



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

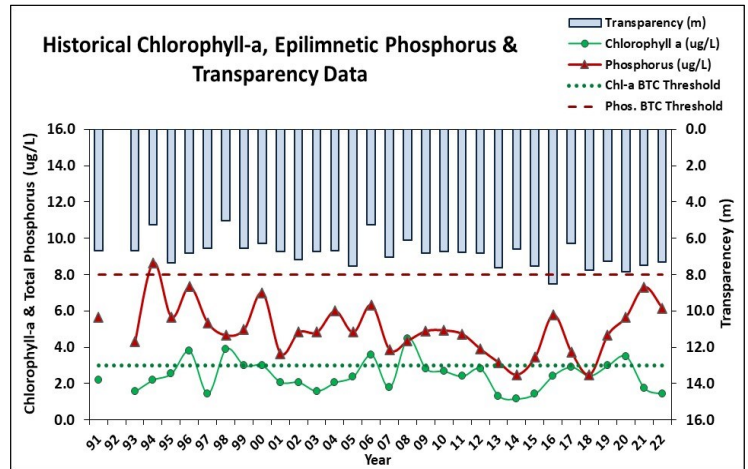
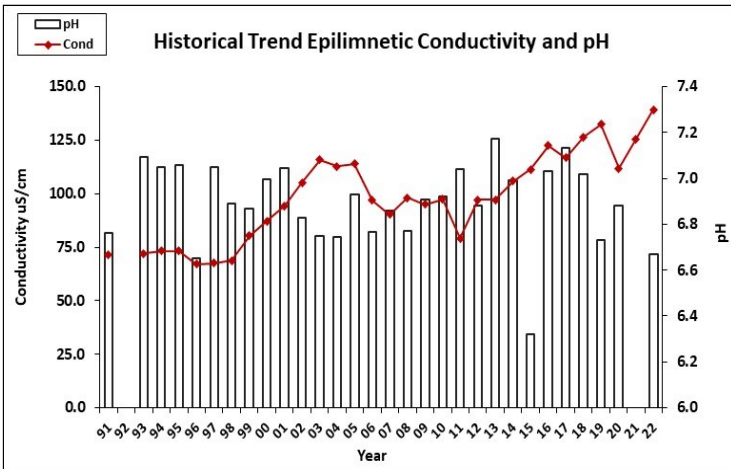
LAKE WAUKEWAN, MAYO STN., MEREDITH

2022 DATA SUMMARY

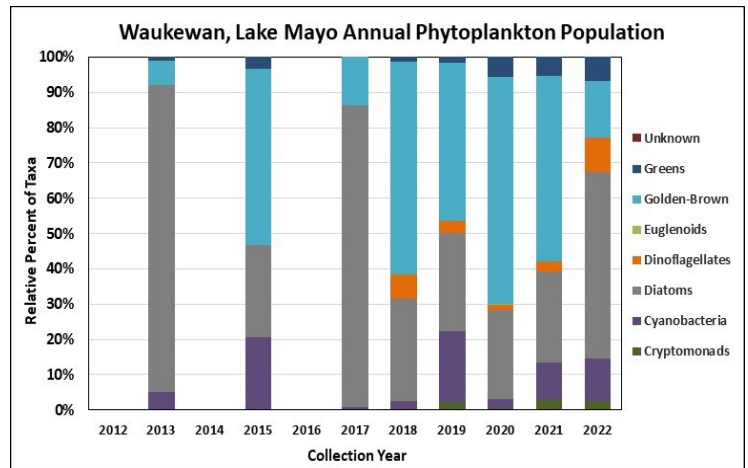
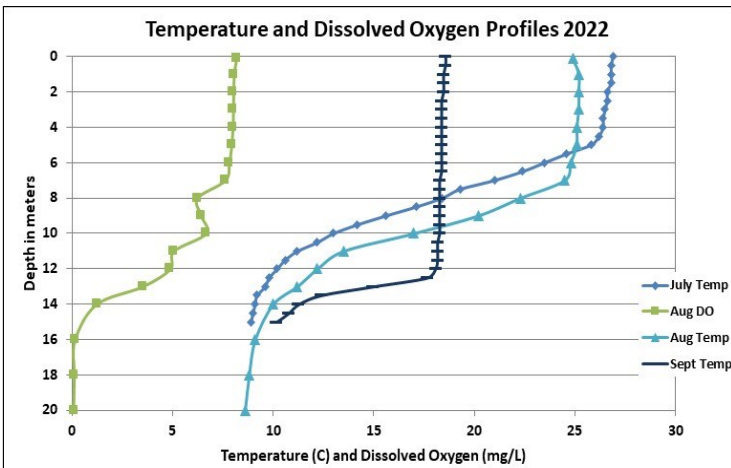
RECOMMENDED ACTIONS: Great job sampling in 2022! Lake quality remained representative of oligotrophic, or high quality conditions, however Epilimnetic (upper water layer) phosphorus (nutrient) levels have increased and remained within a higher range, and Hypolimnetic phosphorus levels were elevated in late summer indicating potential release of phosphorus from bottom sediments under anoxic (low dissolved oxygen) conditions. This internal load of nutrients is readily available for uptake by algae and cyanobacteria. Keep an eye on the in late summer/early fall for any signs of cyanobacteria surface scums or blooms and notify NHDES' [Harmful Algal Bloom Program](#). Spring tributary sampling has historically indicated elevated nutrient levels following spring snowmelt and runoff. Clean up roadside ditches and culverts of any leftover sand/salt mixtures applied to roads during winter months. Consider adding additional tributary sampling to the summer monitoring program. Continue watershed management efforts to reduce nutrient loads and [stormwater runoff](#). Monitor the increasing conductivity and chloride trends as chloride can negatively impact drinking water and aquatic life. Encourage local and private winter maintenance companies to obtain [Green SnowPro](#) Certification. Continue efforts to monitor water quality in spring, fall and winter to better understand nutrient dynamics and affects on cyanobacteria growth. Keep up the great work!

