



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

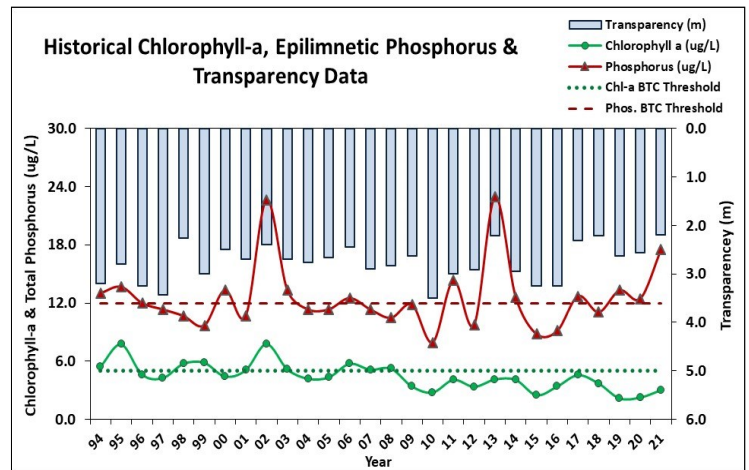
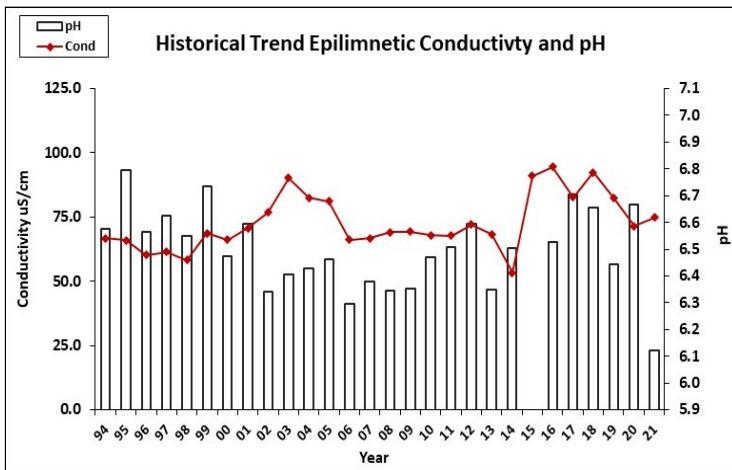
## CONTOOCCOOK LAKE, JAFFREY

### 2021 DATA SUMMARY

**RECOMMENDED ACTIONS:** Great job sampling in 2021! Lake quality is representative of mesotrophic, or average, conditions and the improving chlorophyll levels are encouraging. However, lake phosphorus levels tend to fluctuate above the threshold for mesotrophic lakes and conductivity levels have increased. The record rainfall amounts in summer 2021 resulted in elevated in-lake phosphorus levels that likely fueled the cyanobacteria growth in late summer. This highlights the importance of managing stormwater runoff and erosion within the watershed. Consider development of a watershed management plan to help identify and quantify nutrient (phosphorus) loads and make recommendations on ways to reduce loading to the lake. Encourage property owners to be certified LakeSmart through NH LAKES lake-friendly living program and to utilize the NH Homeowner's Guide to Stormwater Management to reduce stormwater runoff from shorefront properties. Woodbound Inlet experienced elevated phosphorus and turbidity levels following significant storm event in August. Investigate potential upstream sources at this site in 2022. Encourage local road agents and private winter maintenance companies to obtain Green SnowPro Certification to help address the increasing conductivity levels. Contact the VLAP Coordinator to discuss addition of phytoplankton monitoring to understand shifts in algal population dynamics due to recent history of late summer cyanobacteria blooms. Keep up the great work!

