



## Volunteer Lake Assessment Program Individual Lake Reports

### MOUNTAIN LAKE, UPPER, HAVERHILL, NH

#### MORPHOMETRIC DATA

#### TROPHIC CLASSIFICATION

#### KNOWN EXOTIC SPECIES

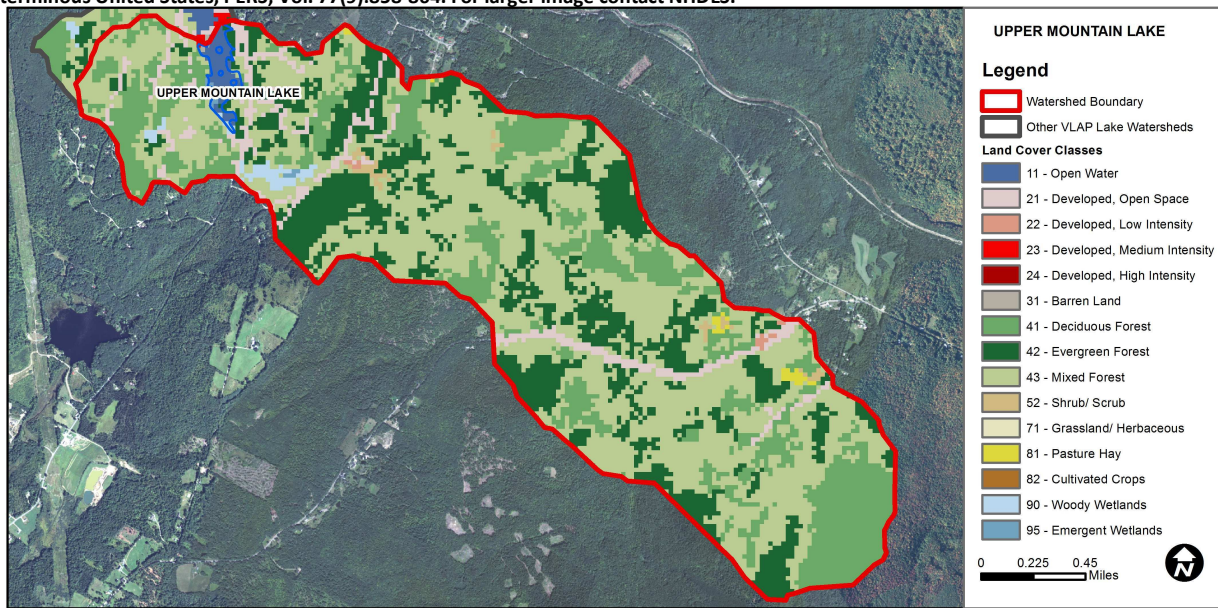
Watershed Area (Ac.):	2,155	Max. Depth (m):	5.4	Flushing Rate (yr <sup>1</sup> ):	17.1	Year	Trophic class	
Surface Area (Ac.):	30	Mean Depth (m):	2.5	P Retention Coef:		1984	MESOTROPHIC	
Shore Length (m):		Volume (m <sup>3</sup> ):	232,500	Elevation (ft):	776	2006	EUTROPHIC	

The Waterbody Report Card tables are generated from the DRAFT 2018 305(b) report on the status of N.H. waters, and are based on data collected from 2008-2017. Detailed waterbody assessment and report card information can be found at [www.des.nh.gov/organization/divisions/water/wmb/swqa/index.htm](http://www.des.nh.gov/organization/divisions/water/wmb/swqa/index.htm)

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Cautionary	Limited data for this parameter predicts exceedance of water quality standards or thresholds; however more data are necessary to fully assess the parameter.
	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for a given parameter by a small margin.
	Oxygen, Dissolved	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
	Dissolved oxygen satura	Cautionary	Limited data for this parameter predicts exceedance of water quality standards or thresholds; 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	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.

#### WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	1	Barren Land	0.03	Grassland/Herbaceous	0
Developed-Open Space	4.72	Deciduous Forest	21.45	Pasture Hay	0.35
Developed-Low Intensity	0.17	Evergreen Forest	22.87	Cultivated Crops	0
Developed-Medium Intensity	0.02	Mixed Forest	46.8	Woody Wetlands	0.75
Developed-High Intensity	0	Shrub-Scrub	0.56	Emergent Wetlands	0.13



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

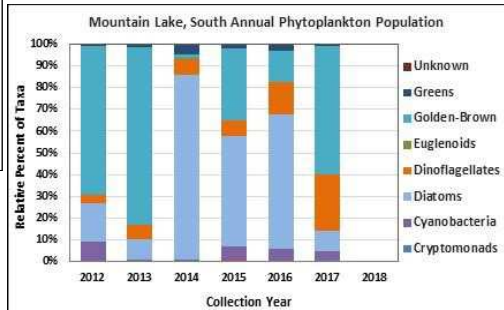
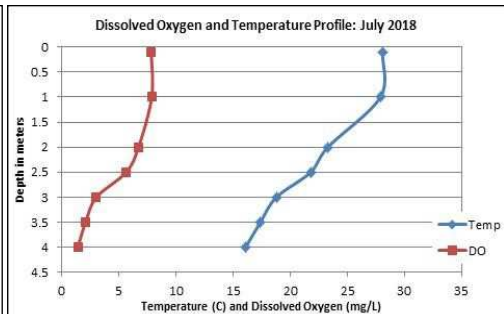
## UPPER (SOUTH) MOUNTAIN LAKE, HAVERHILL

### 2018 DATA SUMMARY

**RECOMMENDED ACTIONS:** Lake water quality was generally indicative of mesotrophic waters and epilimnetic phosphorus, chlorophyll, and transparency improved from 2017. This may have been reflective of the dry conditions experienced during the first half of the summer and the lack of stormwater runoff influencing water quality. Increase monitoring frequency to once per month, typically June, July, and August, to better assess monthly and annual variations in water quality over time. Utilize DES' "NH Homeowner's Guide to Stormwater Management" and UNH Cooperative Extension's "Landscaping at the Water's Edge" to mitigate impacts of stormwater runoff on the lake. Continue monitoring apparent color to better evaluate the relationship between water color and lake clarity. Keep up the good work!

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

- ◆ **CHLOROPHYLL-A:** July chlorophyll level was within a low range, decreased from 2017, and was approximately equal to the state median, and was less than the threshold for mesotrophic lakes. Historical trend analysis indicates highly variable chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Hypolimnetic (bottom water layer), Cove, and Outlet conductivity levels were slightly elevated and greater than the state median. Monteau Inlet conductivity level was the highest recorded since monitoring began. Epilimnetic chloride level was greater than the state median, however within a low range and much less than the state chronic chloride standard. Historical trend analysis indicates moderately stable epilimnetic conductivity levels since monitoring began.
- ◆ **COLOR:** Apparent color was measured in the epilimnion and indicates the water is moderately tea colored, or brown.
- ◆ **E. COLI:** Beach E. coli levels were low and much less than the state standard of 88 cts / 100 mL for public beaches.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic, Cove, and Outlet phosphorus levels were within a low range. Epilimnetic phosphorus level decreased sharply from 2017 and was less than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates highly variable epilimnetic phosphorus levels since monitoring began. Hypolimnetic and Monteau Inlet phosphorus levels were slightly elevated and the turbidity of the samples was also slightly elevated.
- ◆ **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was within an average range for the lake. NVS transparency increased (improved) slightly from 2017 but remained less than the state median. Historical trend analysis indicates highly variable transparency since monitoring began.
- ◆ **TURBIDITY:** Epilimnetic and Cove turbidity levels were within a low to average range for those stations. Hypolimnetic, Monteau Inlet and Outlet turbidity levels were slightly elevated.
- ◆ **pH:** Epilimnetic, Hypolimnetic, Cove, Monteau Inlet, and Outlet pH levels were within the desirable range of 6.5–8.0 units. Historic trend analysis indicates highly variable epilimnetic pH levels since monitoring began.



Station Name	Table 1. 2018 Average Water Quality Data for UPPER MOUNTAIN LAKE - HAVERHILL										
	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	17	4.36	13	70	101.7		10	2.30	2.63	1.21	7.44
Hypolimnion					102.4		16			2.16	6.74
Beach						10					
Cove					102.4		10			1.41	7.35
Monteau Inlet					120.1		16			2.51	7.05
Outlet					100.4		11			2.37	7.28

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.  
**Alkalinity:** 4.5 mg/L  
**Chlorophyll-a:** 4.39 mg/m<sup>3</sup>  
**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 highly variable.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data highly variable.

