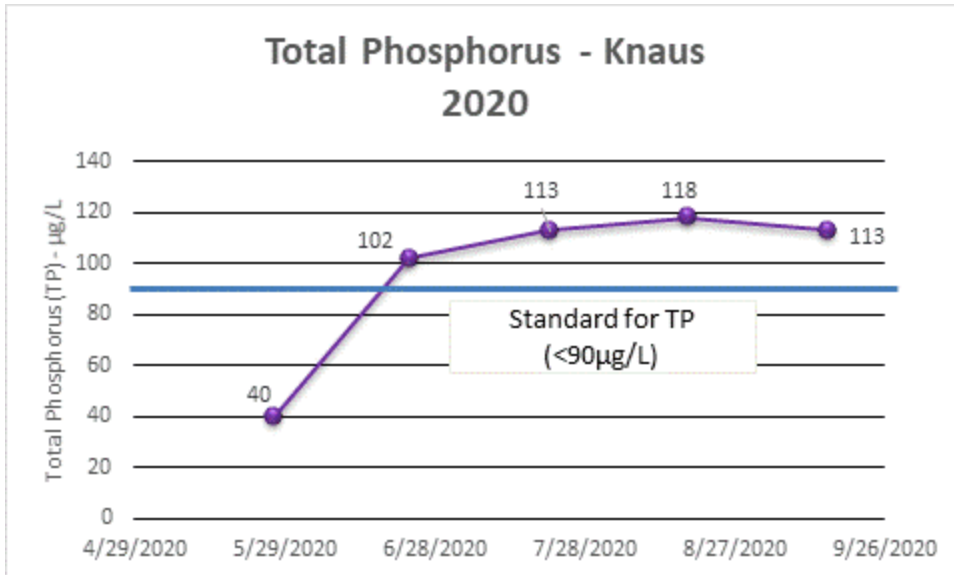
Horseshoe (South), a non-flowage lake within the Sauk River Chain of Lakes, was sampled five times throughout the 2020 monitoring season. Sampling occurred once per month from May through September.

As shown in the graphs, one of the five samples collected from Horseshoe Lake in 2020 met the total phosphorus standard, three of five chlorophyll-a samples met the standard and one of five secchi disk readings met the standard.

Of the three parameters tested on Horseshoe, the yearly averages for total phosphorus and secchi disk did not meet the standards, but the yearly average for chlorophyll-a did.

In the case of non-flowage lakes, such as Horseshoe, the site specific standards are more lenient than the ecoregion standards (with the exception of the secchi disk standard which is the same).

Knaus (flowage lake)

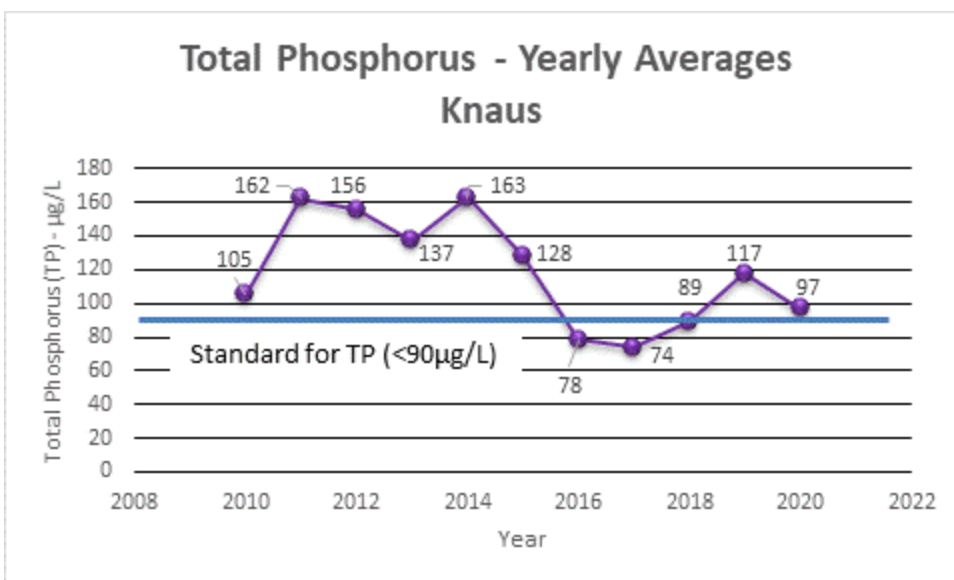


Total Phosphorus (TP)

Total phosphorus is made up of both organic and inorganic (ortho-phosphorus) phosphorus. It can be found suspended in the water or in the bottom sediments of the lake.

The site specific standard for TP in flowage lakes within the SRCL is $< 90\mu\text{g/L}$.

The figure to the left shows the TP results for Knaus during the 2020 monitoring season. Four of the five samples exceeded the site specific standard.



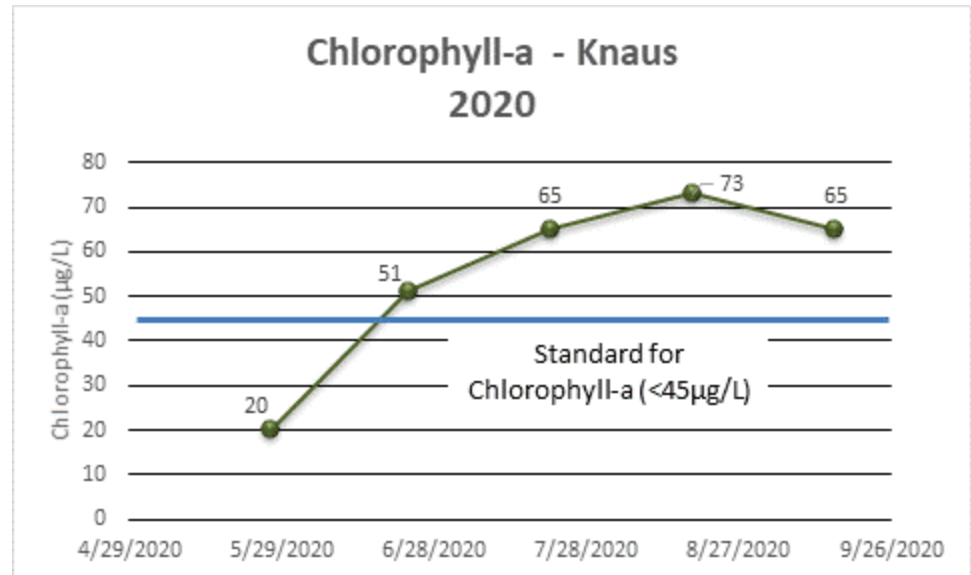
The figure to the left shows the yearly averages for total phosphorus samples collected in Knaus from 2010 to 2020.

Chlorophyll-a (Chl-a)

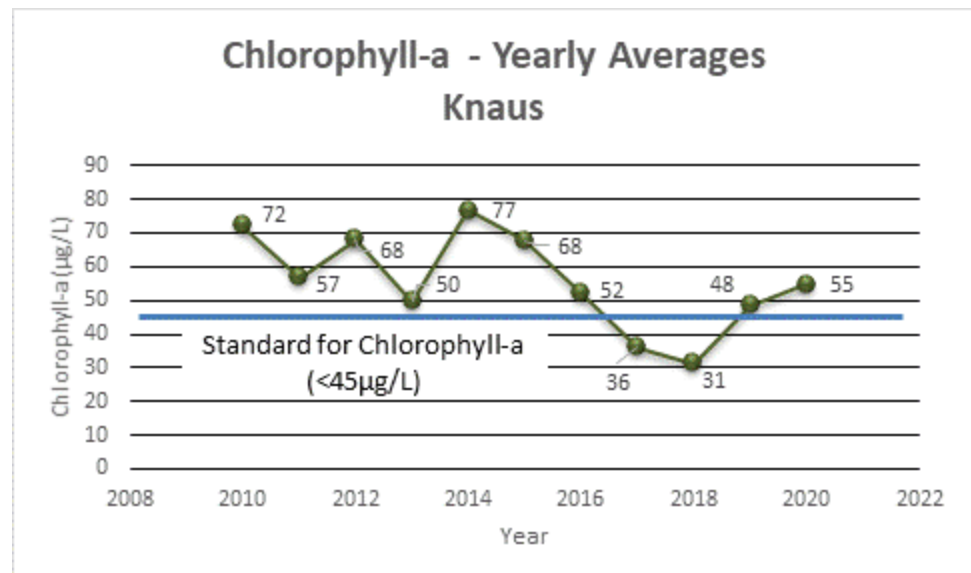
Chlorophyll-a samples are used to measure the amount of algae in the water. Algae grows as the water warms and the amount of growth is dependent on the amount of phosphorus available. Other environmental factors, such as wind and water temperature, can impact the amount of algae growth as well.

