



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

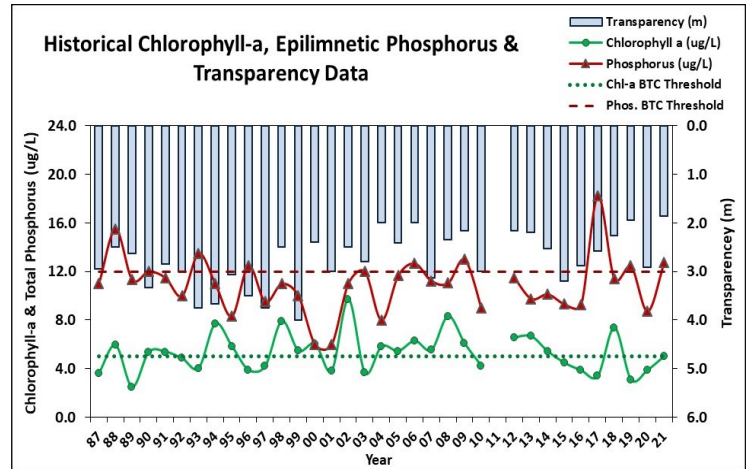
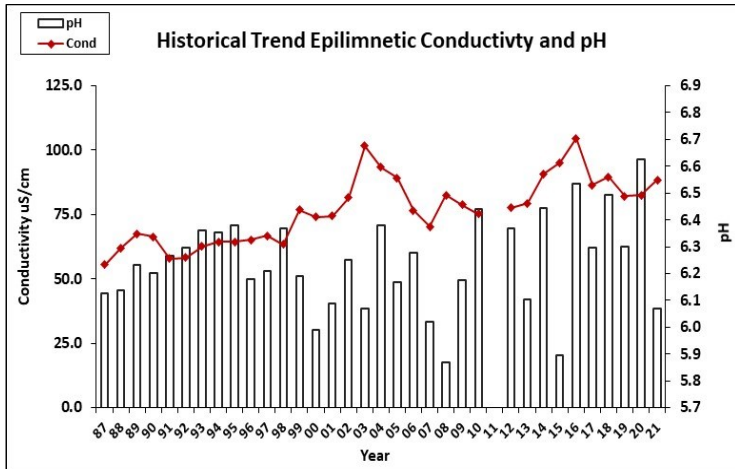
MONOMONAC LAKE, RINDGE

2021 DATA SUMMARY

RECOMMENDED ACTIONS: Great job sampling in 2021! Lake quality is generally representative of mesotrophic, or average conditions, however algal growth tends to fluctuate above the threshold for mesotrophic lakes and cyanobacteria blooms are occurring more frequently which highlights the delicate balance of the system. Evaluate any relationship between exotic plant management activities, such as herbicide treatments, and the occurrence of cyanobacteria blooms. Significant storm events in June and July resulted in higher phosphorus and turbidity levels at several tributary stations. This highlights the importance of implementing stormwater management best practices within the watershed to reduce runoff to tributaries and the lake. Consider development of a watershed management plan to identify and quantify pollutant loads to the lake and make recommendations on management activities to reduce nutrient loading. Water clarity (transparency) worsened in 2021 likely due to significant rainfall amounts and associated stormwater runoff and flushing of wetland systems rich in dissolved organic matter which imparts a tea, or brown, color to the water. Continue to evaluate the relationship between water clarity and color. Keep up the great work!

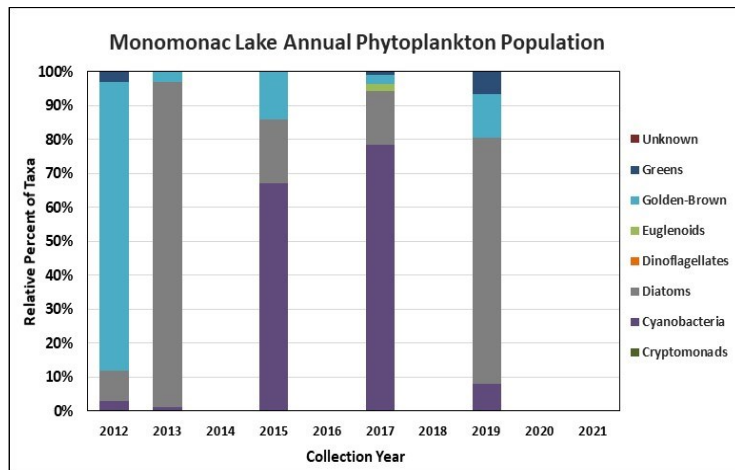
HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Parameter	Trend
Conductivity	Worsening	Chlorophyll-a	Stable
pH (epilimnion)	Stable	Transparency	Worsening
		Phosphorus (epilimnion)	Stable



DISSOLVED OXYGEN AND PHYTOPLANKTON

(Note: Information may not be collected annually)





