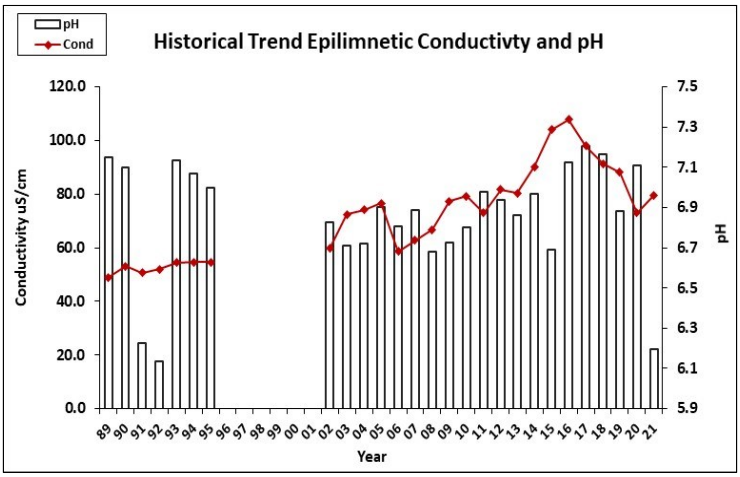
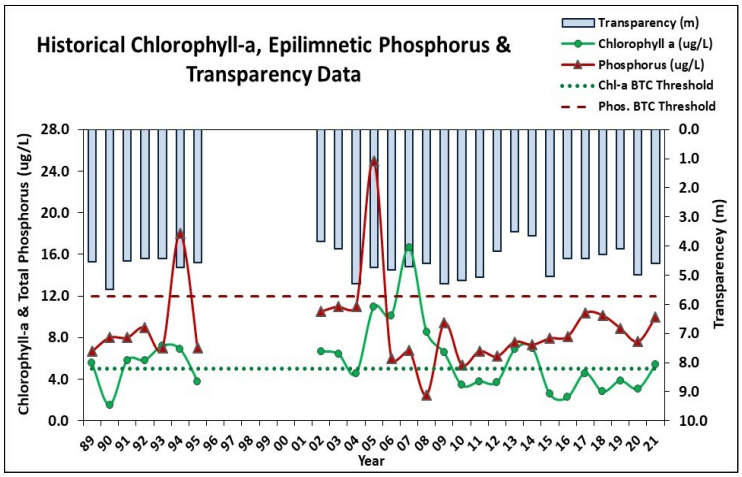
Volunteer Lake Assessment Program Individual Lake Reports
Clough Pond, Loudon
2021 Data Summary

Recommended Actions: Great job sampling in 2021! Pond quality remained representative of mesotrophic, or average, conditions and the improving chlorophyll (algal growth) levels are encouraging. However, similar to 2020, the pond experienced another early season cyanobacteria bloom likely due to warm water temperatures, above average clarity (transparency) and higher levels of nutrients in deeper waters. The dissolved oxygen profiles indicated super-saturated conditions in Epilimnetic and Metalimnetic waters in June and July indicating elevated algal growth and layers of cyanobacteria that can occasionally surface as blooms or scums. Report any suspicious algal/cyanobacteria growth to NHDES' Harmful Algal Bloom Program. Inlet phosphorus improved in 2021 following a period of elevated levels and we hope to see this continue. Record rainfall amounts in July resulted in higher nutrient levels and algal growth. This highlights the importance of managing stormwater runoff and the impacts of high intensity storm events on surface waters. Continue efforts to manage stormwater runoff in the watershed. Encourage shoreline property owners to be certified LakeSmart through NH LAKES lake-friendly living program. Keep up the great work!

Historical Water Quality Trend Analysis

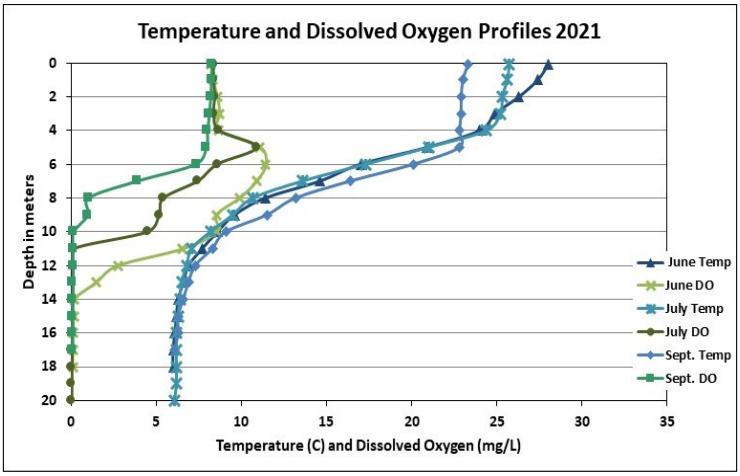
Parameter	Trend	Parameter	Trend
Conductivity	Worsening	**Chlorophyll-a**	Improving
pH (epilimnion)	Stable	**Transparency**	Stable
		Phosphorus (epilimnion)	Stable