The site specific standard for Chl-a in flowage lakes within the SRCL is $< 45\mu\text{g/L}$.

The figure to the right shows the Chl-a results for Knaus during the 2020 monitoring season, where four of the five samples exceed the standard.



The figure to the right shows the yearly averages for chlorophyll-a samples collected in Knaus from 2010-2020. For the first time since before 2010, the 2017 yearly average for Chlorophyll-a met the site specific standard on Knaus Lake. The yearly average for 2018 followed the trend, and also met the standard. 2019 and 2020, however, both had averages that exceed the standard.



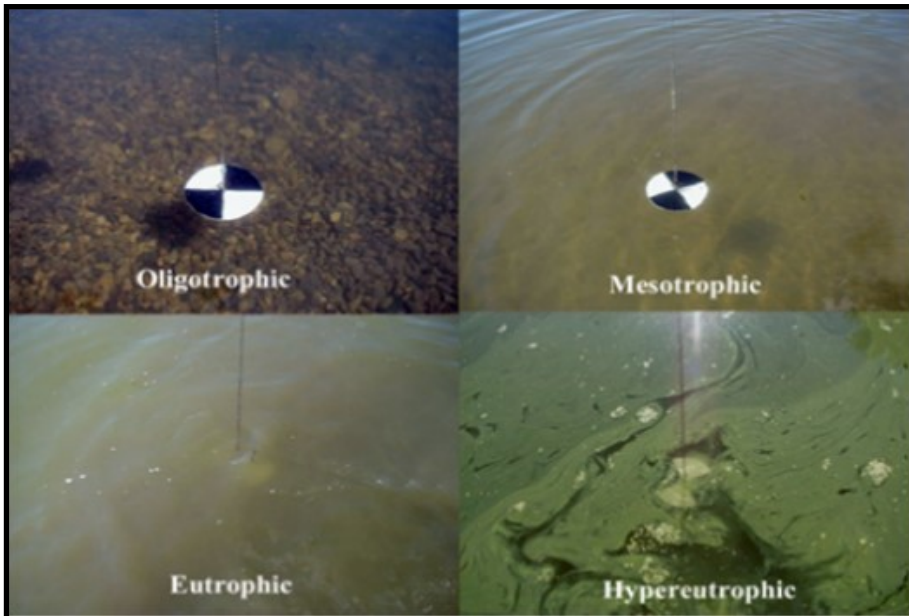


Photo Courtesy of the Minnesota Pollution Control Agency (MPCA)

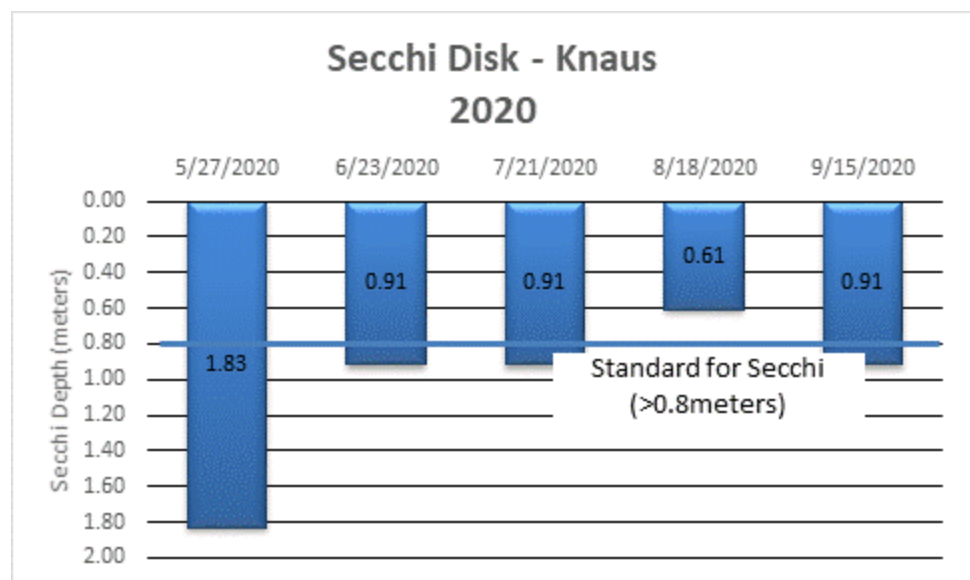
The photo to the left provides examples of what the four main lake classifications (according to Carlson's Trophic Status Index/TSI) would look like during a secchi disk reading.

The four stages of lake classification are oligotrophic (clean, clear), mesotrophic (temporary algal and aquatic plant problems), eutrophic (persistent algal blooms and aquatic plant problems), and hypereutrophic (extreme nuisance algal blooms and aquatic plant problems).

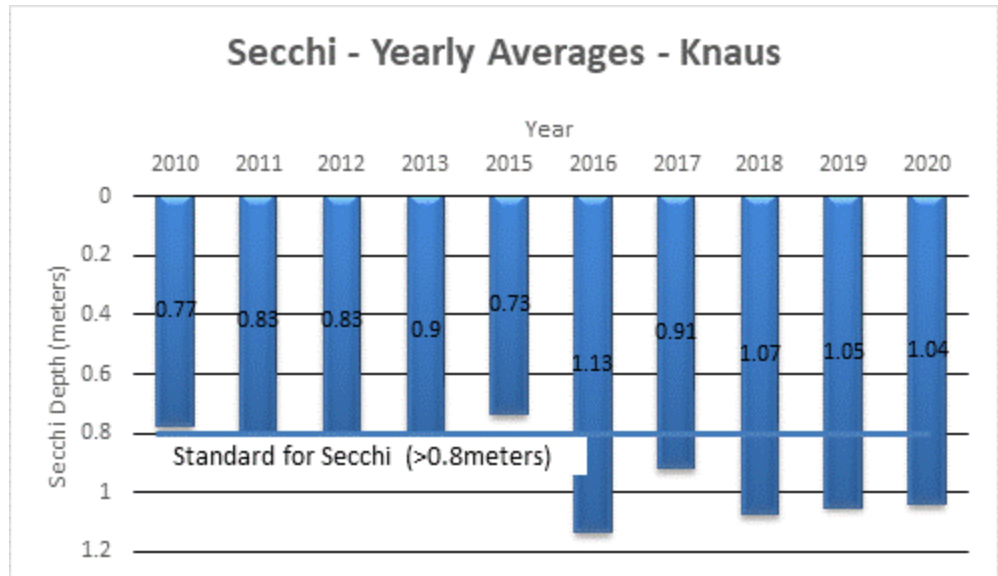
Secchi Disk

Water clarity is measured using a transparency disk (also known as a secchi disk) that is lowered into the water until it can no longer be seen. Ideally, water clarity is measured every time the lake is sampled (if not more). This data, along with phosphorus and chlorophyll-a data, is used to assess the water quality of a lake.

The site specific standard for secchi readings in flowage lakes within the SRCL is > 0.8 meters. The figure below shows the secchi readings taken on Knaus during 2020, where only one of five measurements did not meet the standard.



The figure to the right shows the yearly averages for secchi disk readings on Knaus Lake.



