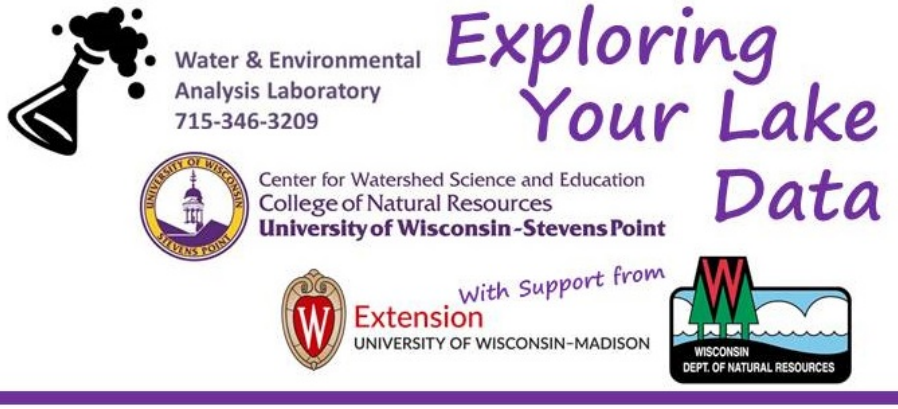
Lake Monitoring Report
Honey Lake - Deep Hole (653289), Walworth Co.
Fall 2022

The Water and Environmental Analysis Laboratory at the University of Wisconsin Stevens Point has provided lake monitoring reports to Wisconsin citizens and groups since the 1970s. Our new report allows us to combine results from some of your monitoring through our laboratory with results stored in the Wisconsin Department of Natural Resources Surface Water Integrated Monitoring System (SWIMS) database. In the report that follows, we are showing results described as collected in the upper 6.5 feet (2 meters) of your lake and any concentrations reported as below the detection limit are plotted at one-half of the detection limit. If you see graphs with no data plotted, this means no data has been collected, or it has not been entered into the WDNR SWIMS database.

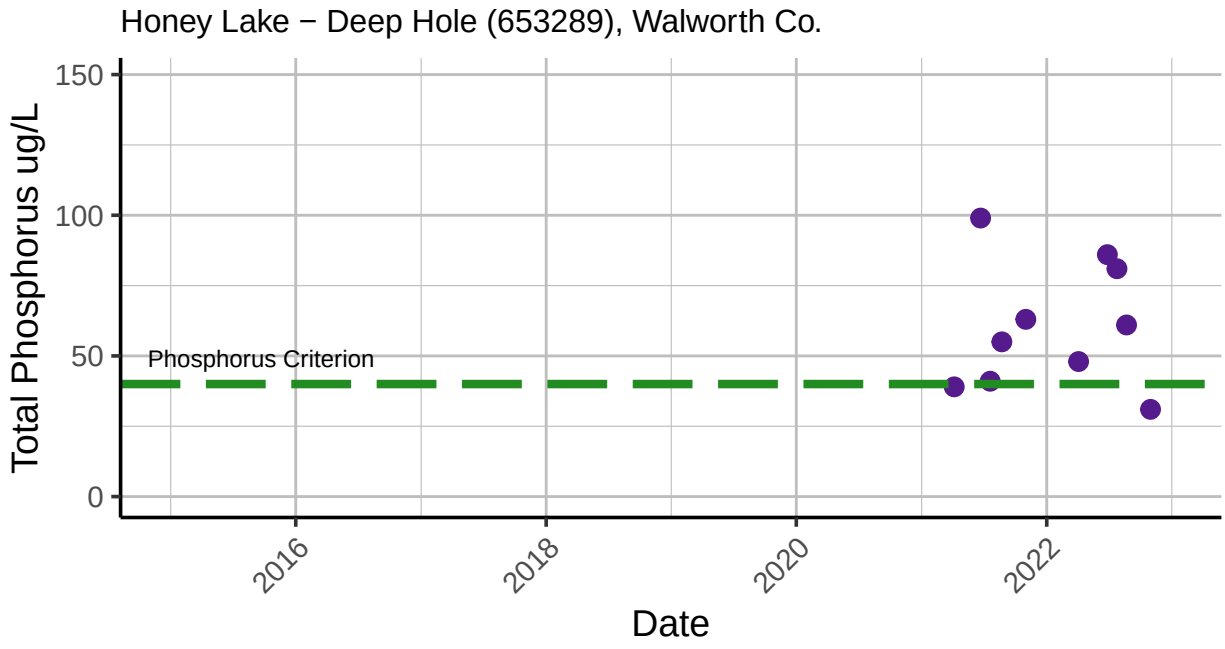
We encourage you to let us know if you believe something is missing, something is in error, or if you feel the report could be improved. Your comments will be important to our ongoing efforts to develop these data presentation tools.

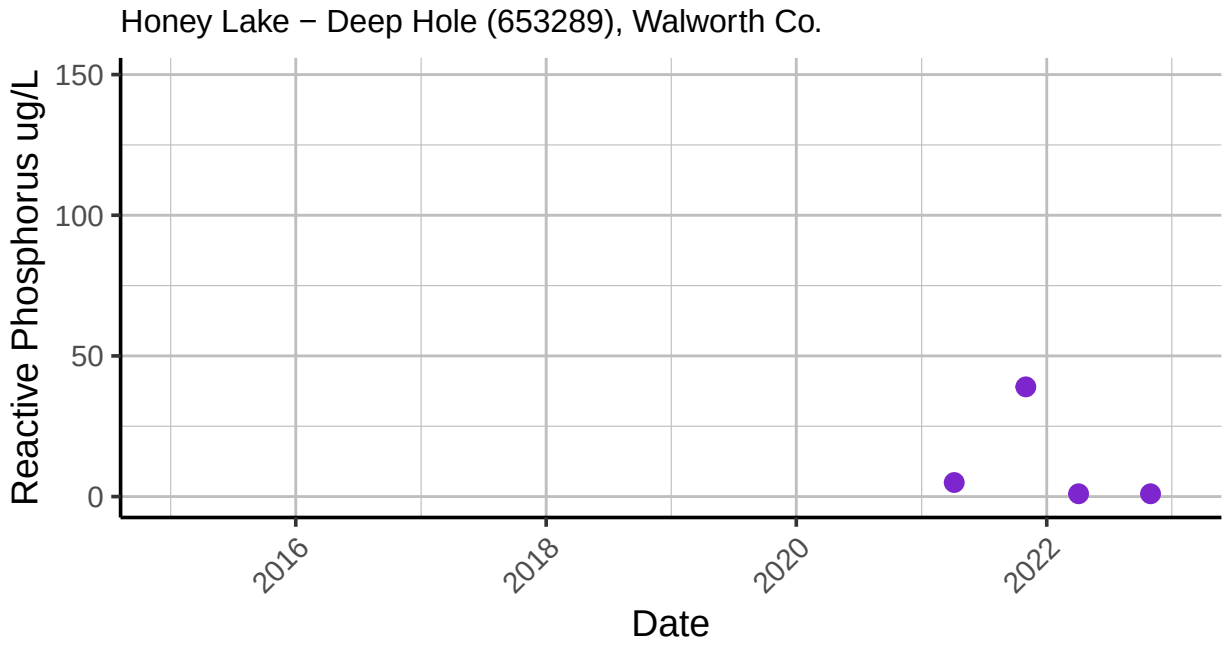
Please send your comments and questions to us at weal@uwsp.edu.

