MORPHOMETRIC DATA   **TROPHIC CLASSIFICATION**   **KNOWN EXOTIC SPECIES**

Watershed Area (Ac.):	1,530	Max. Depth (m):	15.5	Flushing Rate (yr⁻¹)	0.9	Year	Trophic class
Surface Area (Ac.):	119	Mean Depth (m):	6.6	P Retention Coef:	0.63	1979	EUTROPHIC
Shore Length (m):	3,200	Volume (m³):	3,153,500	Elevation (ft):	417	1990	MESOTROPHIC

The Waterbody Report Card tables are generated from the DRAFT 2020 305(b) report on the status of N.H. waters, and are based on data collected from 2010-2019. Detailed waterbody assessment and report card information can be found at **NHDES' Water Quality Assessment Website.**

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for this parameter by a small margin.
	Oxygen, Dissolved	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Dissolved oxygen satura	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Chlorophyll-a	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
Primary Contact Recreation	Escherichia coli	No Data	No data for this parameter.
	Chlorophyll-a	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

CLEMENT POND - CAMP MERRIMAC BEACH	Escherichia coli	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.

VLAP SAMPLE STATION MAP: This map depicts the location of routine sampling stations discussed on page two of the report.

CLEMENT POND
HOPKINTON
VOLUNTEER LAKE ASSESSMENT PROGRAM

STATIONID	STATION NAME
CLEHOPD	DEEP SPOT
CLEHOPI	INLET
CLEHOPO	HARDY BROOK OUTLET

Source: The data layers are derived from NHDES data and are under constant revision. NHDES is not responsible for the use or interpretation of this information. Not intended for legal use. NHDES Watershed Management Bureau   Date: 2/17/2021

Recommended Actions: Great job sampling in 2020! Pond quality is representative of mesotrophic, or average, conditions and the improving hypolimnetic phosphorus levels are encouraging. Drought conditions in 2020 and the lack of stormwater runoff and flushing of wetland systems improved water quality even though water levels remained high due to beaver activity at the Outlet. This highlights the potential impacts from increased frequency and intensity of storm events and associated runoff and wetland impacts. This also highlights the importance of maintaining flow at the Outlet to help flush nutrients out of the system during wet years and following high intensity storm events. Evaluate shoreline areas, dirt/gravel roads, and watershed properties to identify areas prone to stormwater runoff and erosio n. Prioritize high impact sites and implement best practices to mitigate loading to the pond. Encourage shoreline property owners to be certified LakeSmart through NHLAKES lake-friendly living program www.nhlakes.org/lakesmart/. Consider development of a Watershed Management Plan to help identify and quantify pollutant loads to the pond and make recommendations on ways to reduce nutrient loading. Keep up the great work!

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

⬧ **Chlorophyll-a:** Chlorophyll levels fluctuated within a low range from May through September and were lowest in June and highest in August. Av erage chlorophyll level remained stable with 2019 and was less than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates relatively stable chlorophyll levels since monitoring began.

⬧ **Conductivity/Chloride:** Epilimnetic (upper water layer), Metalimnetic (middle water layer), Hypolimnetic (lower water layer), and Outlet conductivity and/or chloride levels remained within a low range and approximately equal to the state medians. 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 moderately tea colored, or brown, in May and June, and then lightened to within a clear range, with little to no tea coloring, by September.

⬧ **Total Phosphorus:** Epilimnetic phosphorus level was moderate in May, decreased to a low level in June, remained stable in July, decreased again in August, and then increased slightly in September. Average epilimnetic phosphorus level decreased from 2019 and was less than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates stable epilimnetic phosphorus levels since monitoring began. Metalimnetic phosphorus level fluctuated within a low range from May through July, increased to a moderate level in August when algal growth was highest, and then decreased slightly in September. Hypolimnetic phosphorus level was low in May and increased gradually to a slightly elevated level in August and September. However, historical trend analysis indicates significantly decreasing (improving) hypolimnetic phosphorus levels since monitoring began. Outlet phosphorus level was slightly elevated in May and decreased to a low level between June through September.

⬧ **Transparency:** Transparency measured without the viewscope (NVS) was below average (worse) for the pond in May, increased (improved) greatly in June and then fluctuated within an average range for the pond through September. Average NVS transparency remained stable with 2019 and was higher (better) than the state median. Historical trend analysis indicates stable NVS transparency since monitoring began. Viewscope transparency (VS) was much higher (better) than NVS transparency and increased (improved) as the summer progressed.

⬧ **Turbidity:** Epilimnetic turbidity levels fluctuated within a low range and average epilimnetic turbidity level was the lowest measured si nce 2000. Metalimnetic turbidity levels also fluctuated within a low range and average metalimnetic turbidity level was the lowest measured since monitoring began. Hypolimnetic turbidity level was low between May and July and increased to a moderate range in August and September. Outlet turbidity level was higher in May when phosphorus levels were elevated and then decreased to a low level between June through September.

⬧ **pH:** Epilimnetic, Metalimnetic and Outlet pH levels were within the desirable range 6.5 -8.0 units. Historical trend analysis indicates stable epilimnetic pH levels since monitoring began. Hypolimnetic pH levels were less than desirable and slightly acidic.

Station Name	Table 1. 2020 Average Water Quality Data for CLEMENT POND - HOPKINTON									
	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	9.9	3.49	6	32	39.7	10	3.61	4.74	0.39	7.21
Metalimnion					39.3	10			0.55	6.51
Hypolimnion					39.5	14			0.91	6.04
Hardy Brook Outlet			6		40.7	11			0.47	6.87

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

Chloride: > 230 mg/L (chronic)

E. coli: > 88 cts/100 mL – public beach

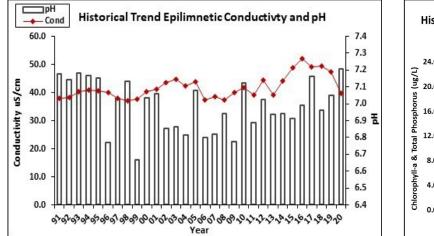**E. coli:** > 406 cts/100 mL – surface waters
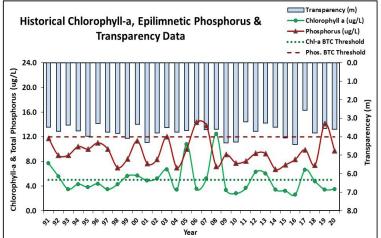
Turbidity: > 10 NTU above natural level

pH: between 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters 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

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Worsening	Data significantly increasing.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Stable	Trend not significant; data show low variability.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.

Historical Trend Epilimnetic Conductivty and pH

Historical Chlorophyll-a, Epilimnetic Phosphorus & Transparency Data