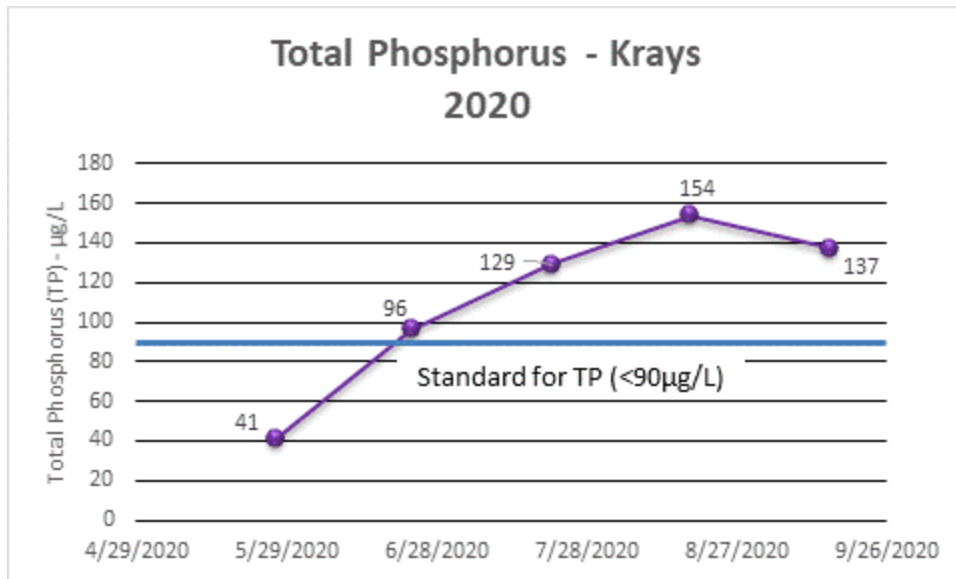
Knaus Data Summary

Knaus, a flowage lake within the Sauk River Chain of Lakes, was sampled five times throughout the 2020 monitoring season. Sampling occurred once per month from May through September.

As shown in the graphs, during the 2020 season Knaus had one out of five total phosphorus samples meet the standard, with the yearly averages exceeding the standard. Four of five of the chlorophyll-a samples exceeded the standard in 2020, and the yearly average also exceeded the standard. Secchi disk readings in 2020 met the standard for four out of five of the readings, with a yearly average that also met the standard.

In the case of flowage lakes, such as Knaus, the site specific standards are more lenient than the ecoregion standards.

Krays (flowage lake)

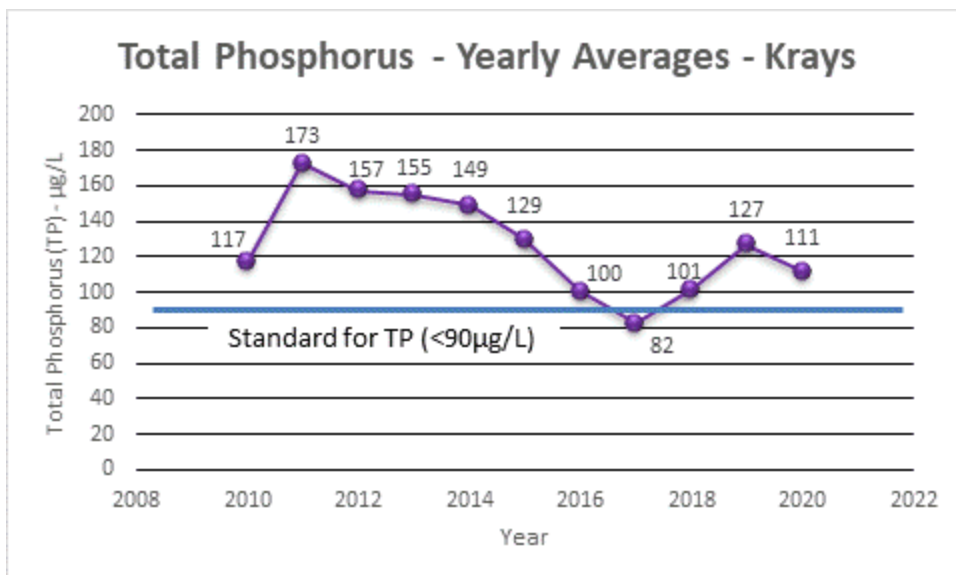


Total Phosphorus (TP)

Total phosphorus is made up of both organic and inorganic (ortho-phosphorus) phosphorus. It can be found suspended in the water or in the bottom sediments of the lake.

The site specific standard for TP in flowage lakes within the SRCL is $< 90\mu\text{g/L}$.

The figure to the left shows the TP results for Krays during the 2020 monitoring season, where one of the five samples collected met the standard.



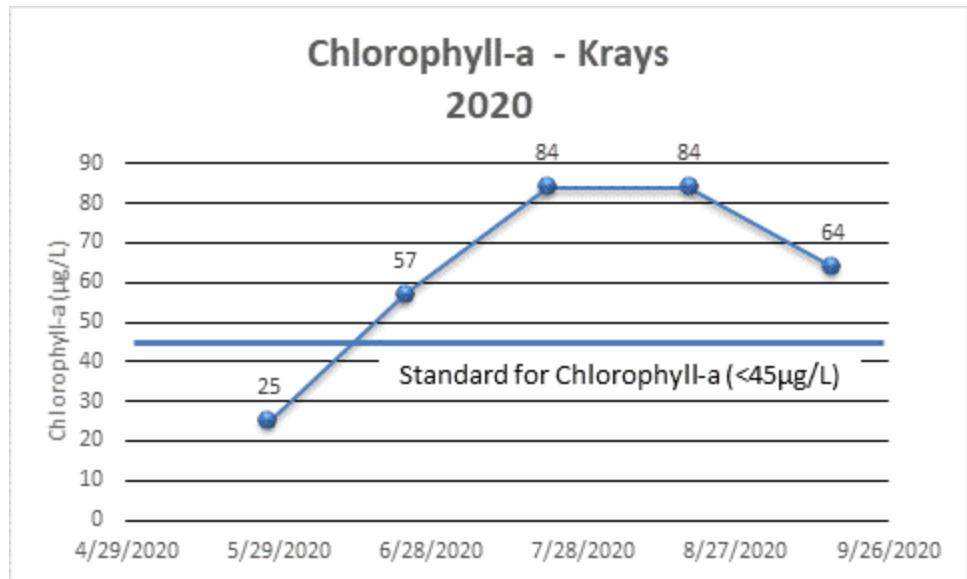
The figure to the left shows the yearly averages for total phosphorus samples collected in Krays from 2010 to 2020. Although the averages from 2011-2017 decreased each year, the averages from 2018-2020 increased and did not meet the standard.

Chlorophyll-a (Chl-a)

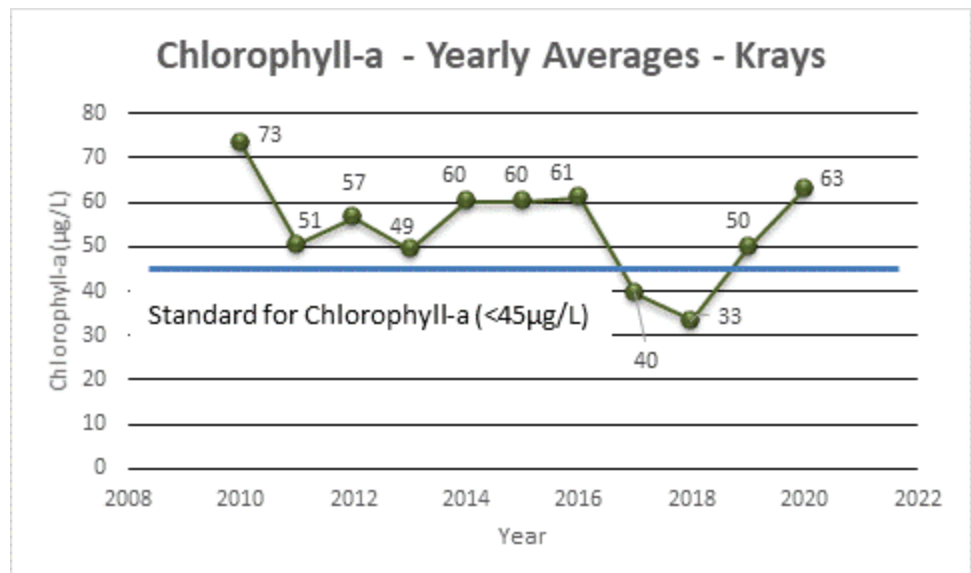
Chlorophyll-a samples are used to measure the amount of algae in the water. Algae grows as the water warms and the amount of growth is dependent on the amount of phosphorus available. Other environmental factors, such as wind and water temperature, can impact the amount of algae growth as well.

