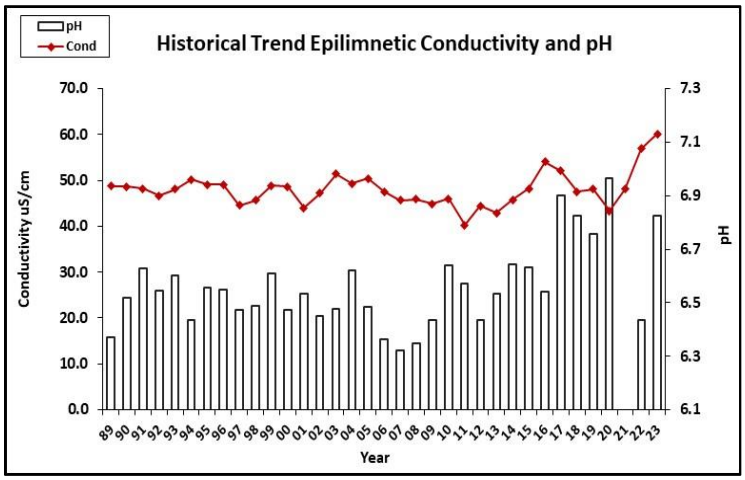
2023 VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
LAUREL LAKE, FITZWILLIAM

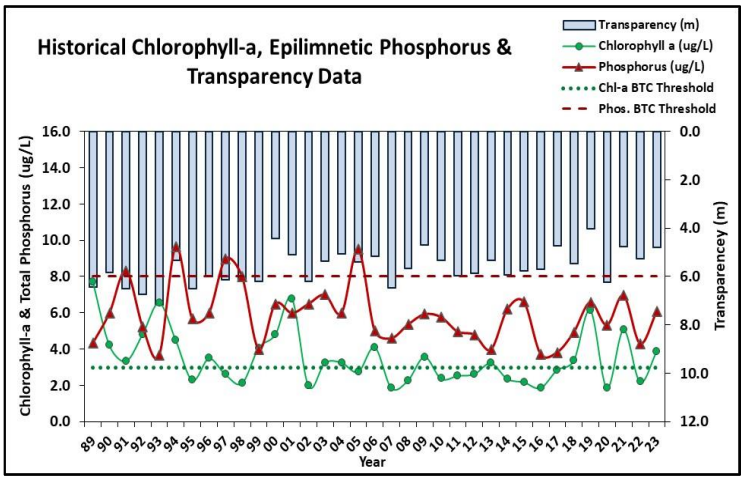
Recommended Actions: Great job sampling in 2023! May sampling revealed higher nutrient levels in the lake following significant rainfall and may be indicative of the negative impacts of stormwater runoff. Similar to 2021, excessive summer rainfall resulted in higher levels of nutrients (phosphorus) and algal growth (chlorophyll) in the lake. This highlights the importance of managing stormwater runoff within the watershed. Great job on continued efforts to develop and implement a watershed management plan to help protect the lake from future degradation. Encourage lake front properties to be certified LakeSmart through NH LAKES' lake-friendly living program. Great job adding a sampling event in May to evaluate spring nutrient loading and continue May monitoring in the future. Keep up the great work!

