



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

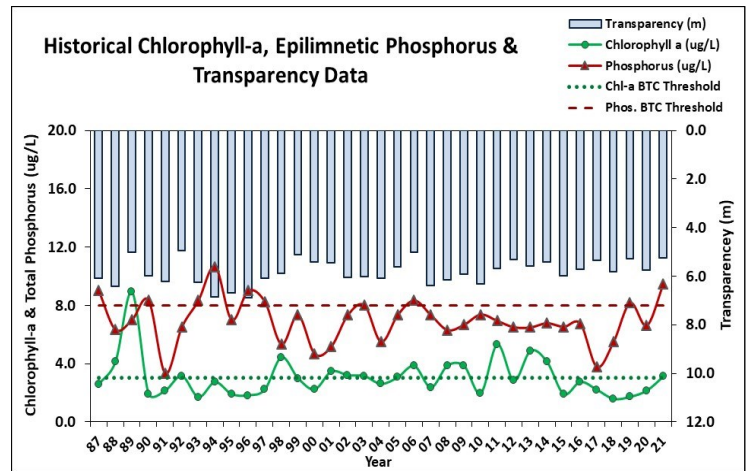
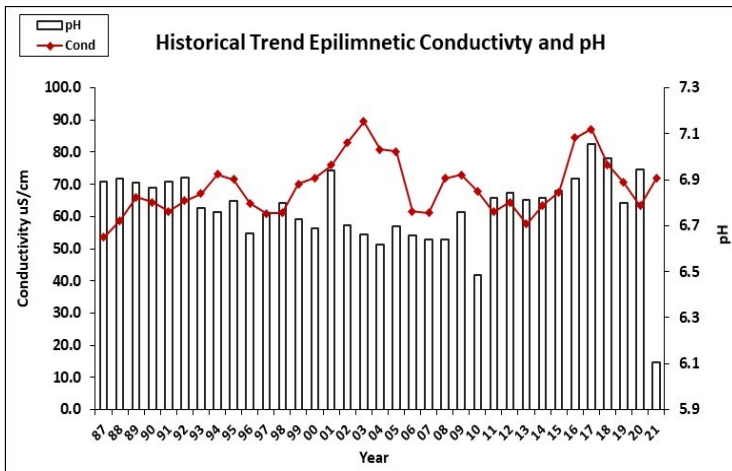
DEERING LAKE, DEERING

2021 DATA SUMMARY

RECOMMENDED ACTIONS: Great job sampling in 2021! Lake phosphorus levels were slightly elevated in 2021 likely due to the record summer rainfall amounts indicating potentially negative impacts of stormwater runoff and erosion to the lake. Morotta and Zowski Inlets experienced elevated phosphorus and turbidity levels following significant storm event in August. Investigate these sub-watersheds for areas of stormwater runoff and erosion and evaluate potential remediation strategies. Watershed management efforts should focus on managing stormwater runoff, dirt/gravel road stabilization, and reduced application of road salt/sand during winter months. Encourage winter maintenance companies to obtain NH Salt Applicator License through the Green SnowPro Certification Program. Encourage the town to conduct spring cleaning of roadside ditches and catch-basins to remove sand/salt that accumulated over winter. Educate shorefront property owner's on becoming certified LakeSmart through NH LAKES' lake-friendly living program. Great job collecting monthly dissolved oxygen and temperature data. This will help to better assess summer thermal stratification and dissolved oxygen levels as they may relate to potential internal phosphorus loading from bottom sediments. Keep up the great work!

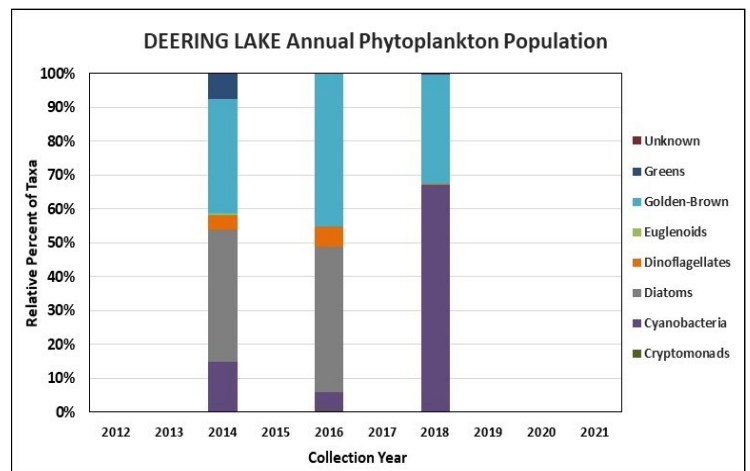
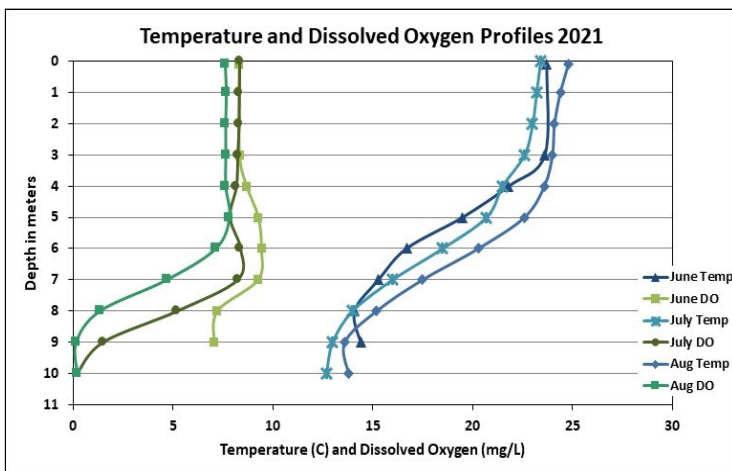
HISTORICAL WATER QUALITY TREND ANALYSIS