The site specific standard for Chl-a in flowage lakes within the SRCL is $< 45\mu\text{g/L}$.

The figure to the right shows the Chl-a results for Krays during the 2020 monitoring season. Four of the five samples exceed the site specific standard.



The figure to the right shows the yearly averages for chlorophyll-a samples collected in Krays from 2010-2020 with the 2017 and 2018 yearly averages meeting the standard.



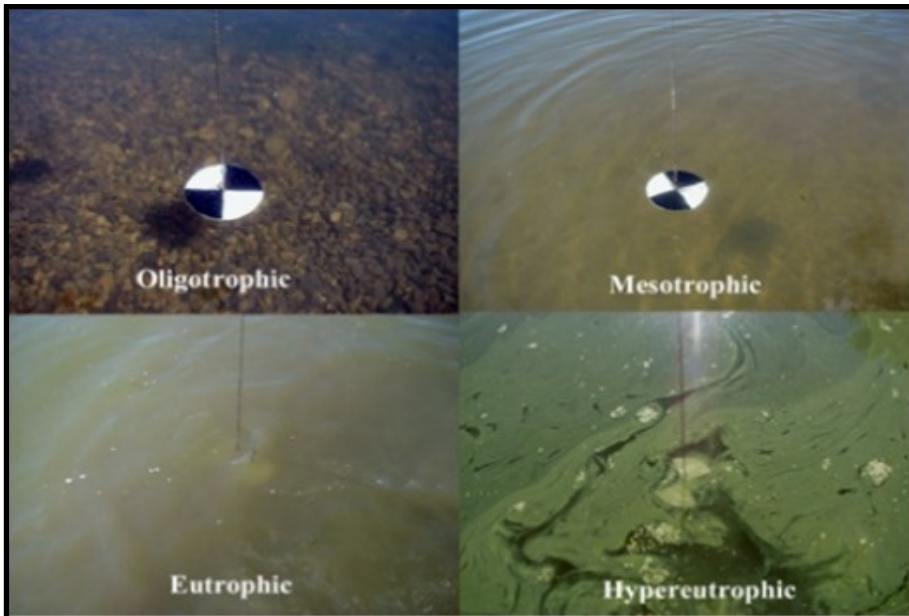


Photo Courtesy of the Minnesota Pollution Control Agency (MPCA)

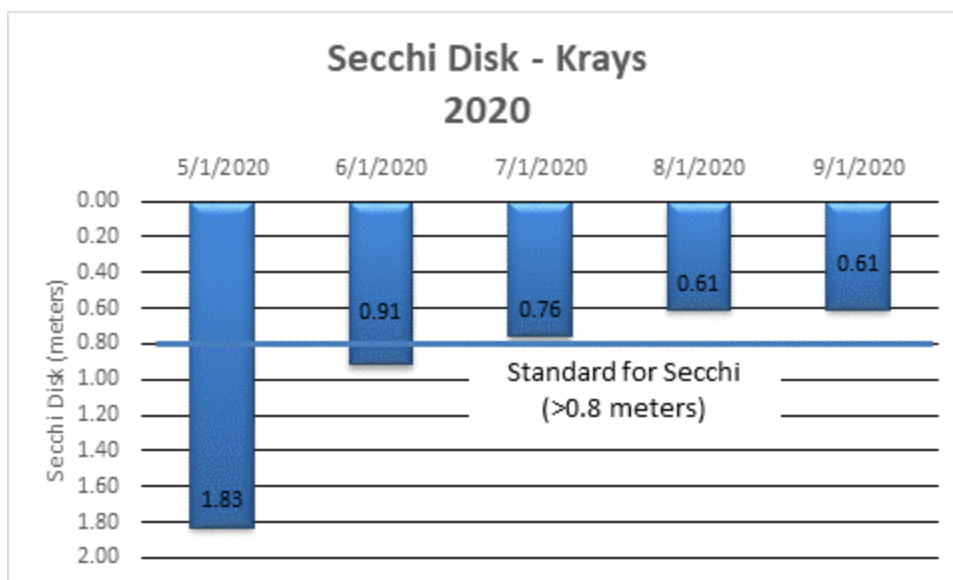
The photo to the left provides examples of what the four main lake classifications (according to Carlson's Trophic Status Index/TSI) would look like during a secchi disk reading.

The four stages of lake classification are oligotrophic (clean, clear), mesotrophic (temporary algal and aquatic plant problems), eutrophic (persistent algal blooms and aquatic plant problems), and hypereutrophic (extreme nuisance algal blooms and aquatic plant problems).

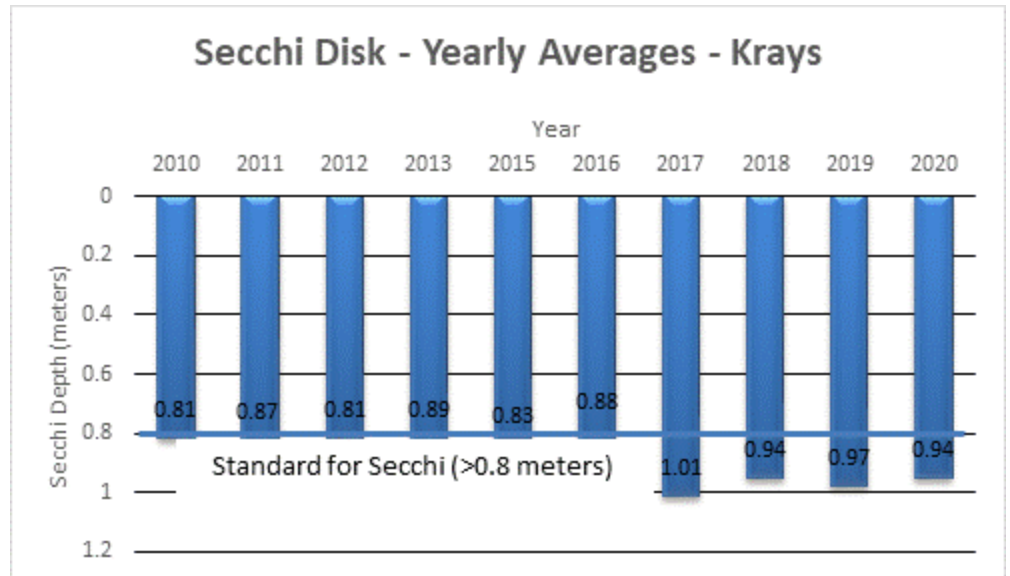
Secchi Disk

Water clarity is measured using a transparency disk (also known as a secchi disk) that is lowered into the water until it can no longer be seen. Ideally, water clarity is measured every time the lake is sampled (if not more). This data, along with phosphorus and chlorophyll-a data, is used to assess the water quality of a lake.

The site specific standard for secchi readings in flowage lakes within the SRCL is > 0.8 meters. The figure below shows the secchi readings taken on Krays during 2020, where two of the five measurements met the site specific standard.



The figure to the right shows the yearly averages for secchi disk readings on Krays Lake. The averages all meet the standard, though they hover close to the standard. The averages have been consistent since 2010.