Thank you for your efforts to monitor and understand Wisconsin's water resources.



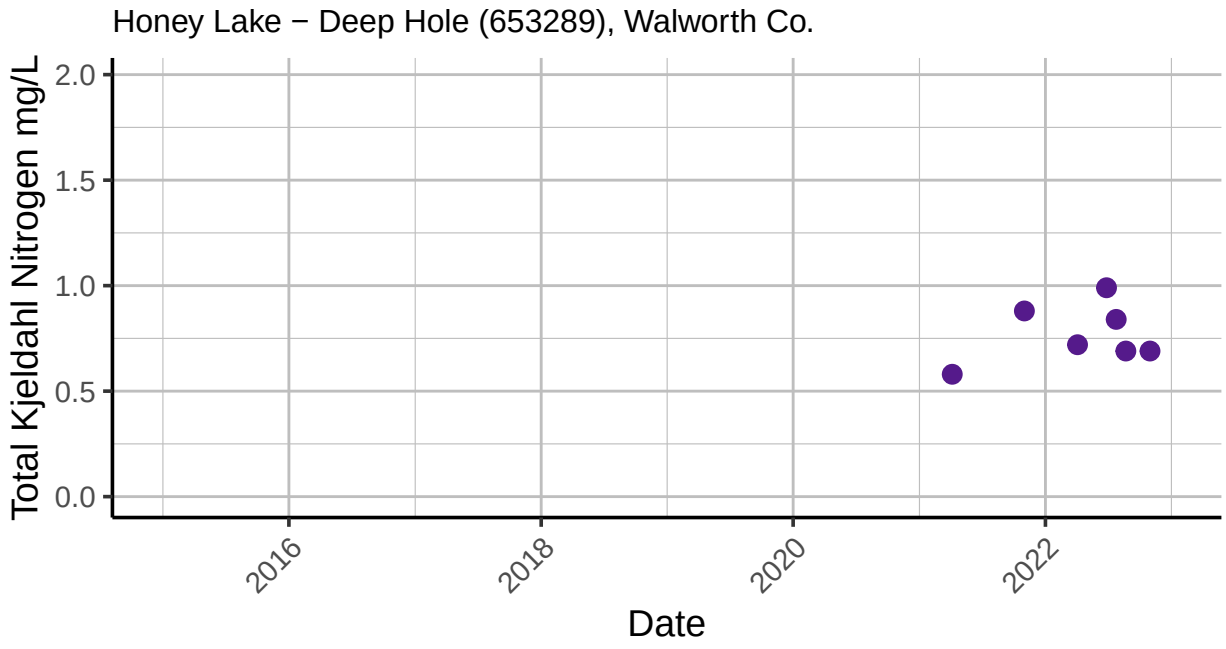
Total and Reactive Phosphorus

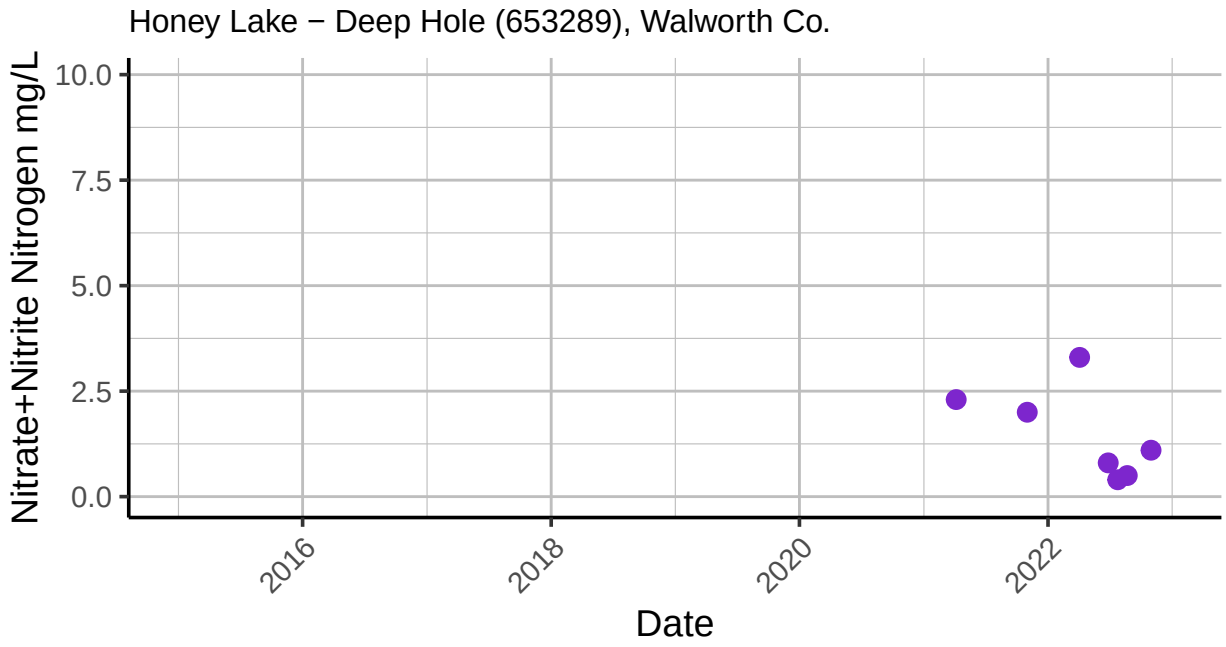




Phosphorus concentrations likely control the growth and amount of algae in your lake. Reactive phosphorus dissolves in water and aids plant growth. Total P is considered a better indicator because it remains more stable than reactive P. The Total P Criterion line shows the upper limit for a lower likelihood of nuisance algal blooms for your lake type.

