



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	OLIGOTROPIC
2002	OLIGOTROPIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

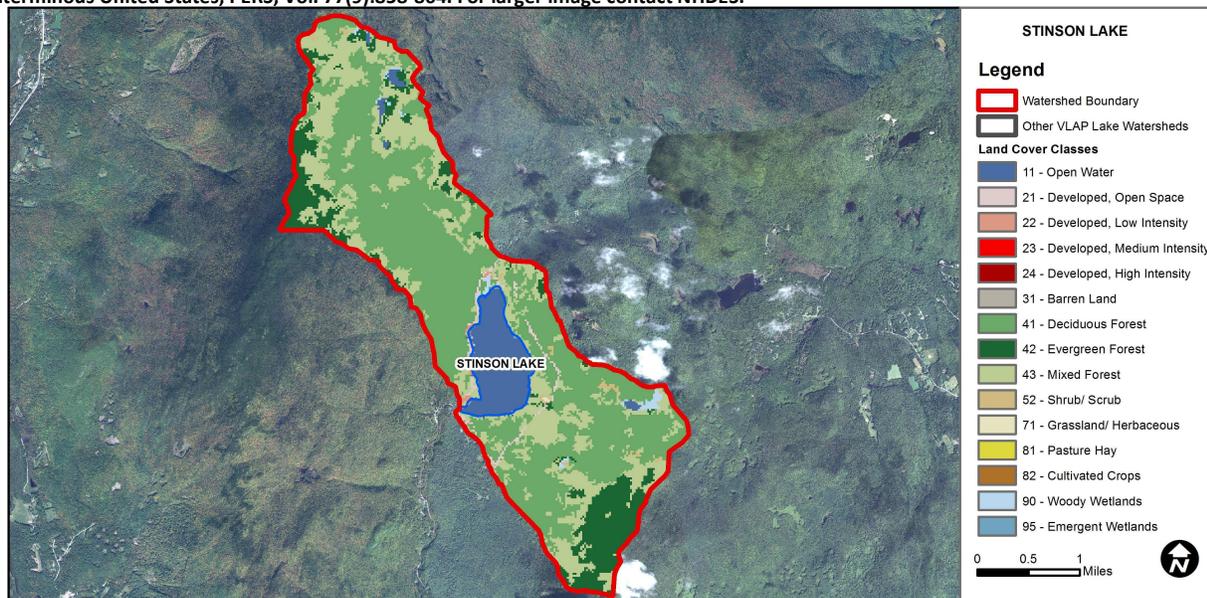
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator and the chlorophyll a indicator is okay.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	Oxygen, Dissolved	Very Good	There are a total of at least 10 samples with 0 exceedances of criteria.
	Dissolved oxygen satura	Very Good	There are a total of at least 10 samples with 0 exceedances of criteria.
	Chlorophyll-a	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

STINSON LAKE - CAMP HAPPY T RANCH BEACH	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
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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



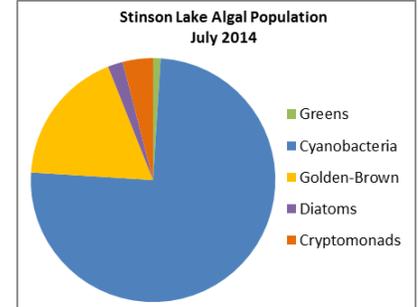
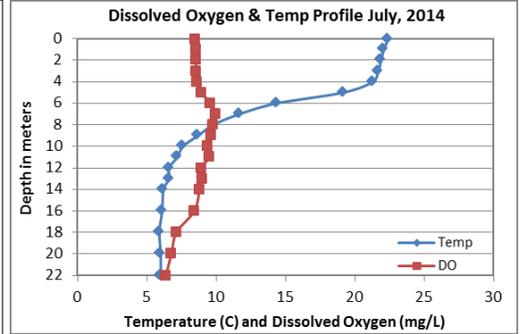
VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

STINSON LAKE, RUMNEY

2014 DATA SUMMARY

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

- ◆ **CHLOROPHYLL-A:** Chlorophyll levels were stable and low from July to September, however were slightly above average for the pond. Average chlorophyll levels were the highest measured since monitoring began. Historical trend analysis indicates stable chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity and/or chloride levels remained low and less than the state medians. Historical trend analysis indicates significantly decreasing (improving) epilimnetic (upper water layer) conductivity since monitoring began. We hope to see this continue!
- ◆ **TOTAL PHOSPHORUS:** Deep spot phosphorus levels remained stable and low from July to September. Average epilimnetic phosphorus levels were very low, decreased from 2013 and were much less than the state median. Historical trend analysis indicates highly variable epilimnetic phosphorus since monitoring began. Tributary phosphorus levels were all low in September and decreased from elevated levels measured in 2013.
- ◆ **TRANSPARENCY:** Transparency measured without the viewscope (NVS) was good in July, then decreased (worsened) in August due to wave action, and then increased (improved) in September. However, transparency remained below average for the lake and historical trend analysis indicates significantly decreasing (worsening) transparency since monitoring began. Transparency measured with the viewscope (VS) followed the same monthly pattern but was slightly better than that measured without and likely a better representation of actual conditions.
- ◆ **TURBIDITY:** Epilimnetic turbidity was slightly above average in August when wind and wave conditions at the deep site were high. Otherwise, deep spot and tributary turbidities were low.
- ◆ **pH:** Epilimnetic pH fluctuated below the desirable range 6.5-8.0 units in August and metalimnetic and hypolimnetic pH levels were less than desirable. However, historical trend analysis indicates significantly increasing (improving) epilimnetic pH since monitoring began. We hope to see this continue!
- ◆ **RECOMMENDED ACTIONS:** Collect monthly tributary samples to better understand the inputs and sources of nutrients and sediments to the lake from the surrounding watershed. The increased frequency and intensity of storm events can cause erosion of unstable stream banks, slopes, and shoreline areas. Encourage lake residents to utilize DES' "NH Homeowner's Guide to Stormwater Management" to stabilize properties and decrease stormwater runoff into the tributaries and lake. The improving conductivity and pH are encouraging! Keep up the great work!



Station Name	Table 1. 2014 Average Water Quality Data for STINSON LAKE								
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m	Turb. ntu	pH	
						NVS	VS		
Epilimnion	2.63	2.42	3	20.0	3	4.99	5.47	0.73	6.51
Metalimnion				20.4	4			0.94	6.04
Hypolimnion				21.1	5			0.90	5.97
Collins Brook				17.2	9			0.79	6.11
Cross Rd Brook				15.5	3			0.69	6.22
Outlet In Stream				20.7	3			0.60	6.56
Sucker Brook				19.8	5			0.27	6.50

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: between 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

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