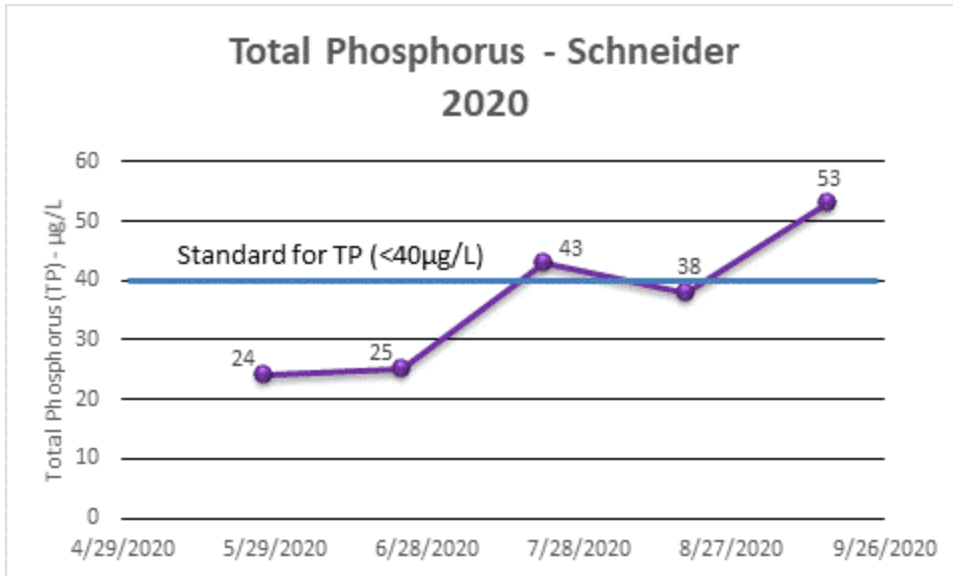
Krays Data Summary

Krays, a flowage lake within the Sauk River Chain of Lakes, was sampled five times throughout the 2020 monitoring season. Sampling occurred once per month from May through September.

As shown in the graphs, Krays had four of five total phosphorus samples exceed the standard in 2020, and the yearly average also exceeded the standard. Chlorophyll-a samples exceed the standard four of five times in 2020, with the yearly average also exceeding the standard. Secchi disk readings met the standard for two out of the five readings in 2020, and all of the secchi disk yearly averages have met the standard and been within 0.1 meter of each other and the standard.

In the case of flowage lakes, such as Krays, the site specific standards are more lenient than the ecoregion standards.

Schneider (NCHF Ecoregion Standards)

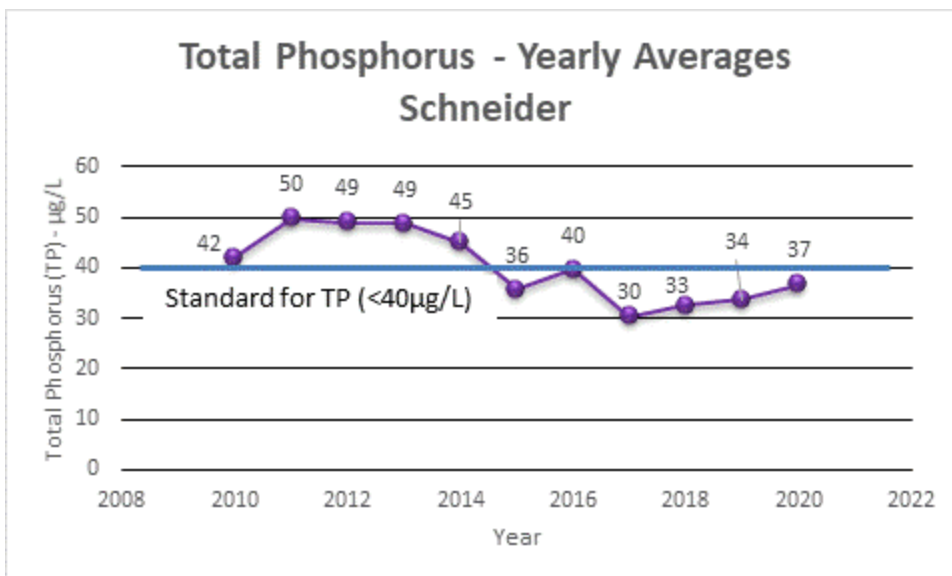


Total Phosphorus (TP)

Total phosphorus is made up of both organic and inorganic (ortho-phosphorus) phosphorus. It can be found suspended in the water or in the bottom sediments of the lake.

The TP standard for North Central Hardwood Forest (NCHF) Ecoregion lakes is $< 40\mu\text{g/L}$.

The figure to the left shows the TP results for Schneider during the 2020 monitoring season. Three of the five samples met the NCHF Ecoregion standard of $40\mu\text{g/L}$.



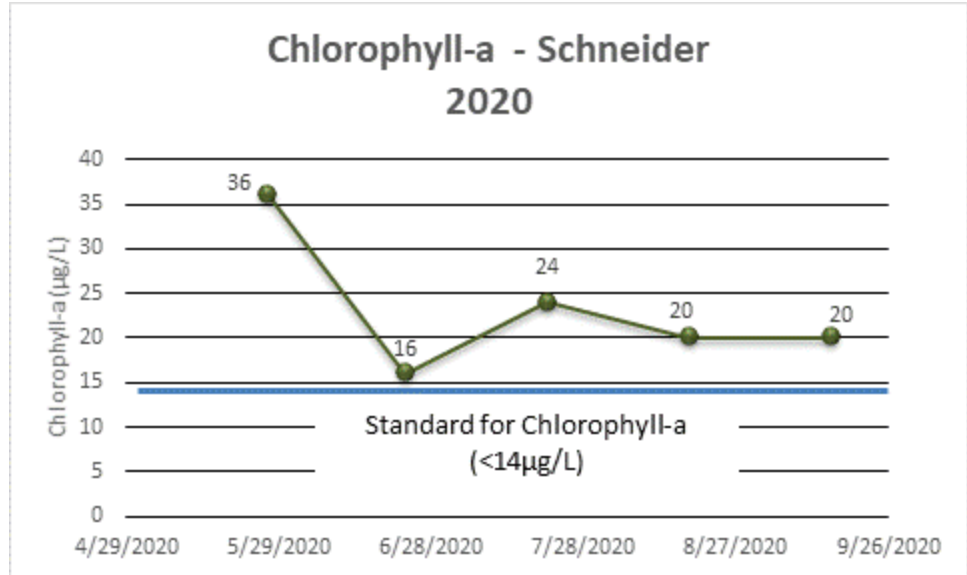
The figure to the left shows the yearly averages for total phosphorus samples collected in Schneider from 2010 to 2020. The yearly averages from 2010 through 2014 did not meet the standard, however, the averages from 2015 through 2020 have.

Chlorophyll-a (Chl-a)

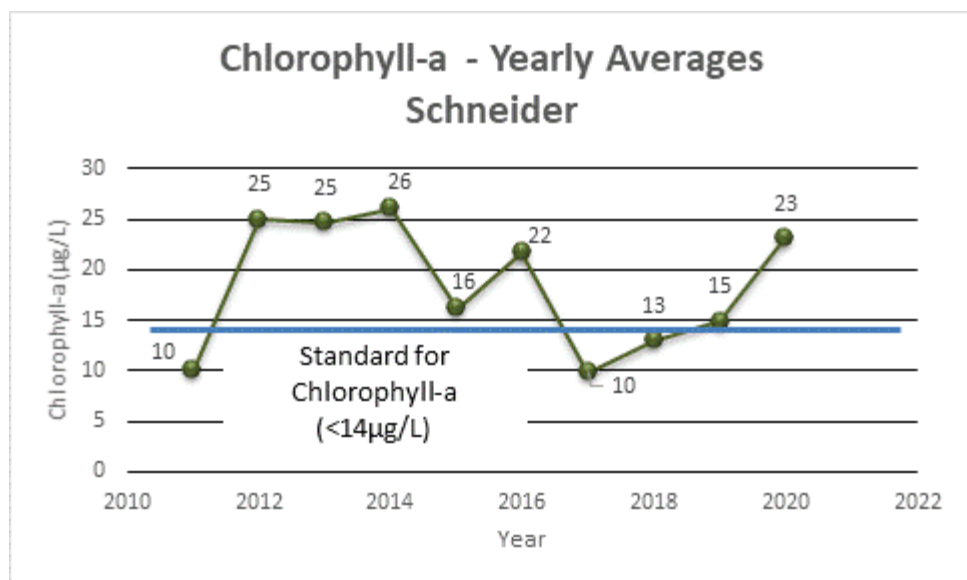
Chlorophyll-a samples are used to measure the amount of algae in the water. Algae grows as the water warms and the amount of growth is dependent on the amount of phosphorus available. Other environmental factors, such as wind and water temperature, can impact the amount of algae growth as well.

The Chl-a standard for North Central Hardwood Forest (NCHF) Ecoregion lakes is $< 14\mu\text{g/L}$.