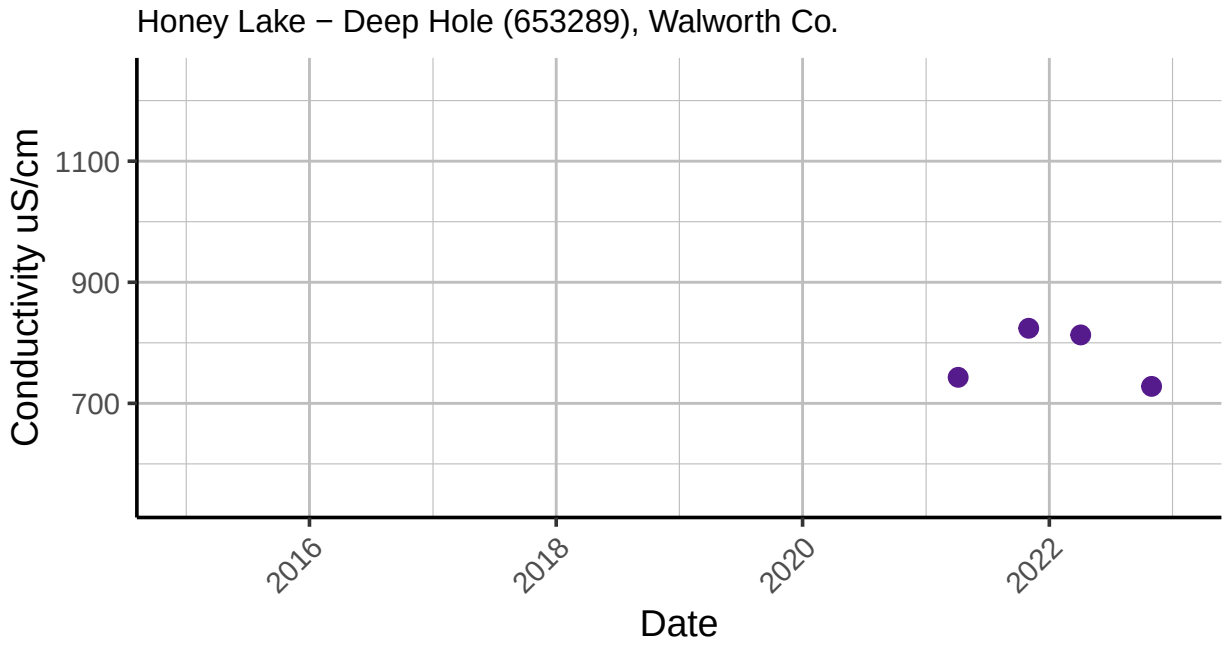
Total Kjeldahl Nitrogen and Nitrate+Nitrite Nitrogen

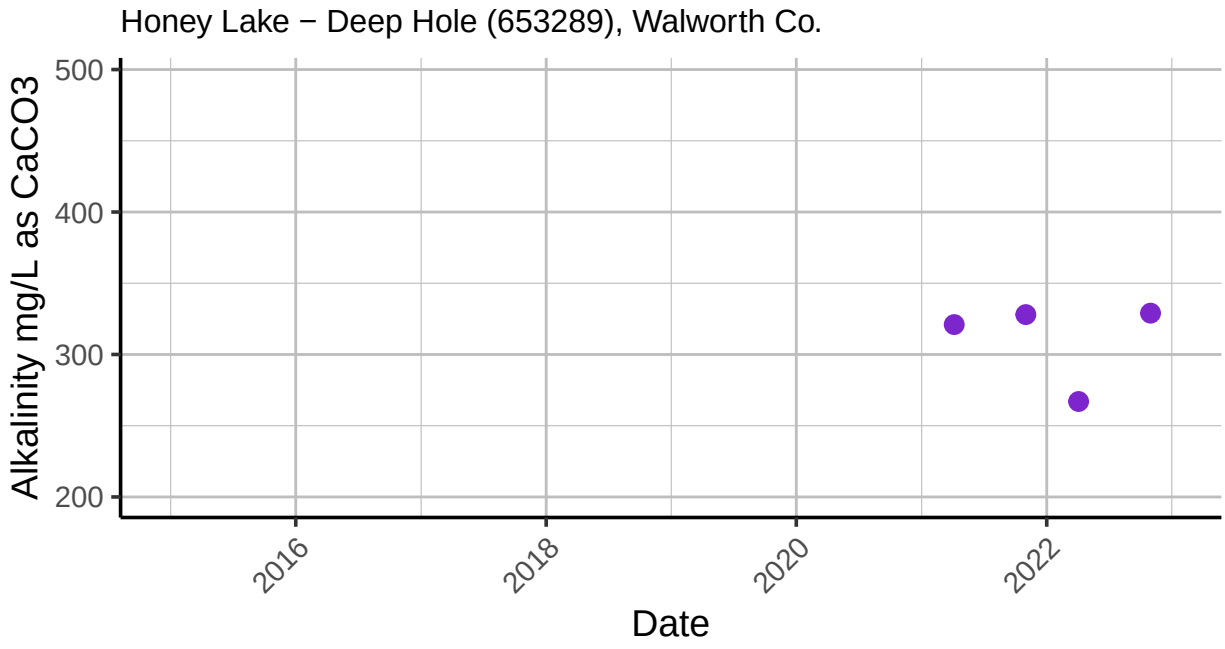




Nitrogen is a critical element for the growth of algae and plants in a lake. Nitrogen concentrations are less likely to be controlling the overall biological productivity than phosphorus concentrations, but increasing nitrogen over time can lead to changes in amount and type of plant and algal communities. Nitrogen in lake water typically corresponds to local land use.

