



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

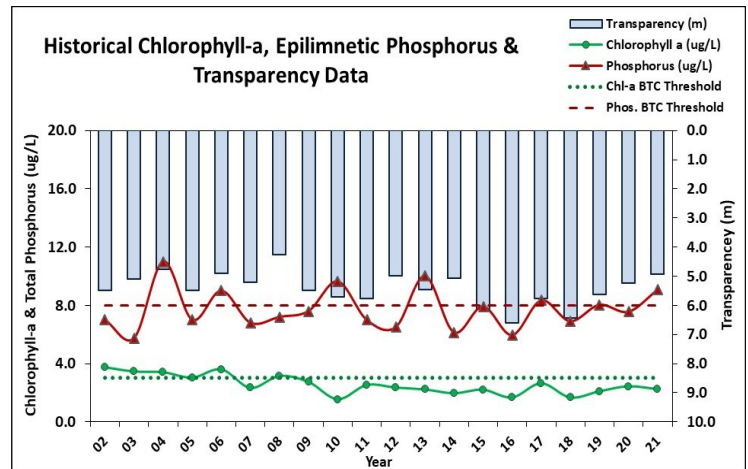
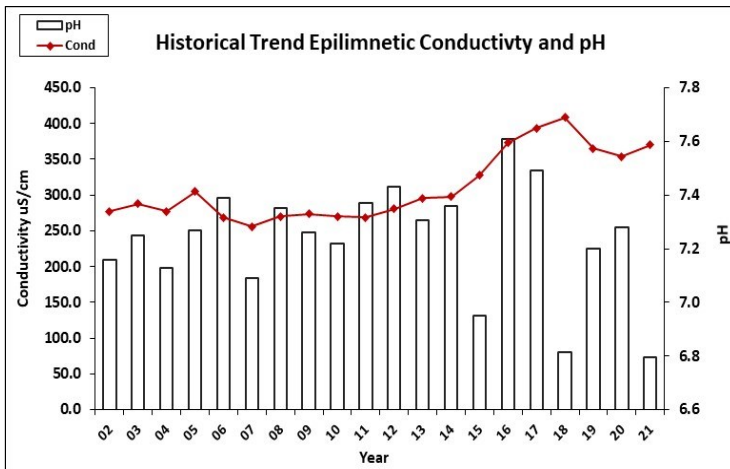
## CANOBIE LAKE, WINDHAM

### 2021 DATA SUMMARY

**RECOMMENDED ACTIONS:** Great job sampling in 2021! Lake quality remains representative of oligotrophic, or high quality, conditions. The improving chlorophyll levels are encouraging however phosphorus (nutrient) levels tend to fluctuate above the threshold for oligotrophic lakes and were elevated in 2021 potentially due to record summer rainfall amounts and associated stormwater runoff. This combined with a potential internal load of nutrients from bottom sediments due to the depletion of dissolved oxygen levels in the hypolimnion, could fuel late season algal/cyanobacteria growth. Keep an eye out for any blooms or surface scums and report them to NHDES' Harmful Algal Bloom Program. The increased frequency and intensity of significant storm events also highlights the importance of managing stormwater runoff to the lake. Chloride and conductivity levels remain elevated but we hope to see some improvement in the future due to local efforts to address the problem. Continue enhanced chloride/conductivity monitoring to help assess future changes. Educate shorefront property owner's on becoming certified LakeSmart through NH LAKES' LakeSmart lake-friendly living program. Keep up the great work!

