



2023 VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

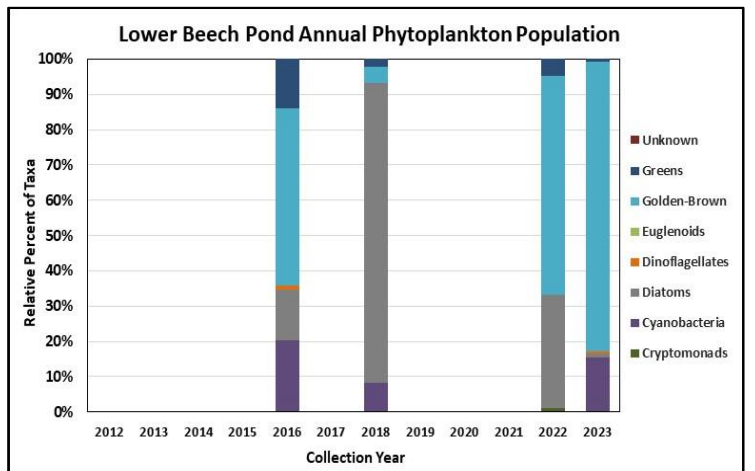
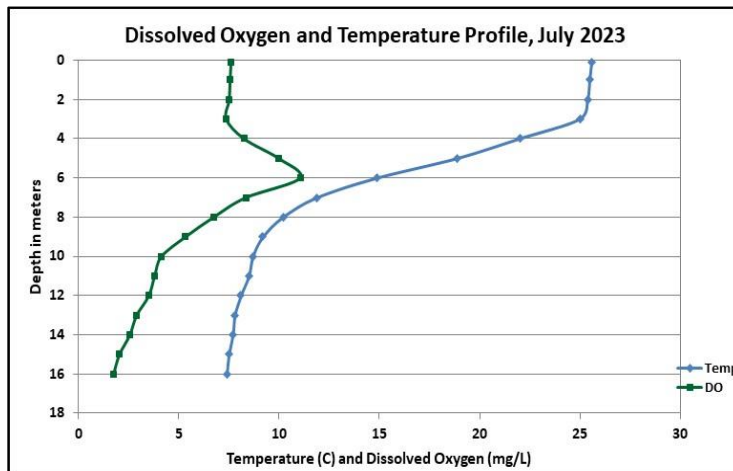
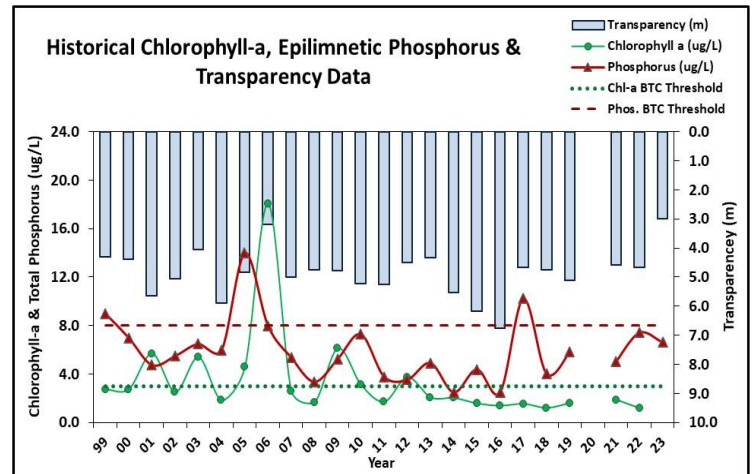
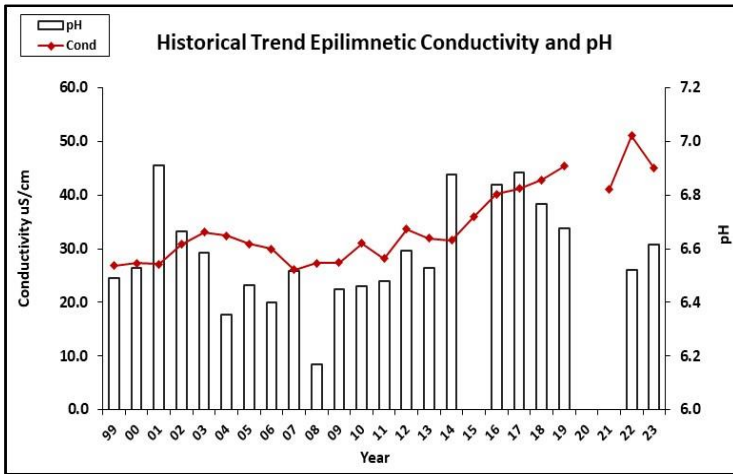
LOWER BEECH POND, TUFTONBORO