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Parameter	Trend
Conductivity	Worsening	Chlorophyll-a	Stable
pH (epilimnion)	Stable	Transparency	Improving
		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 within a low range in June, decreased in July, and increased through September but remained within a low range. Average chlorophyll level decreased from 2021 and was less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates relatively stable chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Deep spot, Inlet, Outlet, Perkins Cove, Sayward Bk., Sayward Bk. at Rock Ridge, and Sayward Bk. Upper conductivity and chloride levels remained slightly elevated and greater than the state medians. Historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began. Camp Rd. Trib., EE Brook and Mayo Farm Brook conductivity and chloride levels were within a low range.
- ◆ **COLOR:** Apparent color measured in the epilimnion indicates the water was clear with little to no tea, or brown, coloring.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic (upper water layer) phosphorus levels fluctuated within a low range and was lowest in June and highest in September. Average epilimnetic phosphorus level decreased from 2021 and was less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicate relatively stable epilimnetic phosphorus levels since monitoring began. Metalimnetic (middle water layer) phosphorus levels also fluctuated within a low range. Hypolimnetic (lower water layer) phosphorus level was elevated in August and September indicating a potential internal load of phosphorus from bottom sediments under anoxic (low dissolved oxygen) conditions. EE Brook, Mayo Farm Inlet, Outlet, Perkins Cove, and Sayward Bk. phosphorus levels were within a low range. Camp Rd. Trib., Sayward Bk. at Rock Ridge and Sayward Bk. Upper phosphorus levels were within a moderate range. Inlet phosphorus level was slightly elevated in July and the turbidity of the sample was also slightly elevated.
- ◆ **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was within an average range in June and increased (improved) to above average range in August, then decreased (worsened) in September. Average NVS transparency remained stable with 2021 and was much higher (better) than the state median. Historical trend analysis indicates significantly increasing (improving) NVS transparency since monitoring began.
- ◆ **TURBIDITY:** Epilimnetic, Metalimnetic, EE Brook, Mayo Farm Bk., Outlet, Perkins Cove, and Sayward Bk. turbidity levels fluctuated within a low range. Hypolimnetic turbidity level was slightly elevated in August and September when phosphorus levels were elevated. Camp Rd. Trib. turbidity, Sayward Bk. at Rock Ridge and Sayward Bk. Upper turbidity levels were slightly elevated.
- ◆ **PH:** Epilimnetic, Metalimnetic, Inlet, Outlet, Perkins Cove, Sayward Bk., Sayward Bk. at Rock Ridge, and Sayward Bk. Upper pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates stable, yet variable epilimnetic pH levels since monitoring began. Hypolimnetic pH levels was slightly acidic and less than desirable. Camp Rd. Trib., EE Brook and Mayo Farm Brook pH levels were approximately equal to the low end of the desirable range.

Station Name	Table 1. 2022 Average Water Quality Data for LAKE WAUKEWAN - MEREDITH									
	Alk. (mg/L)	Chlor-a (ug/L)	Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	Total P (ug/L)	Trans. (m)		Turb. (ntu)	pH
							NVS	VS		
Epilimnion	9.6	1.42	32	15	139.3	6	7.33	7.54	0.29	6.67
Metalimnion			35		138.6	6			0.56	6.86
Hypolimnion			36		133.1	17			0.93	6.30
Camp Rd. Trib.			3		28.9	11			1.82	6.48
EE Brook			3		30.9	6			0.47	6.51
Inlet			28		123.0	9			0.66	6.79
Mayo Farm Bk.			5		44.2	9			0.98	6.52
Outlet			33		142.2	8			0.62	6.99
Perkins Cove			32		139.9	8			0.63	7.04
Sayward Bk.			26		129.3	9			0.67	6.81
Sayward Bk. Rock Ridge			27		128.9	13			1.39	6.83
Sayward Bk. Upper			14		79.3	14			1.43	6.55

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)