VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
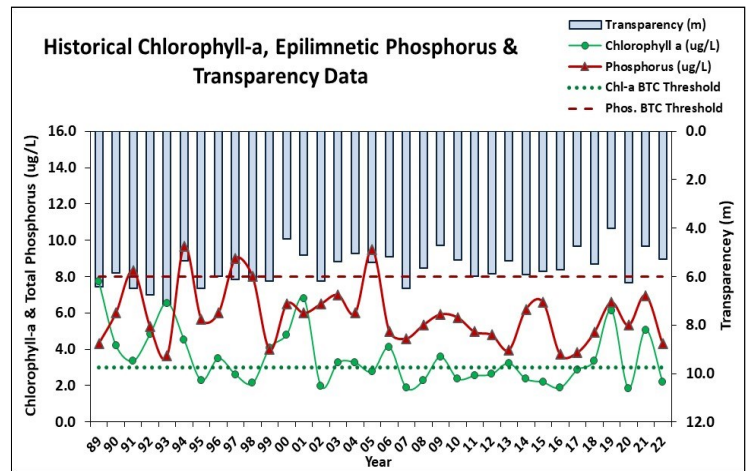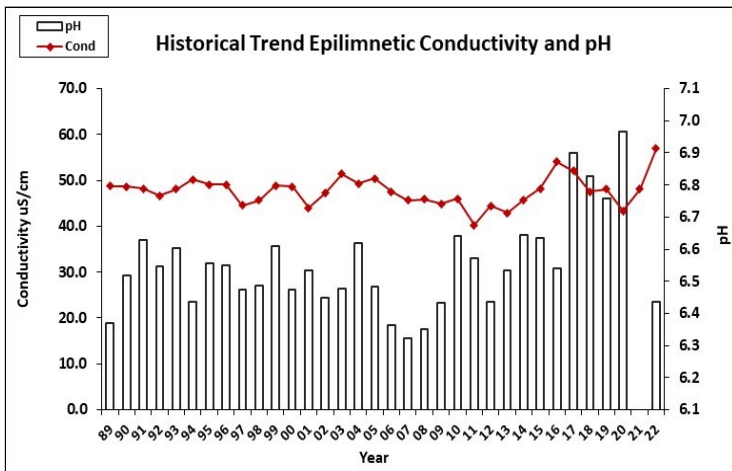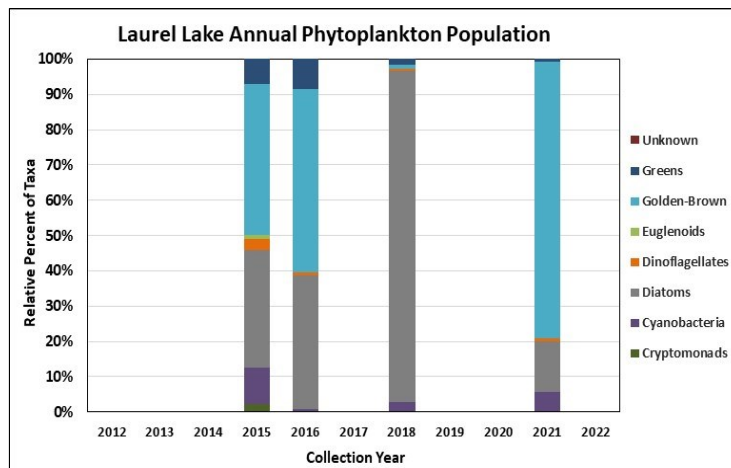## LAUREL LAKE, FITZWILLIAM
2022 DATA SUMMARY

RECOMMENDED ACTIONS: Great job sampling in 2022! Similar to 2020, drought conditions in 2022 resulted in lower levels of nutrients (phosphorus) and algal growth (chlorophyll) in the lake. The lack of stormwater runoff and flushing of wetland systems rich in dissolved organic matter resulted in less tea colored, or brown, water which combined with lower levels of algal growth helped to improve lake clarity (transparency). This highlights the importance of managing stormwater runoff within the watershed. Continue working towards development and implementation of 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 (epilimnion)	Stable

Historical Trend Epilimnetic Conductivity and pH

Historical Chlorophyll-a, Epilimnetic Phosphorus & Transparency Data

DISSOLVED OXYGEN AND PHYTOPLANKTON
(Note: Information may not be collected annually)

Laurel Lake Annual Phytoplankton Population

Volunteer Lake Assessment Program Individual Lake Reports
Laurel Lake, Fitzwilliam
2022 Data Summary

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

- **Chlorophyll-a:** Chlorophyll level was very low in May, increased to a moderate level in June, decreased to a low level in early August, and increased slightly in late August. Average chlorophyll level decreased from 2021 and was less than the state median and 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) and Hypolimnetic (lower water layer) 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, from May through early August, and then became clear with little to no tea, or brown, coloring in late August.
- **E. coli:** Swim Club E. coli level was low and much less than the state standard for public beaches.
- **Total Phosphorus:** Epilimnetic phosphorus level was low in May, increased slightly in June, decreased in early August, and remained stable through late August. Average epilimnetic phosphorus level decreased from 2021 and was much 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 low in May, increased to a moderate level in June and early August, and then decreased to a low level in late August. Hypolimnetic phosphorus level fluctuated within a moderate range from May through early August and then increased to a slightly elevated level in late August and the turbidity of the sample was also slightly elevated.
- **Transparency:** Transparency measured with (VS) and without (NVS) the viewscope was slightly below average (worse) in May, decreased (worsened) in June when algal growth increased, and then increased (improved) to within an average range for the lake in August. Average NVS transparency increased from 2021 and was higher (better) than the state median.
- **Turbidity:** Epilimnetic and Metalimnetic turbidity levels fluctuated within a low range. Hypolimnetic turbidity level was slightly elevated in late August potentially indicating the formation and accumulation of organic compounds under anoxic (low dissolved oxygen) conditions.
- **pH:** Epilimnetic pH level was slightly less than the desirable range 6.5-8.0 units and historical trend analysis indicates relatively stable epilimnetic pH levels since monitoring began. Metalimnetic pH level fluctuated around the low end of the desirable range. Hypolimnetic pH level was slightly acidic.

Station Name	Table 1. 2022 Average Water Quality Data for LAUREL LAKE - FITZWILLIAM										
	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	4.2	2.20	9	20	56.9		4	5.28	5.77	0.35	6.44
Metalimnion					55.0		8			0.51	6.59
Hypolimnion					56.9		13			1.12	6.02
Swim Club						5					

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)