



## Volunteer Lake Assessment Program Individual Lake Reports

### GRANITE LAKE, STODDARD, NH

#### MORPHOMETRIC DATA

Watershed Area (Ac.):	2,432	Max. Depth (m):	28.9	Flushing Rate (yr <sup>-1</sup> )	0.7
Surface Area (Ac.):	228	Mean Depth (m):	9.8	P Retention Coef:	0.61
Shore Length (m):	4,500	Volume (m <sup>3</sup> ):	9,027,000	Elevation (ft):	1278

#### TROPHIC CLASSIFICATION

Year	Trophic class
1996	OLIGOTROPIC
2006	OLIGOTROPIC

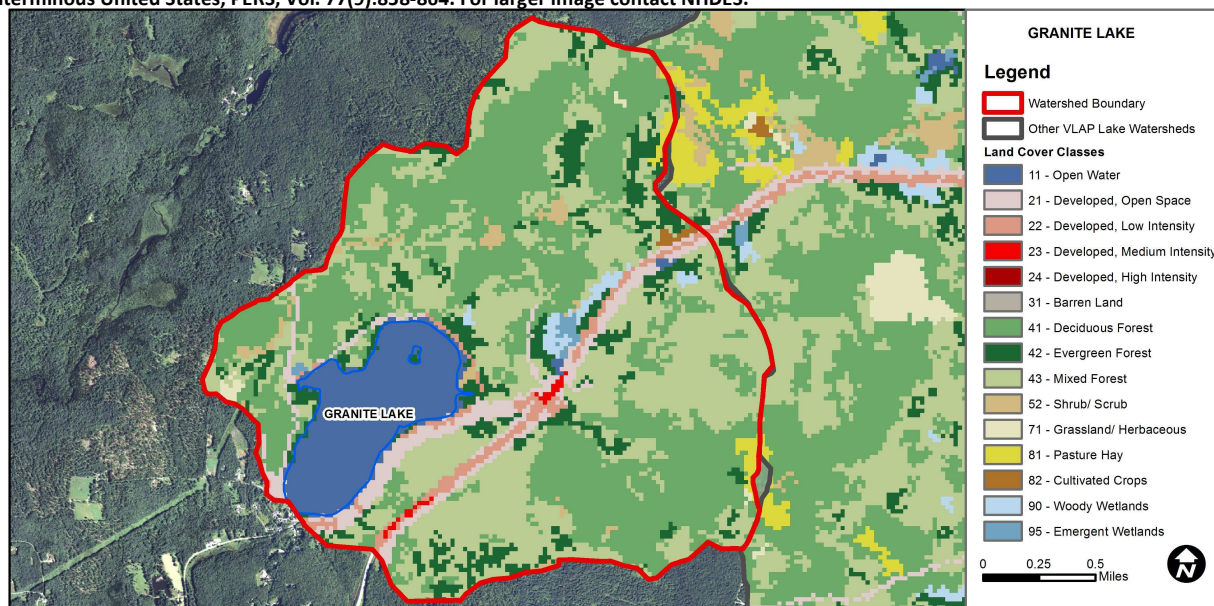
#### KNOWN EXOTIC SPECIES


The Waterbody Report Card tables are generated from the DRAFT 2016 305(b) report on the status of N.H. waters, and are based on data collected from 2006-2015. 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)	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
	pH	Bad	Data periodically exceed water quality standards or thresholds for this parameter by a large 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	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.
	Chlorophyll-a	Very Good	Sampling data is 50 percent 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	9.46	Barren Land	0	Grassland/Herbaceous	0.3
Developed-Open Space	5	Deciduous Forest	36.11	Pasture Hay	0.67
Developed-Low Intensity	2.11	Evergreen Forest	8.75	Cultivated Crops	0.19
Developed-Medium Intensity	0.27	Mixed Forest	34.65	Woody Wetlands	0.87
Developed-High Intensity	0	Shrub-Scrub	1.22	Emergent Wetlands	0.36



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

## GRANITE LAKE, STODDARD

### 2017 DATA SUMMARY

**RECOMMENDED ACTIONS:** Lake and tributary water quality was generally very good this year. However, a significant storm event in August washed out roads and shorelines in the watershed resulting in visible sediment plumes in the lake. This ultimately resulted in higher lake turbidity, lower water clarity, increased nutrients levels and algal growth. This highlights the importance of stabilizing roads, stream banks and shorelines to help minimize sedimentation during these extreme events. If not already done, inventory culverts around the lake and prioritize culvert replacement to ensure properly sized culverts that can handle 100-year storm events on a regular basis. Keep up the great work!