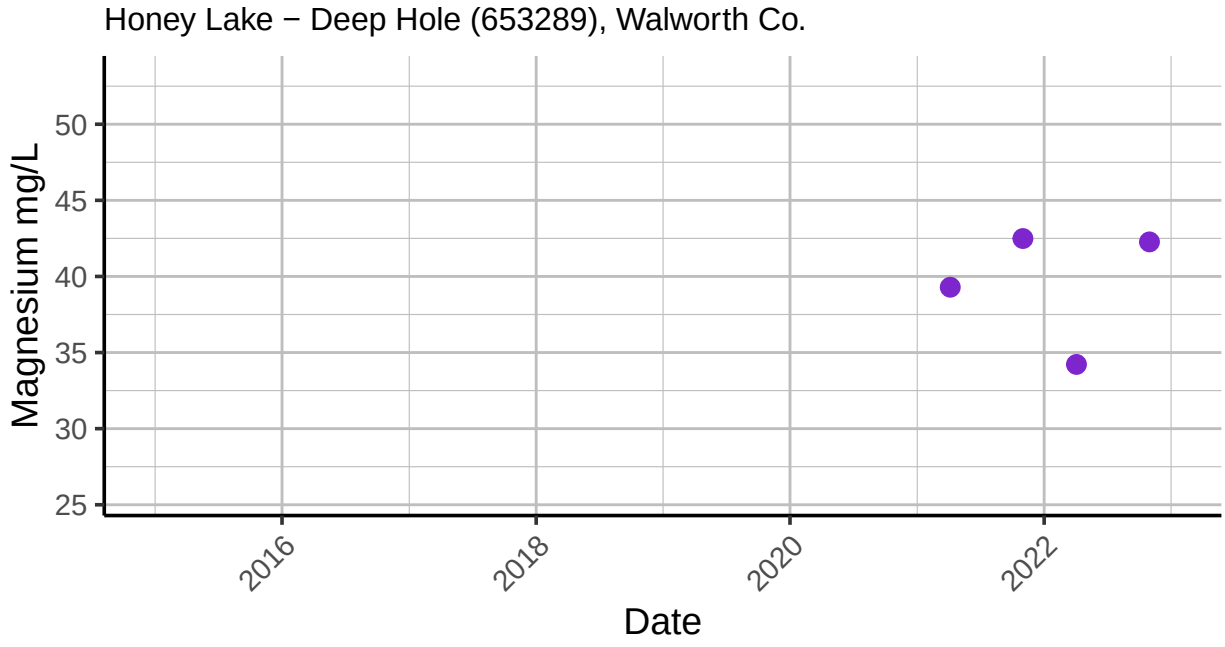
Conductivity and Total Alkalinity





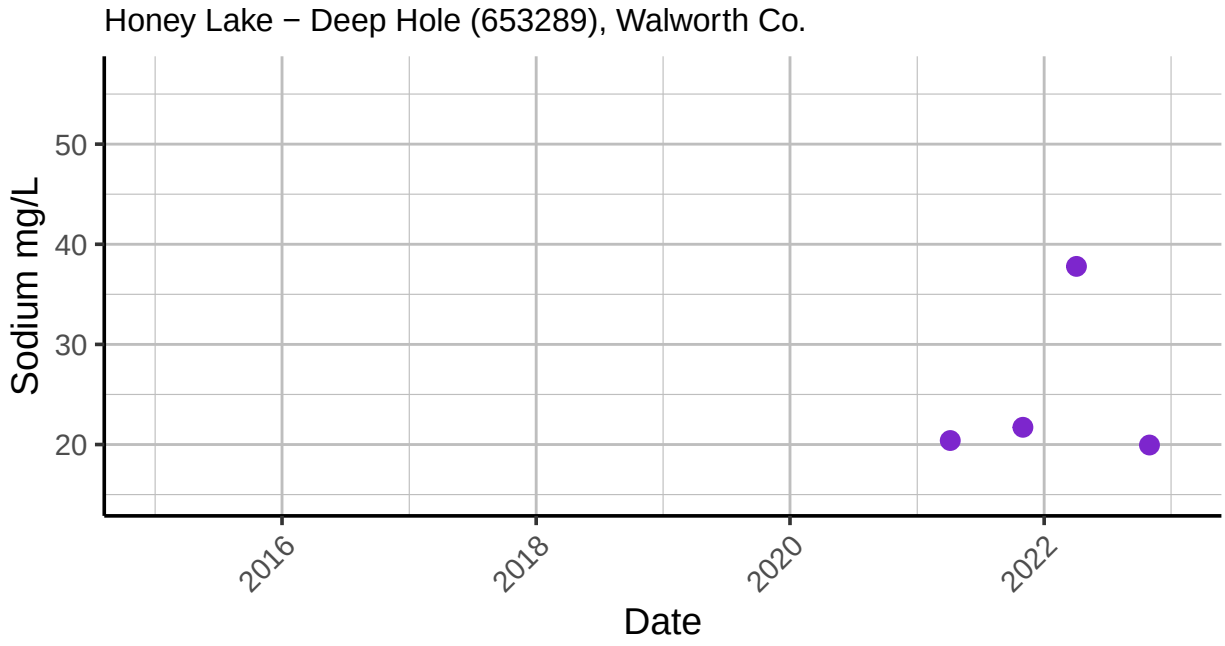
Conductivity is a measure of all the dissolved minerals and salts in your lake. Much of this results from groundwater slowly dissolving the local rocks and minerals as it moves towards your lake. Changes over time may reflect variations in water levels and the addition of salts from deicing and water softening. Alkalinity measures those forms of dissolved minerals that resist changes to pH in the lake.

