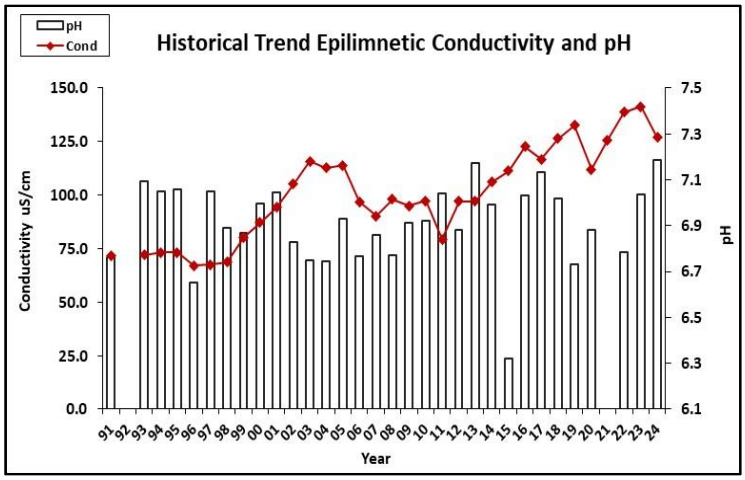
2024 VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
LAKE WAUKEWAN, MAYO STN., MEREDITH

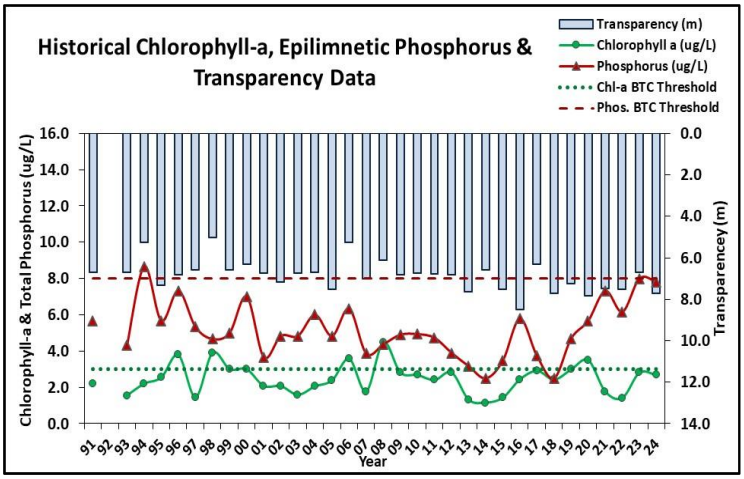
Recommended Actions: Great job monitoring water quality in 2024! Lake quality remains representative of oligotrophic, or high-quality conditions, however Epilimnetic (upper water layer) phosphorus (nutrient) levels have increased and have remained within a higher range in recent years. Hypolimnetic phosphorus levels were elevated in late summer indicating potential release of phosphorus from bottom sediments under anoxic (no dissolved oxygen) conditions. The increased intensity of storm events and fluctuating climate conditions resulting in shorter periods of ice cover, warmer water temperatures, and longer periods of thermal stratification can impact pond quality over time and accelerate the eutrophication process. 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. Continue watershed management efforts to reduce nutrient loads and stormwater runoff. Continue efforts to monitor water quality in spring, fall and winter to better understand nutrient dynamics and effects on cyanobacteria growth. Keep up the great work!