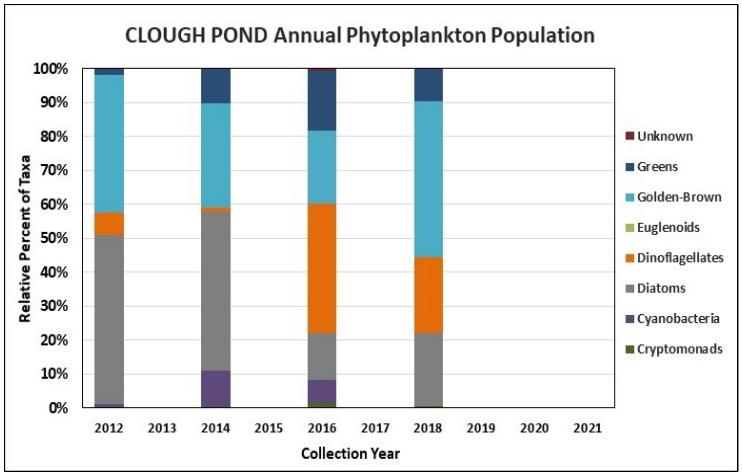




Dissolved Oxygen and Phytoplankton

(Note: Information may not be collected annually)





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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, increased to a slightly elevated level in July, and then decreased to a low level in September. Average chlorophyll level increased from 2020 and was slightly greater than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates significantly decreasing (improving) chlorophyll levels since 2002.
- **Conductivity/Chloride:** Epilimnetic (upper water layer), Metalimnetic (middle water layer), Hypolimnetic (lower water layer), Inlet, and Outlet conductivity and chloride levels remained slightly greater than the state medians, yet less than a level of concern. However, historical trend analysis indicates significantly increasing (worsening) epilmnetic conductivity levels since 2002.
- **Color:** Epilimnetic color data indicates the water was borderline clear to lightly tea colored (light brown) and remained stable from June through September.
- **Total Phosphorus:** Epilimnetic phosphorus level was within a low range in June, increased to a moderate level in July following record rainfall amounts, and decreased to a low level in September. Average epilimnetic phosphorus level increased from 2020 and was slightly less than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates stable, yet variable, epilimnetic phosphorus levels since 2002. Metalimnetic phosphorus level was slightly elevated in June and September. Hypolimnetic phosphorus levels were elevated but within an average range for that station. Inlet and Outlet phosphorus levels fluctuated within a low range.
- **Transparency:** Transparency measured without (NVS) the viewscope was high (good) in June, decreased (worsened) in July following record rainfall amounts, and then increased (improved) in September. Average NVS transparency decreased slightly from 2020 and was higher (better) than the state median. Historical trend analysis indicates stable NVS transparency since monitoring began. Viewscope (VS) transparency fluctuated within an average range for the pond.
- **Turbidity:** Epilimnetic turbidity level fluctuated within a low range for that station and was highest in July following record rainfall amounts. Metalimnetic turbidity level fluctuated within a low range for the station and was highest in June when phosphorus levels were also elevated potentially indicating a layer of algae/cyanobacteria. Hypolimnetic turbidity level fluctuated within a slightly elevated range. Inlet turbidity level was slightly elevated in June and September. Outlet turbidity level fluctuated within a low range for the stations and was highest in June.
- **pH:** Epilimnetic and Hypolimnetic pH levels fluctuated within a slightly acidic range and were less than desirable 6.5-8.0 units. Metalimnetic pH level was within the desirable range in June potentially as a result of a layer of algae/cyanobacteria and photosynthetic by-products, and then became acidic and less than desirable in July and September. Inlet pH levels fluctuated around the low end of the desirable range. Outlet pH levels were within the desirable range.

Station Name	Table 1. 2021 Average Water Quality Data for CLOUGH POND - LOUDON									
	Alk. (mg/L)	Chlor-a (ug/L)	Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	Total P (ug/L)	Trans. (m)		Turb. (ntu)	pH
							NVS	VS		
Epilimnion	8.2	5.39	18	30	79.7	10	4.58	4.25	0.78	6.19
Metalimnion					81.8	13			1.27	6.30
Hypolimnion					89.1	32			3.66	6.01
Inlet			17		75.8	8			1.27	6.54
Outlet			17		79.9	9			0.71	6.80

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)