Calcium and Magnesium



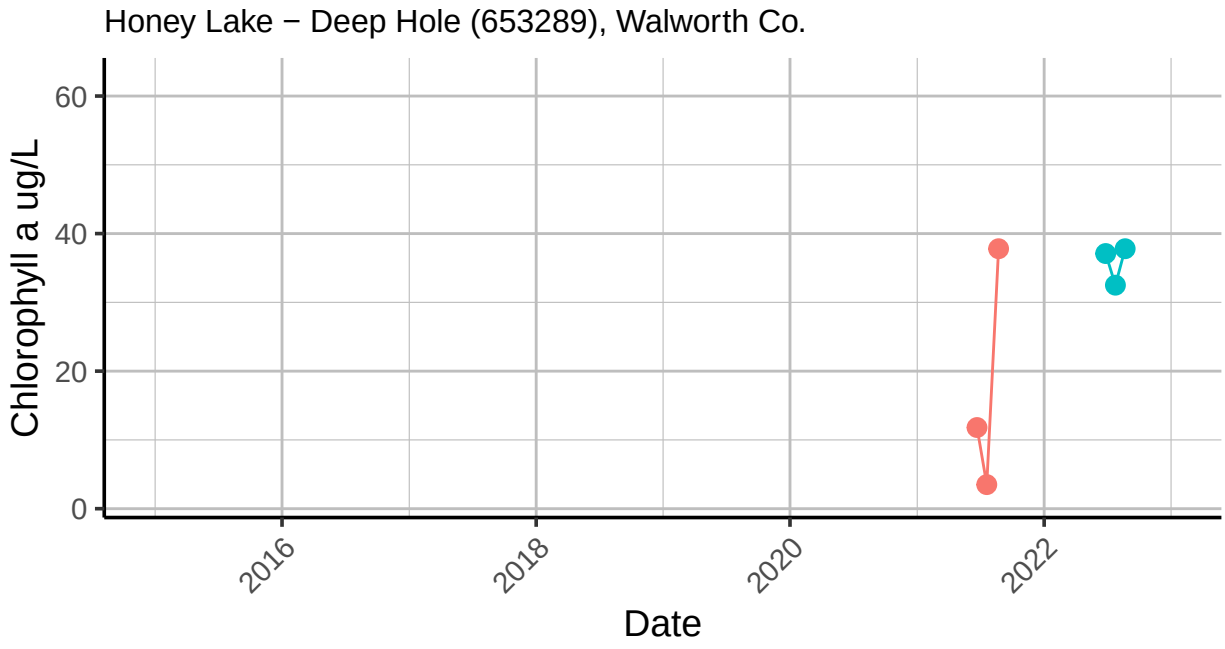
Calcium and magnesium are two essential elements that enter your lake from the groundwater. Calcium is important for the formation of shells in mussels and snails. Lakes with more than 30 to 40 mg/l calcium are considered to be hardwater lakes while those with less than 10 mg/l are softwater.

Chloride and Sodium

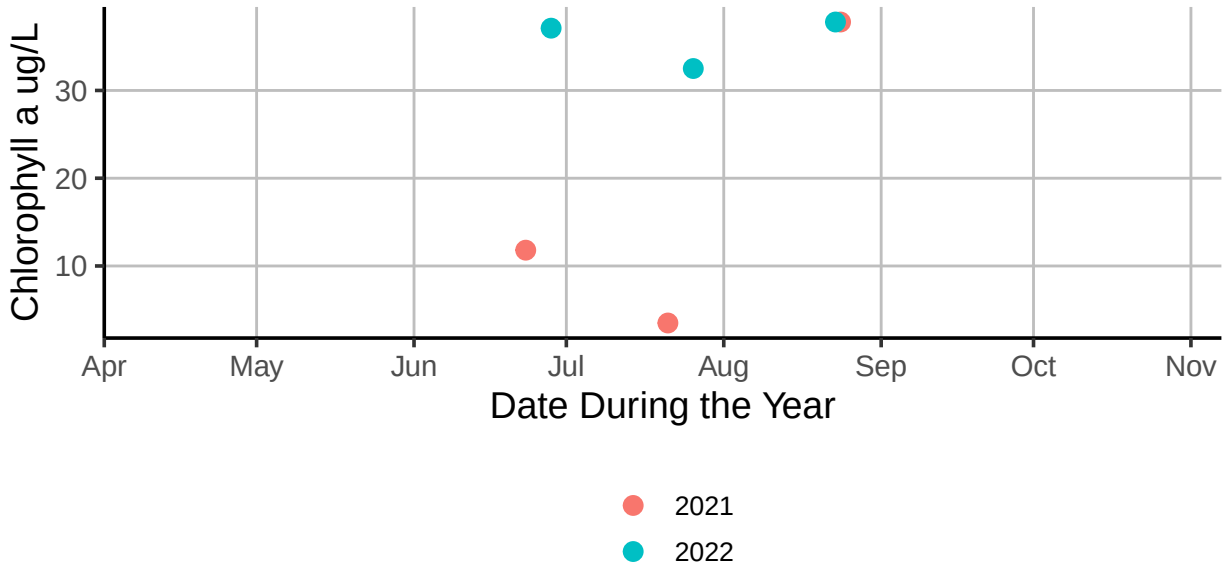


Chloride and sodium concentrations can be naturally occurring at 2 to 3 mg/l in Wisconsin but higher concentrations, especially where trends indicate the concentrations are increasing, usually represent additions of salt from road deicing compounds, water softening salts and fertilizers.