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OBSERVATIONS *(Refer to Table 1 and Historical Deep Spot Data Graphics)*

- ◆ **CHLOROPHYLL-A:** Chlorophyll level was low in June, increased to slightly elevated in July, and decreased to a low level in August. Average chlorophyll level increased slightly from 2020, was slightly greater than the state median, and was approximately equal to the threshold for mesotrophic lakes. Historical trend analysis indicates stable chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity and chloride levels remained greater than the state medians, yet less than a level of concern. Conductivity and chloride levels were lowest at Dapkas 2 and highest at Goddard Inlet. Historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began.
- ◆ **COLOR:** Apparent color measured in the epilimnion indicates the water was moderately tea colored, or brown, in June and July and increased to highly tea colored, or dark brown, conditions in August following significant July rainfall.
- ◆ **E. COLI:** Marina Inlet and Dolly Lane E. coli levels were slightly elevated in July following significant rainfall, however levels remained less than the state standard of 406 cts/100mL for surface waters.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus level was slightly elevated in June, decreased to a low level in July and remained stable in August. Average epilimnetic phosphorus level increased from 2020 and was slightly greater than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates stable epilimnetic phosphorus levels since monitoring began. Hypolimnetic phosphorus levels were elevated in July and August and the turbidity of the samples was also elevated. Begun, Stateline, and Stateline Int. phosphorus levels fluctuated within a low range. Colburn, Dapkas Inlet, Dapkas 2, Findley Point phosphorus levels were slightly elevated in June following a storm event. Converse, Marina Inlet and Swan Point phosphorus levels fluctuated within a moderate range. Goddard and Sandbeck Inlet phosphorus levels were slightly elevated in July following a storm event. Loon Bay phosphorus was elevated in August and cyanobacteria were noted in the sample.
- ◆ **TRANSPARENCY:** Transparency measured without the viewscope (NVS) was below average (worse) in June, increased (improved) slightly in July, and decreased (worsened) in August when water color was darker. Average NVS transparency decreased from 2020, was lower than the state median, and was the lowest (worse) measured since monitoring began. Historical trend analysis indicates significantly decreasing (worsening) transparency since monitoring began.
- ◆ **TURBIDITY:** Epilimnetic, Begun, Colburn, Dapkas, Findley Point, Loon Bay, Marina, State Line, State Line Int., and Swan Point turbidity levels fluctuated within a low range. Hypolimnetic turbidity levels were elevated in July and August. Converse and Goddard Inlet turbidity levels were slightly elevated in July following storm event.
- ◆ **PH:** Deep spot and tributary pH levels fluctuated within an acidic to slightly acidic range and were less than desirable range 6.5-8.0 units. Historical trend analysis indicates stable epilimnetic pH levels since monitoring began.

Station Name	Table 1. 2021 Average Water Quality Data for LAKE MONOMONAC - RINDGE										
	Alk. (mg/L)	Chlor-a (ug/L)	Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	E. coli (mpn/100mL)	Total P (ug/L)	Trans. (m)		Turb. (ntu)	pH
								NVS	VS		
Epilimnion	3.1	5.02	25	93	88.5		13	1.86	1.50	0.95	6.07
Hypolimnion					93.3		18			5.32	5.87
Begun Inlet			25		88.6		12			0.80	6.11
Colburn Inlet			25		89.6		13			0.84	6.11
Converse Inlet			16		56.6		20			1.24	5.70
Dapkas 2			9		46.1		34			6.89	4.72
Dapkas Inlet			18		71.0		18			0.87	5.68
Findley Point Inlet			27		88.2		14			0.82	6.10
Goddard Inlet			34		112.2		17			1.08	6.12
Loon Bay			26		88.6		13			0.75	6.10
Marina Inlet			28		98.1	107	14			1.26	6.00
48 Dolly Lane						129					
Sandbeck Inlet			26		89.3		13			0.82	6.11
State Line Inlet			26		88.9		11			0.76	6.12
State Line Int. Stream			26		89.7		13			1.06	6.12
Swan Point Inlet			27		90.5		13			0.93	6.07

NH Median Values

Median values generated from historic lake monitoring data.

Alkalinity: 4.5 mg/L **Chlorophyll-a:** 4.39 ug/L
Conductivity: 42.3 uS/cm **Chloride:** 5 mg/L
Total Phosphorus: 11 ug/L **Transparency:** 3.3 m
pH: 6.6

NH Water Quality Standards

Numeric criteria for specific parameters. Water quality violation if thresholds exceeded.

Chloride: > 230 mg/L (chronic) **Turbidity:** > 10 NTU above natural
E. coli: > 88 cts/100 mL (beach)
E. coli: > 406 cts/100 mL (surface waters)
pH: between 6.5-8.0 (unless naturally occurring)