The figure to the right shows the Chl-a results for Schneider during the 2020 monitoring season. All five samples exceed the site specific standard.



The figure to the right shows the yearly averages for chlorophyll-a samples collected in Schneider from 2010-2020. In 2018, the yearly average met the standard for the second time since 2010. 2019 and 2020 yearly averages exceeded the standard once again.



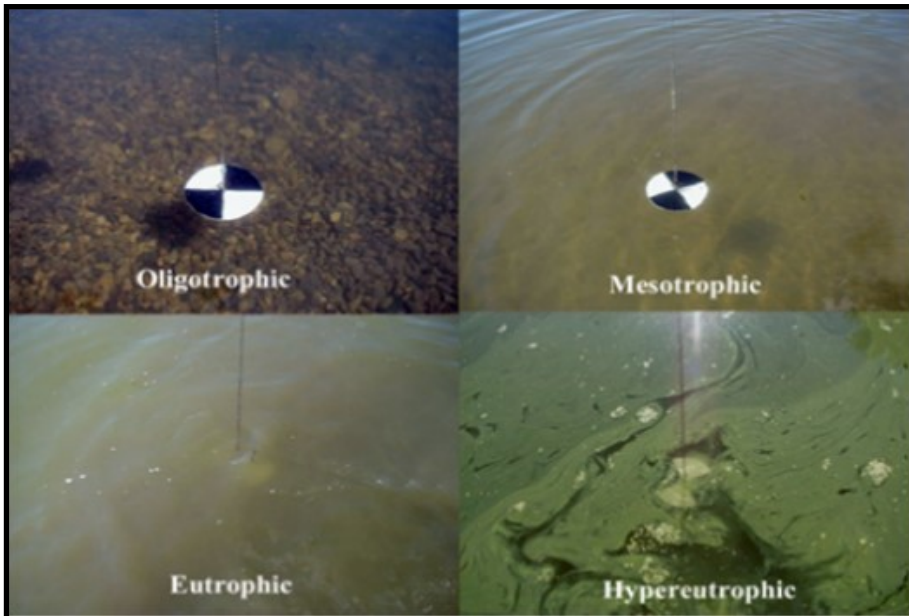


Photo Courtesy of the Minnesota Pollution Control Agency (MPCA)

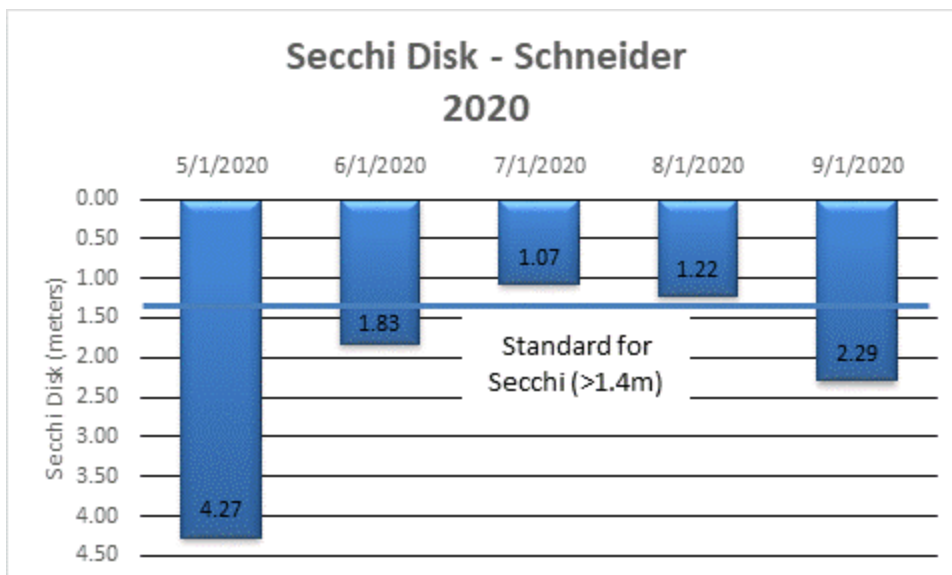
The photo to the left provides examples of what the four main lake classifications (according to Carlson's Trophic Status Index/TSI) would look like during a secchi disk reading.

The four stages of lake classification are oligotrophic (clean, clear), mesotrophic (temporary algal and aquatic plant problems), eutrophic (persistent algal blooms and aquatic plant problems), and hypereutrophic (extreme nuisance algal blooms and aquatic plant problems).

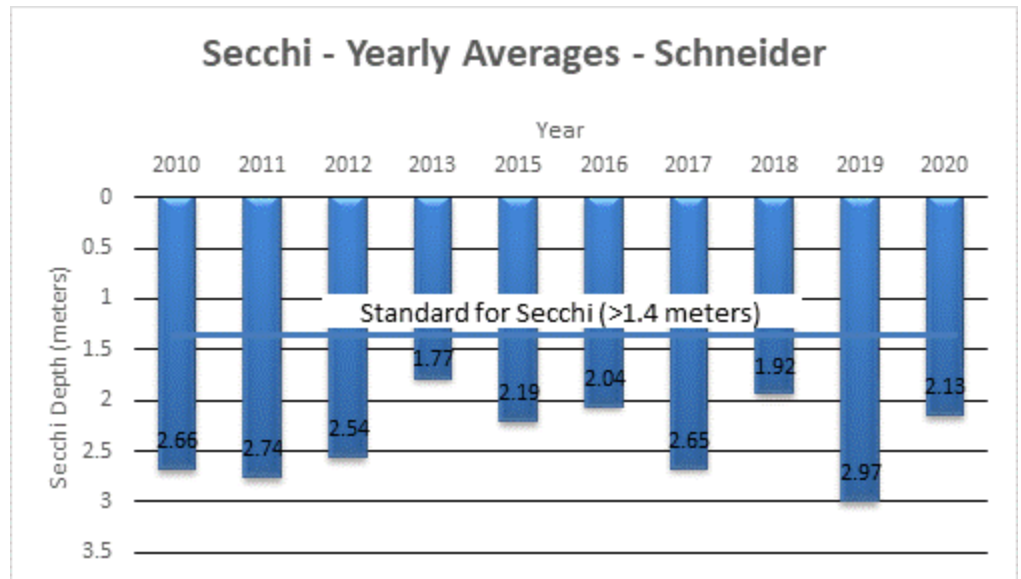
Secchi Disk

Water clarity is measured using a transparency disk (also known as a secchi disk) that is lowered into the water until it can no longer be seen. Ideally, water clarity is measured every time the lake is sampled (if not more). This data, along with phosphorus and chlorophyll-a data, is used to assess the water quality of a lake.

The standard for secchi readings in North Central Hardwood Forest (NCHF) Ecoregion lakes is > 1.4 meters. The figure below shows the secchi readings taken on Schneider during 2020, where three of the five measurements met the standard.



The figure to the right shows the yearly averages for secchi disk readings on Schneider Lake from 2010-2020, all of which met the standard.



Schneider Data Summary

Schneider, one of the few lakes within the Sauk River Chain of Lakes that is regulated by the North Central Hardwood Forest (NCHF) Ecoregion Standards, was sampled five times throughout the 2020 monitoring season. Sampling occurred once per month from May through September.

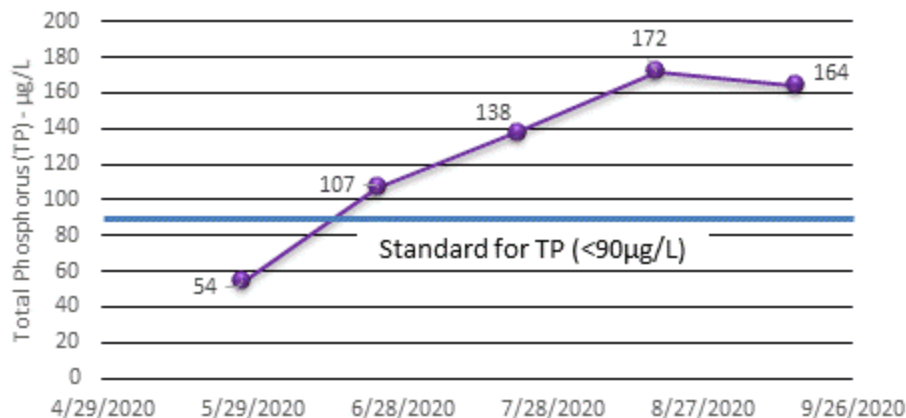
As shown in the graphs, three out of the five total phosphorus samples collected from Schneider in 2020 met the standard, with the yearly average also meeting the standard.