Recommended Actions: Pond quality remained representative of oligotrophic, or high quality, conditions. However, excessive summer rainfall did result in darker water color and poor water clarity (transparency). Metalimnetic nutrient and turbidity levels suggested a deep layer of algal/cyanobacteria growth. Keep an eye on the pond for any suspicious water color, or surface scums and [report](#) to NHDES' [Harmful Algal Bloom Program](#). The increased frequency and intensity of significant storm events highlights the importance of managing stormwater runoff and erosion, particularly from shorefront properties. Educate property owners on ways to reduce stormwater runoff and to stabilize steep slopes. NHDES' [NH Homeowner's Guide to Stormwater Management](#) and UNH Cooperative Extension's [Landscaping at the Water's Edge](#) are great resources. Encourage property owners to be certified [LakeSmart](#) through NH LAKES' lake-friendly living program. Consider development of a watershed management plan to protect high quality waters. NHDES [Watershed Assistance Program](#) provides grant funds for watershed management plan development. Keep up the great work!

HISTORICAL WATER QUALITY TREND ANALYSIS

PARAMETER	TREND	PARAMETER	TREND
Conductivity	Worsening	Chlorophyll-a	Stable
pH (epilimnion)	Stable	Transparency	Stable
Phosphorus (hypolimnion)	Stable	Phosphorus (epilimnion)	Stable

HISTORICAL WATER QUALITY GRAPHICS





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

- ◆ **CHLOROPHYLL-A:** Chlorophyll was not sampled in June and the July data were invalidated due to field duplicate data not meeting acceptable ranges. Dissolved oxygen profile conducted in July indicates a deep layer of algal growth at six meters. 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), Inlet, and Outlet conductivity levels were within an average range for NH lakes and were approximately equal to the state median. Epilimnetic and Inlet chloride levels were also within a low range and slightly greater than the state median. However, historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began.
- ◆ **COLOR:** Apparent color measured in the epilimnion indicates the water was borderline light to moderately tea colored in July.
- ◆ **E. COLI:** First Beach, Inlet and Second Beach E. coli levels were very low and much less than the state standards for public beaches and surface waters.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus level was within a low range in June and increased slightly in July. Average epilimnetic phosphorus level remained stable with 2022 and was 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 slightly elevated in June and the turbidity of the sample was also slightly elevated and lab data noted organic matter in the sample. Hypolimnetic phosphorus level was within a low range for that station. Historical trend analysis indicates stable, yet variable, hypolimnetic phosphorus levels since monitoring began. Inlet and Outlet phosphorus levels were very low.
- ◆ **TRANSPARENCY:** Transparency measured without the viewscope (NVS) was below average (worse) in June and remained stable in July. Average NVS transparency decreased (worsened) from 2022, was lower (worse) than the state median, and was the lowest measured since monitoring began. Historical trend analysis indicates relatively stable NVS transparency since monitoring began. Viewscope (VS) transparency was slightly higher (better) than NVS transparency but also below average for the pond.
- ◆ **TURBIDITY:** Epilimnetic, Hypolimnetic, Inlet, and Outlet turbidity levels fluctuated within a low and average range for those stations. Metalimnetic turbidity level was slightly elevated in June and lab data noted organic matter, potentially algae/cyanobacteria, in the sample.
- ◆ **pH:** Epilimnetic, Metalimnetic and Outlet pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates relatively stable epilimnetic pH levels since monitoring began. Hypolimnetic and Inlet pH levels were slightly acidic and less than desirable.

Table 1. 2023 Average Water Quality Data for LOWER BEECH POND - TUFTONBORO

Station Name	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	n/a	8	50	45.0	-	7	3.00	4.00	0.53	6.62
Metalimnion	-	-	-	-	47.2	-	9	-	-	1.02	6.76
Hypolimnion	-	-	-	-	49.2	-	9	-	-	0.71	5.93
First Beach	-	-	-	-	-	5	-	-	-	-	-
Inlet	-	-	6	-	45.4	8	5	-	-	0.38	6.30
Outlet	-	-	-	-	45.0	-	3	-	-	0.37	6.62
Second Beach	-	-	-	-	-	2	-	-	-	-	-

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)