



Volunteer Lake Assessment Program Individual Lake Reports

LOON LAKE, PLYMOUTH, NH

MORPHOMETRIC DATA

TROPHIC CLASSIFICATION

KNOWN EXOTIC SPECIES

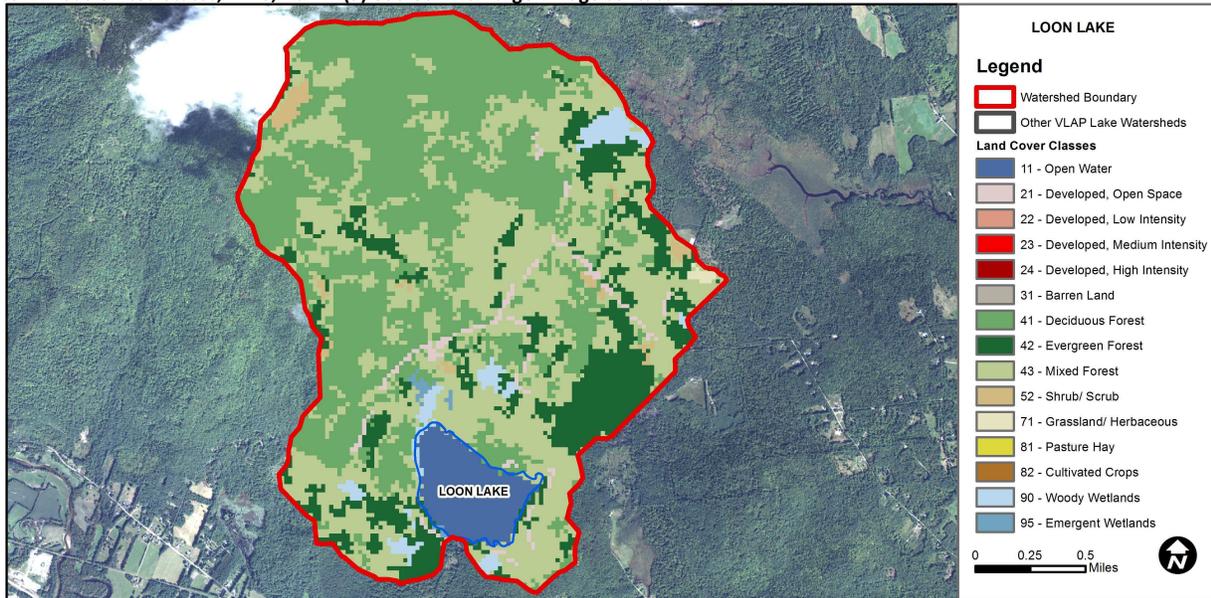
Watershed Area (Ac.):	2,240	Max. Depth (m):	8.8	Flushing Rate (yr ⁻¹):	2.6	Year	Trophic class	
Surface Area (Ac.):	112	Mean Depth (m):	3.9	P Retention Coef:	0.55	1983	MESOTROPHIC	
Shore Length (m):	2,600	Volume (m ³):	1,784,500	Elevation (ft):	489	1999	MESOTROPHIC	

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Encouraging	>2 samples exist that are > 75% of geometric mean criteria, but not enough samples to calculate geometric mean. No single sample exceedances. More data needed.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

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	4.62	Barren Land	0	Grassland/Herbaceous	0.17
Developed-Open Space	1.61	Deciduous Forest	39.28	Pasture Hay	0
Developed-Low Intensity	0	Evergreen Forest	13.92	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	36.44	Woody Wetlands	2.4
Developed-High Intensity	0	Shrub-Scrub	1.26	Emergent Wetlands	0.29



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

LOON LAKE, PLYMOUTH, NH

2013 DATA SUMMARY

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

- ♣ **CHLOROPHYLL-A:** Chlorophyll levels remained low in June and August and much less than the state median. Historical trend analysis indicates relatively stable chlorophyll with moderate variability between years.
- ♣ **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity was low and approximately equal to the state median. Historical trend analysis indicates stable epilimnetic conductivity with low variability between years. However, conductivity has increased gradually since 2009.
- ♣ **E. COLI:** Tributary E. coli levels were low and much less than state standard for surface waters.
- ♣ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels increased slightly from 2012 but remained low and less than the state median. Historical trend analysis indicates significantly decreasing (improving) epilimnetic phosphorus since monitoring began. We hope to see this continue! Metalimnetic and hypolimnetic phosphorus levels remained stable from June to August. Gargaz Inlet phosphorus levels were elevated in June following significant storm event. Mill Brook Inlet phosphorus levels were within a normal range for that tributary.
- ♣ **TRANSPARENCY:** Transparency remained stable from June to August; however was the lowest measured since monitoring began. Viewscope transparency was better than non-viewscope transparency and likely a better representation of conditions. Historical trend analysis indicates relatively stable transparency with moderate variability between years.
- ♣ **TURBIDITY:** Epilimnetic turbidity was elevated in June following significant storm event. Gargaz and Mill Brook Inlet turbidities were elevated in August likely due to low flow and a recent storm event.
- ♣ **pH:** Epilimnetic pH was in a good range 6.5 – 8.0. Metalimnetic and hypolimnetic pH levels were less than desirable. Historical trend analysis indicates highly variable epilimnetic pH.
- ♣ **RECOMMENDED ACTIONS:** Transparency was lower and epilimnetic phosphorus was slightly higher in 2013 potentially due to stormwater runoff from significant storm events. The increased frequency and intensity of storm events highlights the importance of reducing stormwater runoff. Identify areas in the watershed prone to erosion or that contribute large amount of stormwater runoff and consider implementing best management practices to capture and infiltrate stormwater prior to entering the lake and tributaries. DES' "Homeowner's Guide to Stormwater Management" is a great resource. Keep up the great work!

Station Name	Table 1. 2013 Average Water Quality Data for LOON LAKE								
	Alk.	Chlor-a	Cond.	E. Coli	Total P	Trans.		Turb.	pH
	mg/l	ug/l	uS/cm	#/100ml	ug/l	NVS	VS	ntu	
Epilimnion	4.95	1.47	31.4		8	2.94	3.34	1.16	6.91
Metalimnion			27.9		10			1.39	6.43
Hypolimnion			29.0		14			2.00	6.42
Gargaz Inlet			42.3	7	18			5.34	6.98
Mill Brook Inlet			28.3	10	21			2.35	6.56

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m³
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 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: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

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