All chlorophyll-a samples collected from Schneider in 2020 exceed the standard, as did the yearly average.

Three out of five secchi disk readings met the standard in 2020, and all of the yearly averages since 2010 have met the standard.

Zumwalde (flowage lake)

Total Phosphorus - Zumwalde 2020



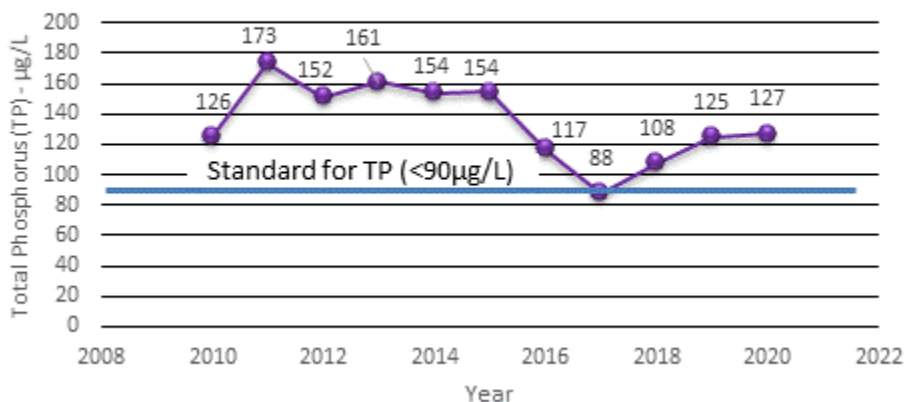
Total Phosphorus (TP)

Total phosphorus is made up of both organic and inorganic (ortho-phosphorus) phosphorus. It can be found suspended in the water or in the bottom sediments of the lake.

The site specific standard for TP in flowage lakes within the SRCL is $< 90\mu\text{g/L}$.

The figure to the left shows the TP results for Zumwalde during the 2020 monitoring season. Four of the five samples exceeded the standard and one sample met the standard.

Total Phosphorus - Yearly Averages Zumwalde



The figure to the left shows the yearly averages for total phosphorus samples collected in Zumwalde from 2010 to 2020.

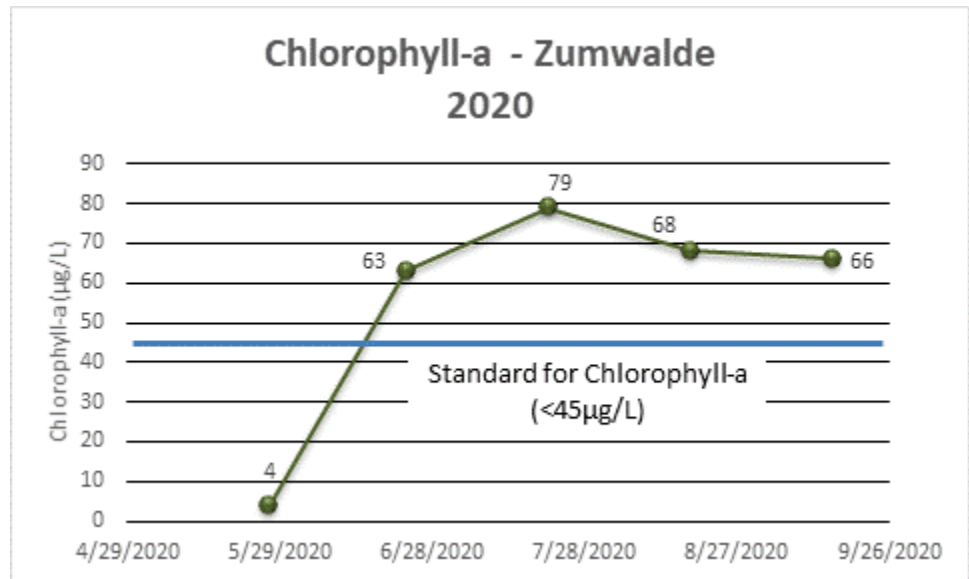
The 2017 yearly average was the first that met the standard since before 2010, however, the 2018, 2019 and 2020 averages exceeded the standard.

Chlorophyll-a (Chl-a)

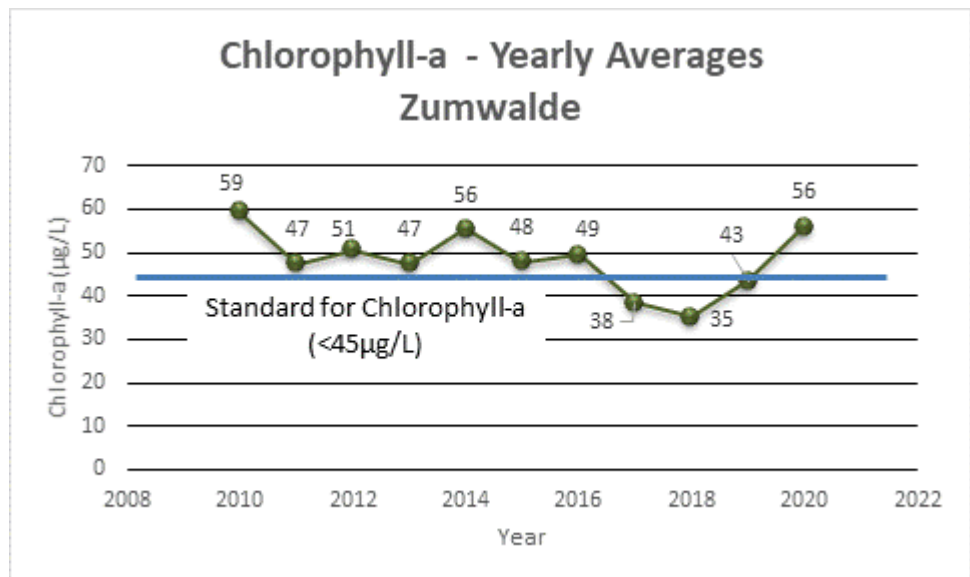
Chlorophyll-a samples are used to measure the amount of algae in the water. Algae grows as the water warms and the amount of growth is dependent on the amount of phosphorus available. Other environmental factors, such as wind and water temperature, can impact the amount of algae growth as well.

The site specific standard for Chl-a in flowage lakes within the SRCL is $< 45\mu\text{g/L}$.

The figure to the right shows the Chl-a results for Zumwalde during the 2020 monitoring season. One of the five samples met the site specific standard.



The figure to the right shows the yearly averages for chlorophyll-a samples collected in Zumwalde from 2010-2020, where 2017 was the first yearly average that has met the standard since before 2010. The averages for 2018 and 2019 continued that trend and also met the standard, however, the average for 2020 exceeded the standard.