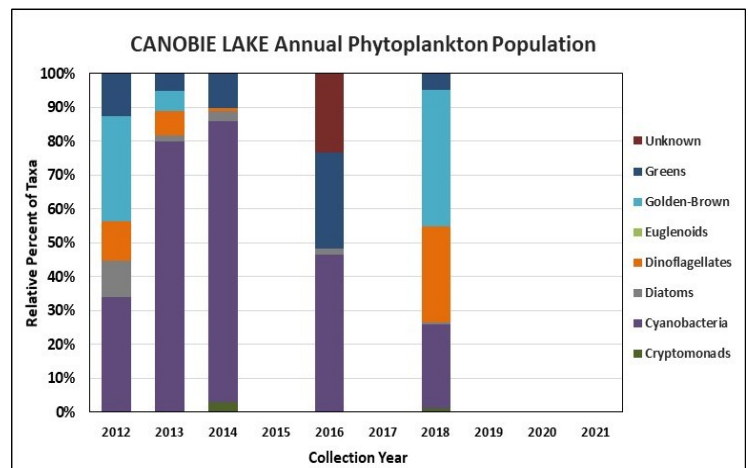
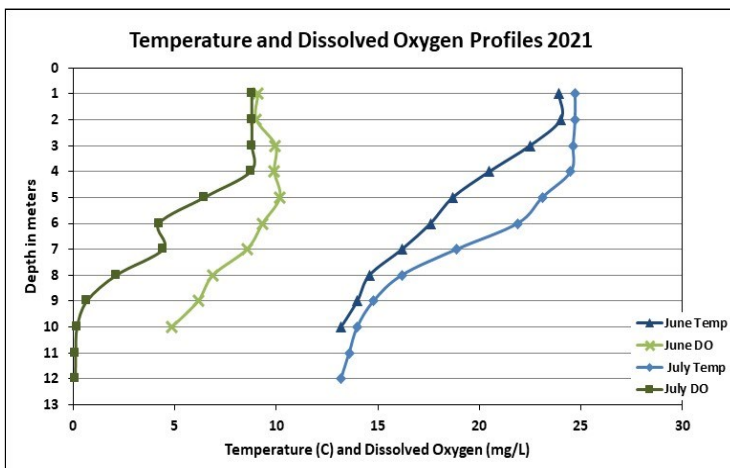
#### HISTORICAL WATER QUALITY TREND ANALYSIS

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



#### DISSOLVED OXYGEN AND PHYTOPLANKTON

(Note: Information may not be collected annually)





# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

## CANOBIE LAKE, WINDHAM

### 2021 DATA SUMMARY

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

- ◆ **CHLOROPHYLL-A:** Chlorophyll level was within a moderate range in June, decreased to a low level in July, and remained stable in August. Average chlorophyll level remained stable with 2020 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), Hypolimnetic (lower water layer), Stations 02, 04, 05, Frog Rock, and Intake conductivity and chloride levels remained elevated and much greater than the state medians. Chloride levels were less than the state chronic chloride standard and were generally higher in August. Historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began.
- ◆ **COLOR:** Epilimnetic color data indicates the water was lightly tea colored, or light brown, and remained stable from June through August.
- ◆ **E. COLI:** Epilimnetic E. coli level was very low and much less than the state standard for surface waters.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus level was low in June and increased to slightly elevated level in July and August. Average epilimnetic phosphorus level increased slightly from 2020, was less than the state median, and was greater than the threshold for oligotrophic lakes. Metalimnetic phosphorus level fluctuated within a slightly elevated range and average level was the highest measured since monitoring began. Hypolimnetic phosphorus level was elevated in July and August and turbidity levels were also elevated suggesting release of phosphorus from bottom sediments under anoxic (no dissolved oxygen) conditions, a process referred to as internal loading. Average hypolimnetic phosphorus level was also the highest measured since monitoring began.
- ◆ **TRANSPARENCY:** Transparency measured without the viewscope (NVS) was below average (worse) in June when algal growth was highest, increased (improved) to an above average range in July, and decreased (worsened) slightly in August. Average NVS transparency decreased slightly from 2020 but remained higher (better) than the state median. Historical trend analysis indicates stable NVS transparency since monitoring began. Viewscope (VS) transparency was much higher (better) than NVS transparency and likely a better measure of actual conditions.
- ◆ **TURBIDITY:** Epilimnetic turbidity level was slightly elevated in July following significant rainfall amounts in the month. Metalimnetic turbidity level was slightly elevated on each sampling event suggesting layers of algal growth or fine particulates from stormwater runoff. Hypolimnetic turbidity level was elevated in July and August and the lab data note sediment in the August sample.
- ◆ **pH:** Epilimnetic, Metalimnetic and Hypolimnetic pH levels were within the desirable range 6.5-8.0 units however pH levels were generally more acidic due to record rainfall amounts in July. Historical trend analysis indicates stable epilimnetic pH levels since monitoring began.

Station Name	Table 1. 2021 Average Water Quality Data for CANOBIE LAKE - WINDHAM										
	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	26.9	2.25	98	30	370.2	1	9	4.93	5.77	0.67	6.80
Metalimnion					346.3		13			1.06	6.89
Hypolimnion					358.3		26			2.11	6.97
Station 04			98		389.4						
Station 05			97		389.9						
02 Cove			98		390.6						
Frog Rock			96		384.3						
Intake			98		389.0						

#### 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)