Volunteer Lake Assessment Program Individual Lake Reports

STINSON LAKE, RUMNEY, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	4,747	**Max. Depth (m):**	23.5	**Flushing Rate (yr^{1})**	0.9
Surface Area (Ac.):	350	**Mean Depth (m):**	10.7	**P Retention Coef:**	0.56
Shore Length (m):	5,600	**Volume (m^3):**	14,827,500	**Elevation (ft):**	1303

TROPHIC CLASSIFICATION

Year	Trophic class
1990	OLIGOTROPHIC
2002	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

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.

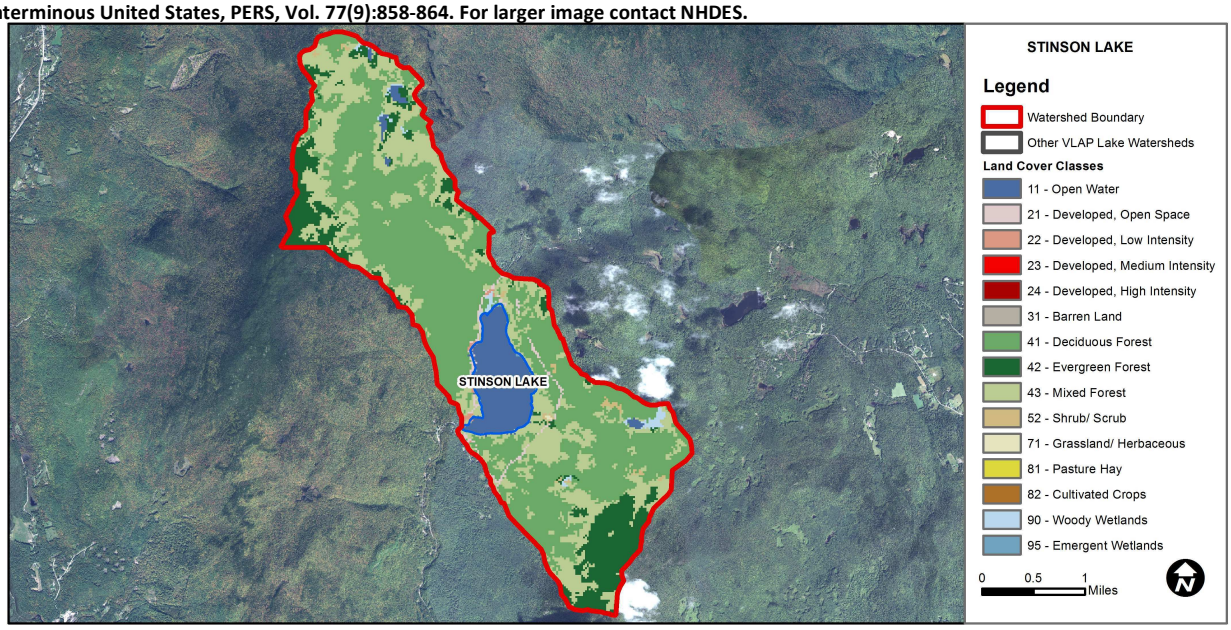
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	D.O. (mg/L)	Very Good	At least 10 samples with 0 exceedances of criteria.
	D.O. (% sat)	Good	At least 10 samples with 1 sample but < 10% of samples exceeding criteria.
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

STINSON LAKE - CAMP HAPPY T RANCH BEACH	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean 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	7.45	Barren Land	0	Grassland/Herbaceous	0.03
Developed-Open Space	1.06	Deciduous Forest	50.5	Pasture Hay	0
Developed-Low Intensity	0.25	Evergreen Forest	12.34	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	27.01	Woody Wetlands	0.73
Developed-High Intensity	0	Shrub-Scrub	0.48	Emergent Wetlands	0.07

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
STINSON LAKE, RUMNEY, NH
2013 DATA SUMMARY

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

- **CHLOROPHYLL-A:** Chlorophyll levels increased gradually from June to August but remained low and were much less than the state median. Historical trend analysis indicates stable chlorophyll with low variability between years.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity and chloride were low and less than the state medians. Historical trend analysis indicates stable epilimnetic conductivity with low variability between years.
- **TOTAL PHOSPHORUS:** Deep spot phosphorus levels were low on each sampling event and much less than the state median. Historical trend analysis indicates highly variable epilimnetic phosphorus. August tributary phosphorus levels were elevated and some turbidities were also elevated. A significant storm event occurred prior to sampling and tributary flows were low which could have contributed to the elevated levels.
- **TRANSPARENCY:** Transparency was the lowest measured since monitoring began and potentially due to weather conditions prior to and during sampling. Transparency measured with the viewscope was much better than without when small waves were present during sampling and may better represent conditions. Historical trend analysis indicates significantly decreasing (worsening) transparency since monitoring began.
- **TURBIDITY:** Deep spot turbidity was low on each sampling event. Outlet in Stream and Collins Bk. Below Beaver Dam turbidity was elevated in August following significant storm event and low flow conditions.
- **PH:** Deep spot pH levels were less than the desirable range (6.5-8.0) on the August sampling event. Historical trend analysis indicates significantly increasing (improving) epilimnetic pH since monitoring began. We hope to see this continue!
- **RECOMMENDED ACTIONS:** The increased frequency and intensity of storm events highlights the importance of managing stormwater runoff in the watershed. DES' "Homeowner's Guide to Stormwater Management" is a great resource for lake front residents. Transparency measure with the viewscope tends to be much better than without. After ten consecutive years of measuring data with the viewscope (2017), we suggest permanently switching to the viewscope method. Keep up the great work!

Table 1. 2013 Average Water Quality Data for STINSON LAKE

Station	Alk.	Chlor-a	Chloride	Cond.	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	ug/l	m		ntu	
						NVS	VS		
Collins Brook			3	16.0	28			0.83	6.45
Collins Brook Below Beaver Dam			3	15.0	16			1.84	6.24
Doe Town Brook			3	13.0	7			0.72	6.24
Epilimnion	2.53	1.41	3	25.1	5	4.55	6.17	0.81	6.64
Metalimnion				23.7	6			0.57	6.46
Hypolimnion				24.2	3			0.53	6.38
Outlet In Stream				19.0	32			4.14	6.48
Sucker Brook			3	16.0	15			0.40	6.48

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
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	Improving	Data significantly increasing.	Chlorophyll-a	Stable	Trend not significant; data show low variability.
Conductivity	Stable	Trend not significant; data show low variability.	Transparency	Degrading	Data significantly decreasing.
			Phosphorus (epilimnion)	Stable	Trend not significant; data highly variable.