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



DISSOLVED OXYGEN AND PHYTOPLANKTON

(Note: Information may not be collected annually)





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LAKE NAME, TOWN

2021 DATA SUMMARY

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

- ◆ **CHLOROPHYLL-A:** Chlorophyll level was within a low range in June, increased to a moderate level in July, and decreased in August. Average chlorophyll level increased from 2020, was slightly less than the state median, and was approximately equal to the threshold for oligotrophic lakes. Historical trend analysis indicates stable, yet variable, chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Metalimnetic (middle water layer), Hypolimnetic (lower water layer), Main Inlet, Outlet, and Zowski Inlet conductivity and/or chloride levels were slightly greater than the state medians, yet less than a level of concern. Historical trend analysis indicates relatively stable epilimnetic conductivity levels since monitoring began. Morotta Inlet conductivity and chloride levels remain elevated and much greater than the state medians and chloride levels have significantly increased (worsened) since monitoring began.
- ◆ **COLOR:** Epilimnetic color data indicates the water was clear with little to no tea, or brown, coloring.
- ◆ **E. COLI:** Town Beach and Outlet E. coli data were very low and much less than the state standards for public beaches and surface waters.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus level was slightly elevated in June, decreased to a low level in July, and then increased to slightly elevated level in August. Average epilimnetic phosphorus level increased from 2020, was less than the state median, and was slightly greater than the threshold for oligotrophic lakes. Historical trend analysis indicates stable epilimnetic phosphorus levels since monitoring began. Metalimnetic and Hypolimnetic phosphorus levels fluctuated within a slightly elevated range and were highest in June and August. Main Inlet phosphorus level was elevated in June during low flow conditions and the turbidity of the sample was also elevated. Morotta and Zowski Inlet phosphorus levels were elevated in August following significant storm event and lab data noted colored water with low levels of sediment. Outlet phosphorus level was slightly elevated in June when flow was stagnant.
- ◆ **TRANSPARENCY:** Transparency measured without the viewscope (NVS) was slightly below average (worse) in June, increased (improved) in July and remained stable in August. Average NVS transparency decreased slightly from 2020 and was much higher (better) than the state median. Historical trend analysis indicates stable NVS transparency since monitoring began. Viewscope (VS) transparency was higher (better) than NVS transparency and a better measure of actual conditions.
- ◆ **TURBIDITY:** Epilimnetic, Metalimnetic and Outlet turbidity levels fluctuated within a low range and were highest in June. Hypolimnetic turbidity level was slightly elevated in June and August when phosphorus levels were also elevated. Main Inlet turbidity level was elevated in June during low flow conditions. Morotta and Zowski Inlet turbidity levels were slightly elevated in August following significant storm event and sediment was noted in the samples.
- ◆ **pH:** Epilimnetic, Metalimnetic and Hypolimnetic pH levels were within the desirable range 6.5-8.0 units in June and then became more acidic and less than desirable in July and August following significant summer rainfall. Historical trend analysis indicates stable epilimnetic pH levels since monitoring began. Main Inlet pH level was slightly acidic and less than desirable. Outlet, Morotta Inlet and Zowski Inlet pH levels were within the desirable range.

Station Name	Table 1. 2021 Average Water Quality Data for DEERING RESERVOIR - DEERING										
	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	6.2	3.12	18	23	71.9		9	5.23	6.14	0.48	6.11
Metalimnion					73.1		11			0.69	6.47
Hypolimnion					75.6		15			1.73	6.23
Main Inlet			26		119.4		22			2.95	6.05
Morotta Inlet			73		241.5		24			1.47	6.51
Outlet			20		72.8	2	8			0.42	6.63
Town Beach 1						3					
Zowski Inlet			20		80.3		19			1.53	6.57

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)