



Volunteer Lake Assessment Program Individual Lake Reports

HILLS POND, ALTON, NH

MORPHOMETRIC DATA
TROPIC CLASSIFICATION
KNOWN EXOTIC SPECIES

Watershed Area (Ac.):	1,472	Max. Depth (m):	12.8	Flushing Rate (yr⁻¹)	1	Year	Trophic class	
Surface Area (Ac.):	138	Mean Depth (m):	5.5	P Retention Coef:	0.64	1985	MESOTROPIC	
Shore Length (m):	2,700	Volume (m³):	3,054,000	Elevation (ft):	809	2005	MESOTROPIC	

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 a given 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	Slightly Bad	Data periodically exceed water quality standards or thresholds for a given parameter by a small margin.
	Chlorophyll-a	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
Primary Contact Recreation	Escherichia coli	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
	Chlorophyll-a	Very Good	All sampling data 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.



**HILLS POND
ALTON
VOLUNTEER LAKE ASSESSMENT PROGRAM**

STATIONID	STATION NAME
HILALTMB	MAIN BEACH
HILALTD	DEEP SPOT
HILALTE	EAST INLET
HILALTEU	EAST INLET UPSTREAM
HILALTN	NORTH INLET
HILALTO	OUTLET
HILALTS	SOUTH INLET

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





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Hills Pond, Alton 2020 Data Summary

Recommended Actions: Great job sampling in 2020! Pond nutrient and chlorophyll levels continue to fluctuate annually with chlorophyll levels (alga I growth) generally greater than the threshold for mesotrophic lakes. Drought conditions in 2020 resulted in very low nutrient (phosphorus) levels measured in surface waters, however low water levels and lack of flushing of nutrients out of the system resulted in higher nutrient levels in deeper waters. The increased frequency and intensity of storm events, earlier ice-out, warmer water temperatures, and changes in water levels and flushing rates can impact nutrient levels and algal growth. Managing stormwater runoff, stabilizing steep slopes, and maintaining a vegetative buffer along the shore are important to reduce nutrient loads to the pond. NHDES' "NH Homeowner's Guide to Stormwater Management" and UNH Cooperative Extension's "Landscaping at the Water's Edge" are good resources. The improving phosphorus levels in East Inlet are encouraging! Increase monitoring frequency to once per month, typically June, July and August, to better assess seasonal variations in water quality and historical water quality trends. Keep up the great work!

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

- ◆ **Chlorophyll-a:** Chlorophyll level was within a slightly elevated range in August, increased from 2019, and was greater than the state median and the threshold for mesotrophic 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), East Inlet, East Inlet Upstream, North Inlet, Outlet, and South Inlet conductivity levels were within a low range and less than the state median. Epilimnetic chloride level was also low and less than the state median. Historical trend analysis indicates relatively stable epilimnetic conductivity levels since monitoring began.
- ◆ **Color:** Apparent color measured in the epilimnion indicates the water was lightly tea colored, or light brown.
- ◆ **Total Phosphorus:** Epilimnetic phosphorus level was within a low range, decreased from 2019, and was less than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates relatively stable epilimnetic phosphorus levels since monitoring began. Metalimnetic and Hypolimnetic phosphorus levels were elevated and likely contributed to the slightly elevated algal growth. East Inlet, North Inlet, Outlet, and South Inlet phosphorus levels were within a low range and some of the lowest levels measured for these stations since monitoring began. East Inlet Upstream phosphorus levels were within a moderate range for NH lakes and within a low range for that station.
- ◆ **Transparency:** Transparency measured without the viewscope (NVS) was within an average range for the pond, increased (improved) from 2019, and was slightly higher (better) than the state median. Historical trend analysis indicates relatively stable NVS transparency since monitoring began. Viewscope (VS) transparency was slightly higher (better) than NVS transparency and likely a better measure of actual conditions.
- ◆ **Turbidity:** Epilimnetic, Metalimnetic, East Inlet, East Inlet Upstream, North Inlet, Outlet, and South Inlet turbidity levels were within a very low range for these stations. Hypolimnetic turbidity level was slightly elevated potentially due to the formation and accumulation of organic compounds under anoxic (no dissolved oxygen) conditions.
- ◆ **pH:** Epilimnetic, East Inlet, East Inlet Upstream, North Inlet, Outlet, and South Inlet pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates relatively stable epilimnetic pH levels since monitoring began. Metalimnetic and Hypolimnetic pH levels were slightly acidic and less than desirable.

Station Name	Table 1. 2020 Average Water Quality Data for HILLS POND - ALTON									
	Alk.	Chlor-a	Chloride	Color	Cond.	Total P	Trans. (m)		Turb.	pH
	(mg/L)	(ug/L)	(mg/L)	(pcu)	(us/cm)	(ug/L)	NVS	VS	(ntu)	
Epilimnion	5.8	6.59	4	40	29.2	8	3.50	4.00	0.36	6.93
Metalimnion					29.7	21			0.69	6.17
Hypolimnion					30.5	17			3.45	6.12
East Inlet					29.6	7			0.33	6.85
East Inlet Upstream					34.1	15			0.25	6.95
North Inlet					29.8	8			0.40	6.65
Outlet					29.5	7			0.37	6.80
South Inlet					30.0	7			0.33	6.79

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

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)

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data highly variable.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.