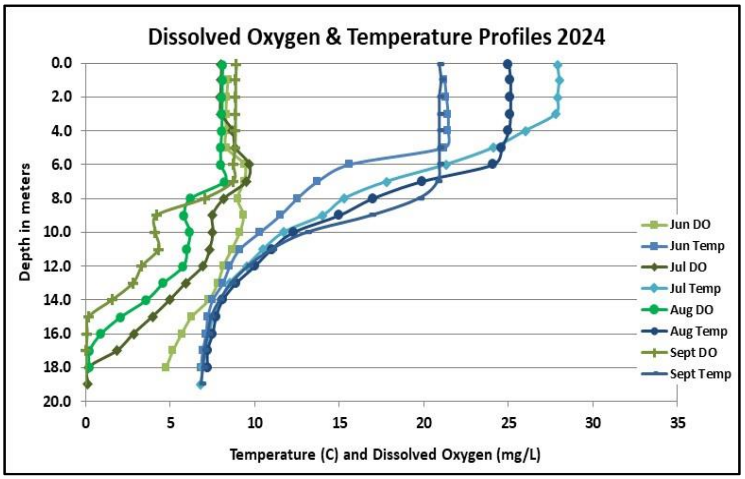
HISTORICAL WATER QUALITY TREND ANALYSIS

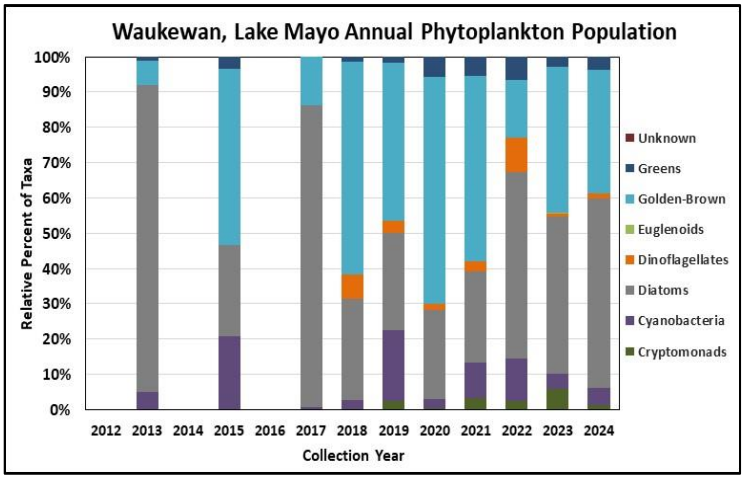
PARAMETER	TREND	PARAMETER	TREND
Conductivity	Worsening	**Chlorophyll-a**	Stable
pH (epilimnion)	Stable	**Transparency**	Improving
Phosphorus (hypolimnion)	Stable	**Phosphorus (epilimnion)**	Stable

HISTORICAL WATER QUALITY GRAPHICS









2024 Volunteer Lake Assessment Program Individual Lake Reports
Lake Waukewan, Mayo Stn., Meredith

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

- **Chlorophyll-a:** Chlorophyll level was within a low range in May and June, increased to a slightly elevated level in July, and then decreased to low levels from August through September. Average chlorophyll level remained stable with 2023 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 phosphorus level was slightly elevated in May, decreased to a low level in June and remained low through September. Average epilimnetic phosphorus level remained stable with 2023, was less than the state median, and was approximately equal to the threshold for oligotrophic lakes. Metalimnetic phosphorus levels were slightly elevated in July and September. Hypolimnetic phosphorus level was stable and low through August and increased to an elevated level in September. Historical trend analysis indicates relatively stable epilimnetic and hypolimnetic phosphorus levels since monitoring began. Camp Rd. Trib, EE Brook, Inlet, Outlet, and Perkins Cove phosphorus levels were low. Sayward Bk., Sayward Bk. Rock Ridge and Upper phosphorus levels were within a moderate range. Mayo Farm Bk. phosphorus level was elevated and the turbidity of the sample was also slightly elevated.
- **Transparency:** Transparency measured with without the viewscope (NVS) was high (good) in May, decreased (worsened) through July, and then increased (improved) through September. Average NVS transparency improved from 2024 and was higher (better) than the state median. Historical trend analysis indicates significantly increasing (improving) NVS transparency since monitoring began. Viewscope (VS) transparency was higher (better) than NVS transparency and a better measured of actual conditions.
- **Turbidity:** Epilimnetic, Metalimnetic, EE Brook, Inlet, Outlet, and Perkins Cove turbidity levels were low. Hypolimnetic turbidity was elevated in July. Camp Rd. Trib, Mayo Farm Bk., and Sayward Bk. system turbidity levels were slightly elevated and lab data noted sediment in some samples.
- **pH:** All stations except for the Hypolimnion and Camp Rd. Trib had pH levels within the desirable range of 6.5-8.0 units. Historical trend analysis indicates stable, yet variable, epilimnetic pH levels since monitoring began.

Table 1. 2024 Average Water Quality Data for LAKE WAUKEWAN, MAYO - MEREDITH

Station Name	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	8.7	2.76	35	15	126.8	8	6.81	7.72	0.44	7.19
Metalimnion	-	-	-	-	126.0	11	-	-	0.90	6.70
Hypolimnion	-	-	-	-	124.3	12	-	-	1.25	6.40
Camp Rd. Trib	-	-	2	-	29.4	9	-	-	1.75	6.47
EE Brook	-	-	2	-	34.5	10	-	-	0.98	6.54
Inlet	-	-	27	-	101.6	12	-	-	0.77	6.61
Mayo Farm Bk.	-	-	2	-	36.2	60	-	-	2.09	6.64
Outlet	-	-	34	-	127.5	8	-	-	0.63	7.00
Perkins Cove	-	-	36	-	128.5	8	-	-	0.78	6.68
Sayward Bk.	-	-	17	-	115.8	19	-	-	2.45	6.89
Sayward Bk. Rock Ridge	-	-	16	-	108.6	18	-	-	3.08	6.91
Sayward Bk. Upper	-	-	7	-	61.7	22	-	-	2.32	6.73

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 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)