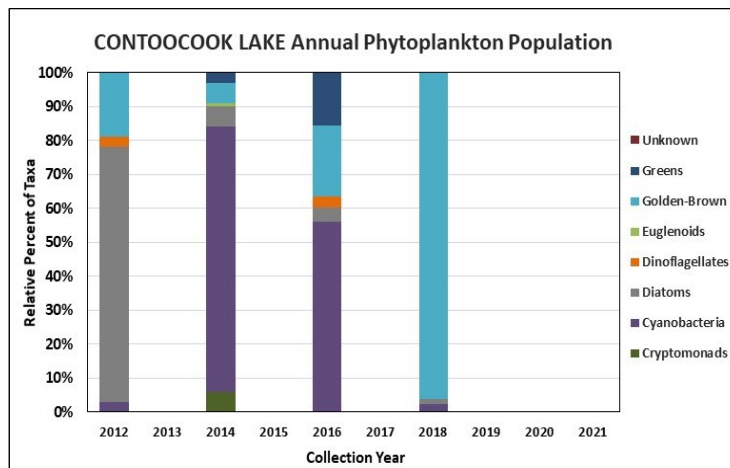
### HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Parameter	Trend
<b>Conductivity</b>	Worsening	<b>Chlorophyll-a</b>	Improving
<b>pH (epilimnion)</b>	Stable	<b>Transparency</b>	Stable
		<b>Phosphorus (epilimnion)</b>	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 and decreased slightly in August. Average chlorophyll level increased slightly from 2020 but remained less than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Hypolimnetic (lower water layer), Cochrane Inlet W, Outlet, Jowder Cove Inlet, Squantum Inlet, and Townline Inlet conductivity and chloride levels were slightly greater than the state medians yet less than a level of concern. However, historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began. Townline Inlet Upstream and Walsh Inlet conductivity and chloride levels were low. Cochrane Inlet E, Rue Deschenes and Woodbound Inlet conductivity and chloride levels were elevated yet chloride levels did not exceed the state chronic chloride standard.
- ◆ **COLOR:** Apparent color measured in the epilimnion indicates the water was moderately tea colored, or brown, in June and then darkened significantly to highly tea colored conditions in August.
- ◆ **E. COLI:** Jowder Cove Inlet E. coli level was low in June and increased in August following significant rainfall amounts, however remained less than the state standard of 406 cts/100 mL.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus level was elevated in June and remained stable in August following record rainfall amounts. Average epilimnetic phosphorus level increased from 2020 and was much greater than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates relatively stable epilimnetic phosphorus levels since monitoring began. Hypolimnetic phosphorus level was moderate in June and increased to an elevated level in August. Jowder Cove Inlet, Cochrane Inlet E and W, Rue Deschenes, Townline Inlet, Townline Inlet Upstream, Walsh Inlet, and Outlet phosphorus levels fluctuated within a low to moderate range for those stations. Squantum Inlet phosphorus level was elevated in August following significant rainfall amounts in July. Woodbound Inlet phosphorus level was elevated in August and the turbidity of the sample was also elevated.
- ◆ **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was above average (good) in June and then decreased (worsened) in August following significant rainfall amounts resulting in turbid and highly tea colored water. Average NVS transparency decreased from 2020 and was lower than the state median. Historical trend analysis indicates relatively stable NVS transparency since monitoring began.
- ◆ **TURBIDITY:** Epilimnetic, Cochrane Inlet E and W, Jowder Cove Inlet, Outlet, Rue Deschenes, Squantum Inlet, Townline Inlet, Townline Inlet Upstream, and Walsh Inlet turbidity levels fluctuated within a low range. Hypolimnetic turbidity level was slightly elevated in August. Woodbound Inlet turbidity level was greatly elevated in August following significant rainfall amounts in July.
- ◆ **pH:** Deep spot and tributary pH levels were slightly less than desirable range 6.5-8.0 in June and then became slightly acidic in August following significant 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 CONTOOCCOOK LAKE - JAFFREY										
	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	4.0	3.00	19	95	74.8		18	2.19	2.44	1.21	6.12
Hypolimnion					74.3		17			1.84	6.02
Cochrane Inlet E			43		150.2		13			0.74	6.04
Cochrane Inlet W			23		85.1		14			0.86	4.74
Dam Outlet					90.2		13			0.48	5.78
Jowder Cove Inlet			27		93.2	117	17			0.73	6.03
Rue Deschenes Inlet			66		211.4		17			0.90	5.93
Squantum Inlet			20		84.8		74			1.08	5.82
Townline Inlet			12		50.6		15			0.66	5.82
Townline Inlet Upstream			9		38.9		13			0.36	5.76
Walsh Inlet			3		21.5		16			0.56	5.83
Woodbound Inlet			49		180.8		32			8.42	6.61

#### 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)