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

- ◆ **CHLOROPHYLL-A:** Chlorophyll levels fluctuated within a low range from July to September and were highest in July. The average chlorophyll level increased from 2016 and was the highest measured since 1991, however levels remained below the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates stable chlorophyll levels with moderate variability between years.
- ◆ **CONDUCTIVITY/CHLORIDE:** Deep spot, Inlet and Outlet conductivity and chloride levels remained slightly greater than the state medians but below a level of concern. However, historical trend analysis indicates significantly increasing (worsening) epilimnetic (upper water layer) conductivity levels since monitoring began. North Shore Rd. conductivity levels remained low. Granite Lake Rd., Boat Ramp and Townline Inlet conductivity and chloride levels were elevated and greater than the state medians.
- ◆ **COLOR:** Apparent color was measured in the epilimnion and indicates a clear lake with low levels of dissolved organic acids that add a “tea” color to the water.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels fluctuated within a low range from July to August, however phosphorus levels in early September were above average following a significant storm event. Average epilimnetic phosphorus levels increased from 2016 but remained less than the state median and threshold for oligotrophic lakes. Metalimnetic (middle water layer), Hypolimnetic (lower water layer), North Shore Rd. stations, Granite Lk. Rd. stations, Outlet, and Townline Inlet phosphorus levels also fluctuated within a low range. Boat Ramp phosphorus levels were elevated in July. Inlet and Nye Meadow Outlet phosphorus levels were within an average range but increased in August following a significant storm event.
- ◆ **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was lower (worse) in July and September following the significant storm event. August transparency was good, however average transparency decreased slightly in 2016. Historical trend analysis indicates stable transparency with moderate variability between years.
- ◆ **TURBIDITY:** Deep spot and tributary turbidity levels, except for Nye Meadow Outlet were within low to average ranges for those stations. Epilimnetic turbidity was higher in September but did not exceed a normal level for that station. Nye Meadow Outlet turbidity was slightly elevated and laboratory data indicate water with a light tea color which could increase turbidity.
- ◆ **pH:** Deep spot and tributary pH levels were generally less than the desirable range 6.5-8.0 units and within an acidic to slightly acidic range. Historical trend analysis indicates highly variable epilimnetic pH levels since monitoring began.

Station Name	Table 1. 2017 Average Water Quality Data for GRANITE LAKE-STODDARD									
	Alk.	Chlor-a	Chloride	Color	Cond.	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	PCU	uS/cm	ug/l	NVS	VS	ntu	
Epilimnion	1.9	2.11	14	17	71.2	6	7.47	7.67	0.78	6.24
Metalimnion					73.8	5			1.09	6.45
Hypolimnion					84.7	4			0.58	6.15
305 North Shore Rd.					20.2	3			0.27	6.26
395 North Shore Rd.					22.8	5			0.42	6.38
586 Granite Lk. Rd.			66		283.3	5			0.41	6.31
603 Granite Lk. Rd.			21		154.3	3			0.24	4.69
Boat Ramp			51		233.0	26			0.42	6.26
Inlet			14		75.9	12			1.25	6.23
North Shore End					18.7	9			0.99	6.23
North Shore West Shore					17.8	7			0.46	5.94
Nye Meadow Outlet			6		41.9	18			1.86	5.85
Outlet In Stream					72.1	4			0.46	6.32
Townline Inlet			35		171.4	3			0.18	5.47

**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)

**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<sup>3</sup>
- Conductivity:** 40.0 uS/cm
- Chloride:** 4 mg/L
- Total Phosphorus:** 12 ug/L
- Transparency:** 3.2 m
- pH:** 6.6

### HISTORICAL WATER QUALITY TREND ANALYSIS

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