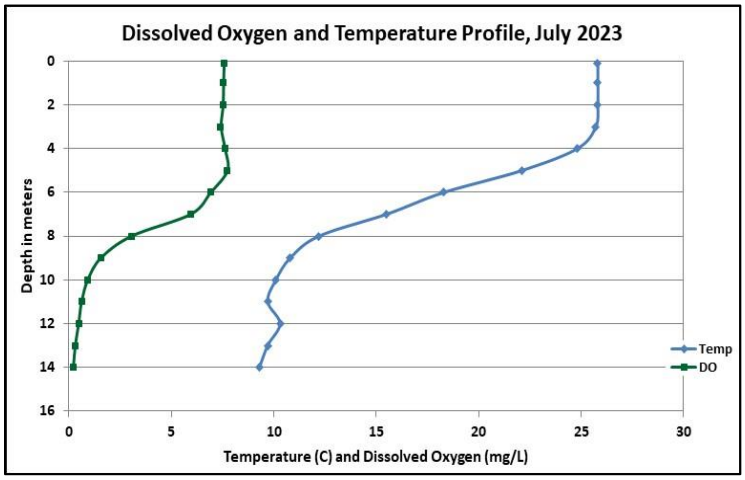
HISTORICAL WATER QUALITY TREND ANALYSIS

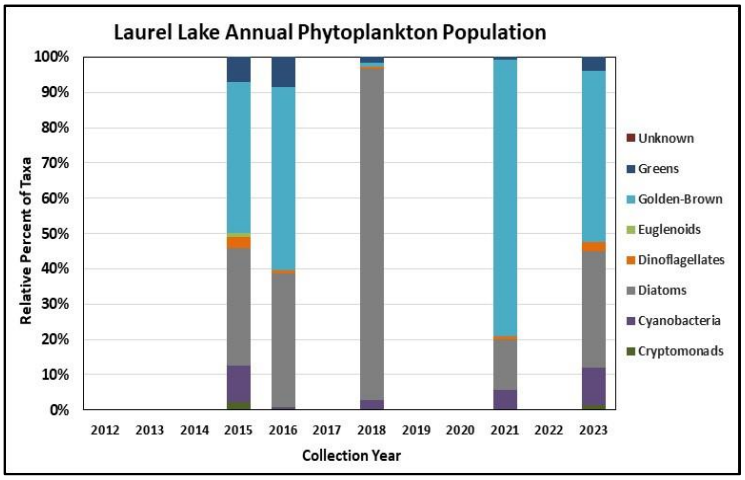
PARAMETER	TREND	PARAMETER	TREND
Conductivity	Stable	**Chlorophyll-a**	Improving
pH (epilimnion)	Stable	**Transparency**	Worsening
Phosphorus (hypolimnion)	Stable	**Phosphorus (epilimnion)**	Stable

HISTORICAL WATER QUALITY GRAPHICS









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

- **CHLOROPHYLL-A:** Chlorophyll level was low in May, increased to a slightly elevated level by July, and increased to an elevated level in August. Average chlorophyll level increased from 2022, was less than the state median, and was slightly greater than the threshold for oligotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) chlorophyll levels since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Metalimnetic (middle water layer), Hypolimnetic (lower water layer), and Keen Ave. Trib conductivity and/or chloride levels were slightly greater than the state medians yet within a low range for NH lakes. Historical trend analysis indicates relatively stable epilimnetic conductivity levels since monitoring began.
- **COLOR:** Apparent color measured in the epilimnion indicates the water was lightly tea colored, or light brown.
- **E. COLI:** North Beach, South Beach and Swim Club E. coli levels were low and much less than the state standard for public beaches.
- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels fluctuated within a low range and were highest in May. Average epilimnetic phosphorus level increased from 2022 but remained less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates stable, yet variable, epilimnetic phosphorus levels since monitoring began. Metalimnetic phosphorus level was slightly elevated in June. Hypolimnetic phosphorus levels were slightly elevated in May, July and August. Historical trend analysis indicates relatively stable hypolimnetic phosphorus levels since monitoring began. Keene Ave Trib. phosphorus level was very low in July.
- **TRANSPARENCY:** Transparency measured without the viewscope (NVS) was average in May, remained stable in June, decreased (worsened) in July following significant rainfall, and increased (improved) slightly in August but remained low (worse) likely due to elevated algal growth. Average NVS transparency decreased from 2022 but remained higher (better) than the state median. Historical trend analysis indicates significantly decreasing (worsening) NVS transparency since monitoring began. Viewscope (VS) transparency was higher (better) than NVS transparency but was also low in August due to algal growth.
- **TURBIDITY:** Epilimnetic, Metalimnetic and Keene Ave Trib. turbidity levels fluctuated within a low range. Hypolimnetic turbidity level was slightly elevated in August potentially due to formation and accumulation of organic compounds as the summer progressed and dissolved oxygen levels were depleted.
- **PH:** Epilimnetic and Keene Ave Trib. pH levels were within the desirable range of 6.5-8.0 units. Historical trend analysis indicates stable, yet variable, epilimnetic pH levels since monitoring began. Metalimnetic and Hypolimnetic pH levels were slightly acidic and less than desirable.

Table 1. 2023 Average Water Quality Data for LAUREL LAKE - FITZWILLIAM

Station Name	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	4.3	3.87	10	27	60.2	-	6	4.79	5.48	0.29	6.82
Metalimnion	-	-	-	-	59.8	-	8	-	-	0.75	6.34
Hypolimnion	-	-	-	-	62.5	-	14	-	-	1.06	6.11
Keene Ave Trib. In Lake	-	-	-	-	58.8	-	3	-	-	0.38	6.64
North Beach	-	-	-	-	-	2	-	-	-	-	-
South Beach	-	-	-	-	-	6	-	-	-	-	-
Swim Club	-	-	-	-	-	4	-	-	-	-	-

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)