Chlorophyll over time and during the growing season

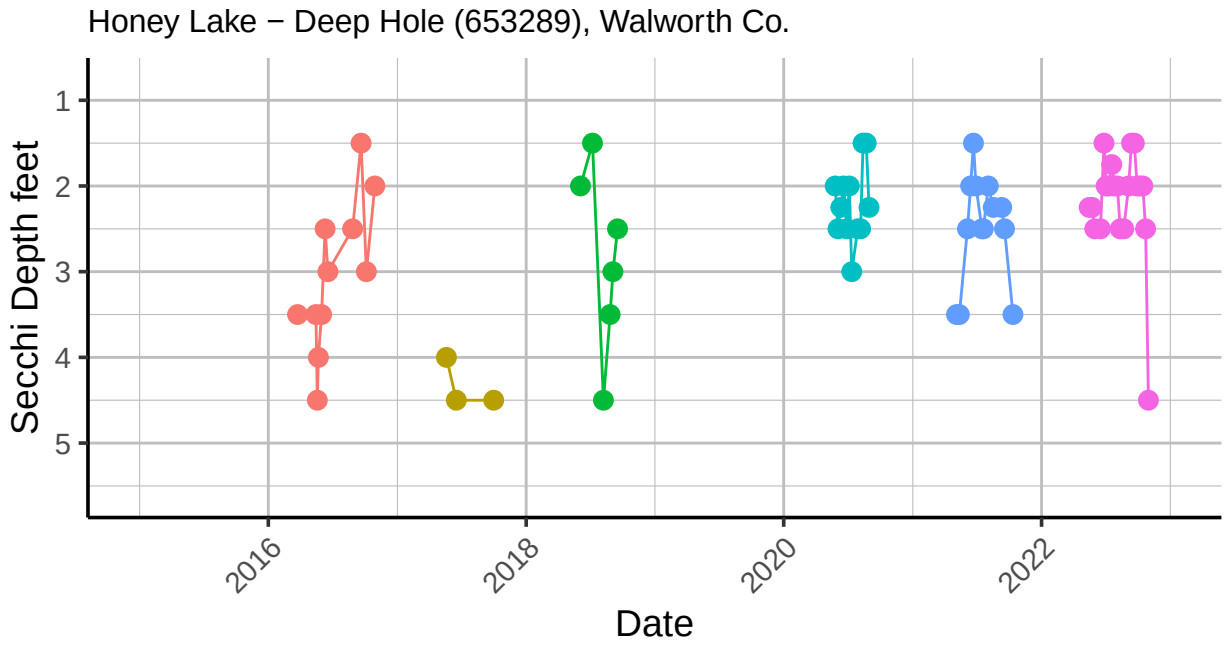


Plot below shows this during the year (only the last ten years shown):

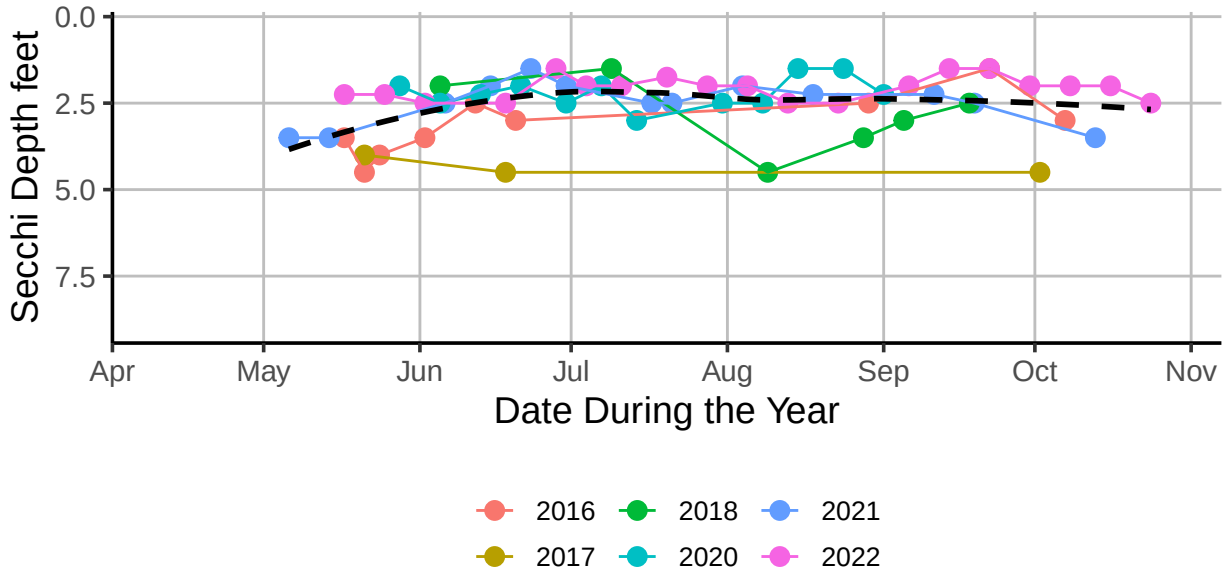


Chlorophyll is an algal pigment and its concentration is a measure of the amount of suspended algae in the lake. The upper figure shows how chlorophyll concentrations have varied over time. The lower figure shows how the concentrations have varied within the year. Seasonal variation reflects how phosphorus concentrations, mixing and warming influence algal concentrations.

Secchi Depth over time and during the growing season

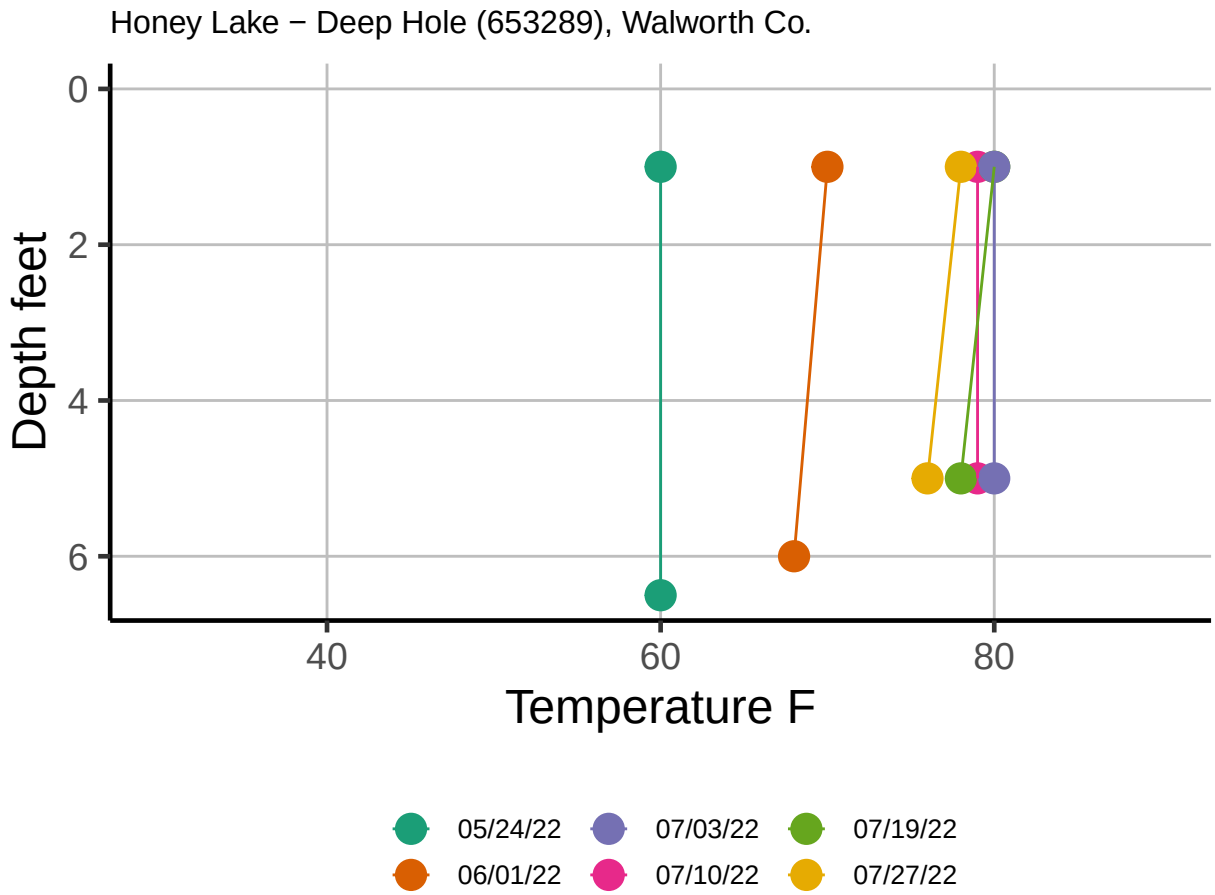


Plot below shows this during the year (only the last ten years shown):