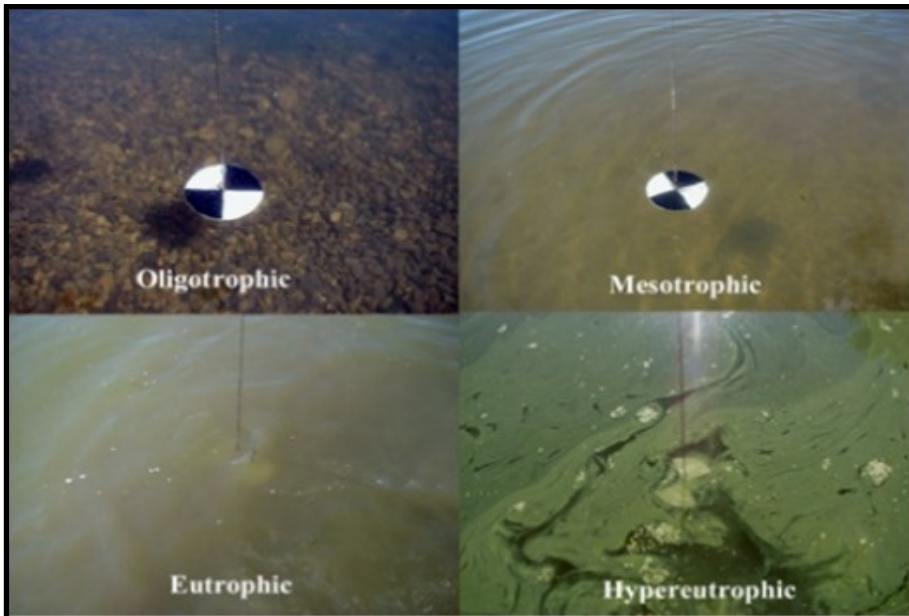


Photo Courtesy of the Minnesota Pollution Control Agency (MPCA)

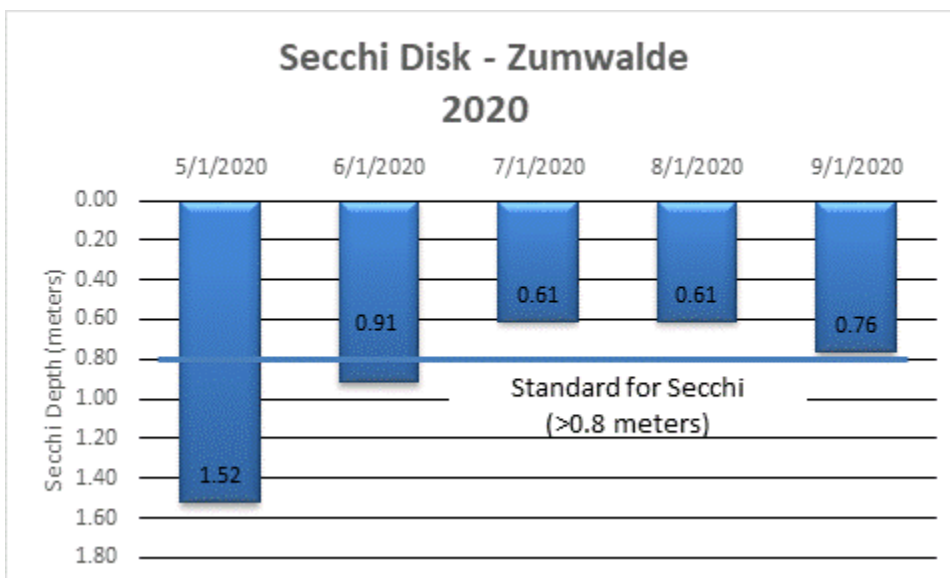
The photo to the left provides examples of what the four main lake classifications (according to Carlson's Trophic Status Index/TSI) would look like during a secchi disk reading.

The four stages of lake classification are oligotrophic (clean, clear), mesotrophic (temporary algal and aquatic plant problems), eutrophic (persistent algal blooms and aquatic plant problems), and hypereutrophic (extreme nuisance algal blooms and aquatic plant problems).

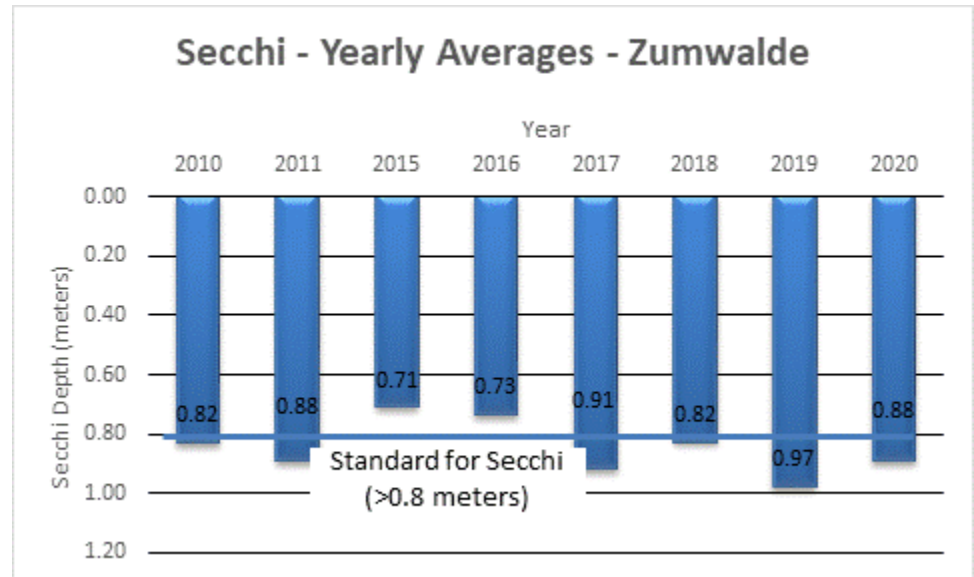
Secchi Disk

Water clarity is measured using a transparency disk (also known as a secchi disk) that is lowered into the water until it can no longer be seen. Ideally, water clarity is measured every time the lake is sampled (if not more). This data, along with phosphorus and chlorophyll-a data, is used to assess the water quality of a lake.

The site specific standard for secchi readings in flowage lakes within the SRCL is > 0.8 meters. The figure below shows the secchi readings taken on Zumwalde during 2020, where two out of five measurements met the site specific standard.



The figure to the right shows the yearly averages for secchi disk readings on Zumwalde, where the yearly average has met the standard six out of eight years that have been sampled since 2010. Although three of the five secchi disk readings taken in 2020 did not meet the standard, the overall 2020 average did meet the standard.



Zumwalde Data Summary

Zumwalde, a flowage lake within the Sauk River Chain of Lakes, was sampled five times throughout the 2020 monitoring season. Sampling occurred once per month from May through September.

As shown in the graphs, only one of five total phosphorus samples collected on Zumwalde in 2020 met the standard. The 2020 yearly average for total phosphorus did not meet the standard.

Four out of five chlorophyll-a samples exceeded the standard in 2020, with the yearly average also exceeding the standard.

Secchi disk readings collected in 2020 met the standard two out of five times with the yearly average also meeting the standard.

Summary of 2020 Monitoring Data

Of the six lakes on the Sauk River Chain of Lakes monitored in 2020, total phosphorus yearly averages from five of the lakes did not meet the standard (Cedar Island, Knaus, Krays, Horseshoe and Zumwalde). The yearly total phosphorus average for Schneider did meet the standard.

For chlorophyll-a, all six of the lakes had averages that did not meet standards.

Five of the six lakes had yearly secchi disk averages for 2020 that met the standard. The yearly average for Horseshoe did not.

Although the Chain of Lakes is often referred to as a whole system, it is important to remember there are several different types of lakes within the system. Each type of lake, flowage, non-flowage, NCHF Ecoregion, etc., has been identified as having a specific set of characteristics that classified them to a certain set of standards. These standards are the goals for each lake within the chain. Due to the development of site specific standards, each lake should be looked at individually for progress and regression, as well as being looked at as a part of the entire system.

It is also important to note that numerous factors, such as precipitation, temperatures, etc., can impact water quality results. Looking at trends over time is helpful when trying to gain an understanding of what is happening in the lake as a whole.

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IMPORTANT REMINDERS

THE DATA AND RECOMMENDATIONS INCLUDED IN THIS REPORT ARE BASED ON THE 2020 MONITORING SEASON, ALONG WITH SUMMARIZATIONS OF DATA FROM 2010-2020. SAMPLES WERE COLLECTED BY A LAKE ASSOCIATION VOLUNTEER (WITH THE EXCEPTION OF 2019, WHEN SAMPLES WERE COLLECTED BY SRWD STAFF) AND DATA WAS REVIEWED BY THE SAUK RIVER WATERSHED DISTRICT. IT IS IMPORTANT TO REMEMBER THAT THIS DATASET IS NOT A COMPLETE PICTURE OF ALL CONDITIONS.

PLEASE CONTACT SARAH JO BOSER, WATER RESOURCE MANAGER AT THE SAUK RIVER WATERSHED DISTRICT, WITH ANY QUESTIONS OR CONCERNS REGARDING THE INFORMATION PRESENTED IN THIS REPORT.