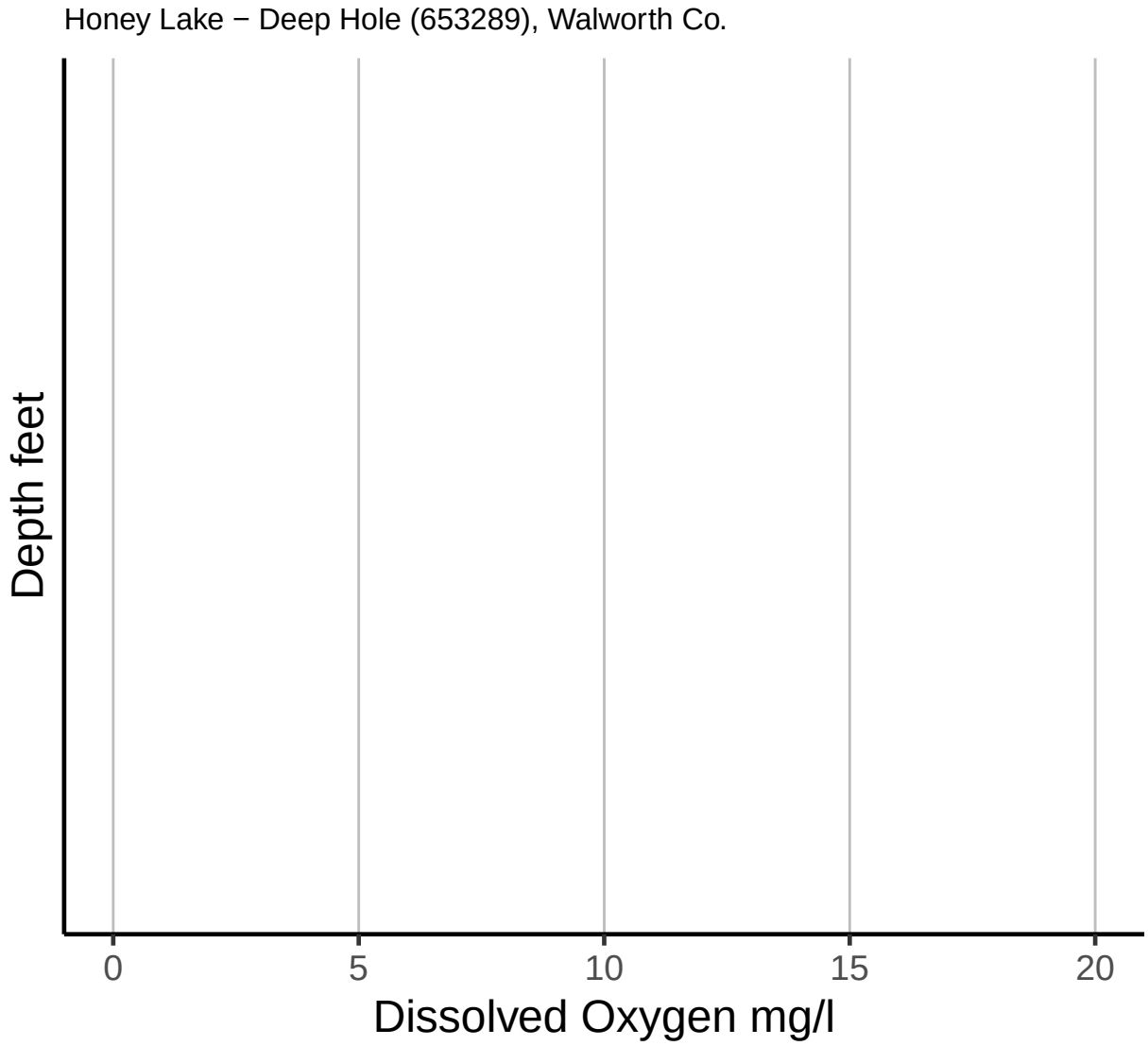
Secchi Disk depth measurements can vary over time with changes in the amount of algae and they also vary during the year as algae respond to phosphorus additions and recycling, and increasing temperature, in addition to variations in turbidity from lake mixing. If you do not see data plotted above, this means that no Secchi Disk data has been collected, or the data has not been entered into the WDNR SWIMS database.

Temperature profiles during the year



Temperature profiles show the extent to which the lake stratifies as the lake warms in the summer and mixes as it cools in the fall. If you do not see data plotted above, this means that no temperature data has been collected this year, or the data has not been entered into the WDNR SWIMS database.

Dissolved oxygen profiles during the year



Dissolved oxygen profiles show how and where oxygen is consumed in the lake by microbial respiration and added to the lake by mixing with the atmosphere and photosynthesis at different depths. If you do not see data plotted above, this means that no dissolved oxygen data has been collected this year, or the data has not been entered into the WDNR SWIMS database.

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Honey Lake
N6208 W Lakeshore Dr
Burlington, WI 53105

Date Reported 11/17/22
Date Received 11/01/22
DNR State Cert. 750040280

2200669-01 Honey Lake - Deep Hole

Sampled: 10/31/2022 12:40PM	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Notes
Alkalinity	329	mg/L	1	4	4	11/09/22	SM2320B	
Ammonium as NH3-N	0.01	mg/L	1	0.01	0.03	11/10/22	SM4500-NH3 H	
Calcium	80.43	mg/L	1	0.020	0.067	11/15/22	EPA 200.7	
Chloride (FIA)	42.1	mg/L	1	0.5	1.5	11/04/22	SM4500-Cl- G	
Conductivity	728	µS	1	1	1	11/09/22	SM2510B	
Hardness by Calculation	374.9	mg/L	1	0.0499	0.1673	11/15/22	SM2340B	
Magnesium	42.27	mg/L	1	0.007	0.024	11/15/22	EPA 200.7	
NO3+NO2(N)	1.1	mg/L	1	0.1	0.3	11/04/22	SM4500-NO3- F	
pH	8.30	SU	1	0.10	0.30	11/09/22	SM4500H+B	
Potassium	2.494	mg/L	1	0.015	0.050	11/15/22	EPA 200.7	
Sodium	19.95	mg/L	1	0.234	0.781	11/15/22	EPA 200.7	
Soluble Reactive Phosphorus	ND	mg/L	1	0.002	0.006	11/10/22	SM4500-P G	
Sulfate (ICP)	32.03	mg/L	1	0.06	0.20	11/15/22	EPA 200.7	
Total Kjeldahl Nitrogen	0.69	mg/L	1	0.05	0.15	11/15/22	EPA 351.2	
Total Phosphorus	0.031	mg/L	1	0.006	0.018	11/15/22	EPA 365.4	
Turbidity	4.7	NTU	1	0.1	0.3	11/03/22	SM2130B	H

NOTES/DEFINITIONS

D: Sample diluted
H: Hold time exceeded
ND: Analyte not detected at or above the reporting limit
LOD: Limit of Detection. Adjusted for sample dilution when applicable.
LOQ: Limit of Quantitation. Adjusted for sample dilution when applicable.
MPN: Most Probable Number
E. coli count: ND means analyte not detected at or above the limit of detection (LOD), which is 1 organism/100mL

Authorized Signature:

Juli Bowling

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Shelley Hildebrandt
N6208 W Lakeshore Dr
Burlington, WI 53105

Date Reported 09/22/22
Date Received 08/23/22
DNR State Cert. 750040280
WDATCP ID 105-191

2200513-01 Honey Lake - Deep Hole

Sampled: 8/22/2022 12:30PM	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Notes
Chlorophyll a	37.8	µg/L	4	2.4	7.2	09/01/22	EPA 445.0	DF
NO3+NO2(N)	0.5	mg/L	1	0.1	0.3	08/24/22	SM4500-NO3- F	
Total Kjeldahl Nitrogen	0.69	mg/L	1	0.05	0.15	09/01/22	EPA 351.2	
Total Phosphorus	0.061	mg/L	1	0.006	0.018	09/01/22	EPA 365.4	

NOTES/DEFINITIONS

D: Sample diluted
DF: lab duplicate failure
ND: Analyte not detected at or above the reporting limit
LOD: Limit of Detection. Adjusted for sample dilution when applicable.
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Date Reported 08/19/22
Date Received 07/26/22
DNR State Cert. 750040280
WDATCP ID 105-191

2200434-01 Honey Lake - Deep Hole

Sampled: 7/25/2022 2:45PM	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Notes
Chlorophyll a	32.5	µg/L	5	3.0	9.0	08/04/22	EPA 445.0	
NO3+NO2(N)	0.4	mg/L	1	0.1	0.3	08/02/22	SM4500-NO3- F	
Total Kjeldahl Nitrogen	0.84	mg/L	1	0.05	0.15	08/16/22	EPA 351.2	
Total Phosphorus	0.081	mg/L	1	0.006	0.018	08/16/22	EPA 365.4	

NOTES/DEFINITIONS

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Burlington, WI 53105

Date Reported 08/03/22
Date Received 06/28/22
DNR State Cert. 750040280

2200345-01 Honey Lake - Deep Hole

Sampled: 6/27/2022 8:10AM	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Notes
Chlorophyll a	37.1	µg/L	5	3.0	9.0	07/14/22	EPA 445.0	
NO3+NO2(N)	0.8	mg/L	1	0.1	0.3	07/18/22	SM4500-NO3- F	
Total Kjeldahl Nitrogen	0.99	mg/L	1	0.05	0.15	07/19/22	EPA 351.2	
Total Phosphorus	0.086	mg/L	1	0.006	0.018	07/19/22	EPA 365.4	

NOTES/DEFINITIONS

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LOQ: Limit of Quantitation. Adjusted for sample dilution when applicable.
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E. coli count: ND means analyte not detected at or above the limit of detection (LOD), which is 1 organism/100mL

Authorized Signature:

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Burlington, WI 53105

Date Reported 05/16/22
Date Received 04/05/22
DNR State Cert. 750040280

2200124-01 Honey Lake - Deep Hole

Sampled: 4/4/2022 11:45AM	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Notes
Alkalinity	267	mg/L	1	4	4	04/11/22	SM2320B	
Ammonium	0.02	mg/L	1	0.01	0.03	04/11/22	SM4500-NH3 H	
Calcium	77.11	mg/L	1	0.020	0.067	04/29/22	EPA 200.7	
Chloride (FIA)	73.5	mg/L	1	0.5	1.5	04/07/22	SM4500-Cl- G	
Conductivity	813	µS	1	1	1	04/11/22	SM2510B	
Magnesium	34.22	mg/L	1	0.007	0.024	04/29/22	EPA 200.7	
NO3+NO2(N)	3.3	mg/L	1	0.1	0.3	04/07/22	SM4500-NO3- F	
pH	8.26	SU	1	0.10	0.30	04/11/22	SM4500H+B	
Potassium	2.107	mg/L	1	0.015	0.050	04/29/22	EPA 200.7	
Sodium	37.79	mg/L	1	0.234	0.781	04/29/22	EPA 200.7	
Soluble Reactive Phosphorus	ND	mg/L	1	0.002	0.006	04/11/22	SM4500-P G	
Sulfate (ICP)	43.72	mg/L	1	0.06	0.20	04/29/22	EPA 200.7	
Total - Hardness - Calculated	333.5	mg/L	1	0.0499	0.1673	04/29/22	Calculation	
Total Kjeldahl Nitrogen	0.72	mg/L	1	0.05	0.15	04/20/22	EPA 351.2	
Total Phosphorus	0.048	mg/L	1	0.006	0.018	04/20/22	EPA 365.4	
Turbidity	14.3	NTU	1	0.1	0.3	05/04/22	SM2130B	H

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