



# Volunteer Lake Assessment Program Individual Lake Reports

## GRANITE LAKE, STODDARD, NH

### MORPHOMETRIC DATA

|                       |       |                           |           |                                   |      |
|-----------------------|-------|---------------------------|-----------|-----------------------------------|------|
| Watershed Area (Ac.): | 2,432 | Max. Depth (m):           | 33.6      | 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 | OLIGOTROPHIC  |
| 2006 | OLIGOTROPHIC  |

### KNOWN EXOTIC SPECIES

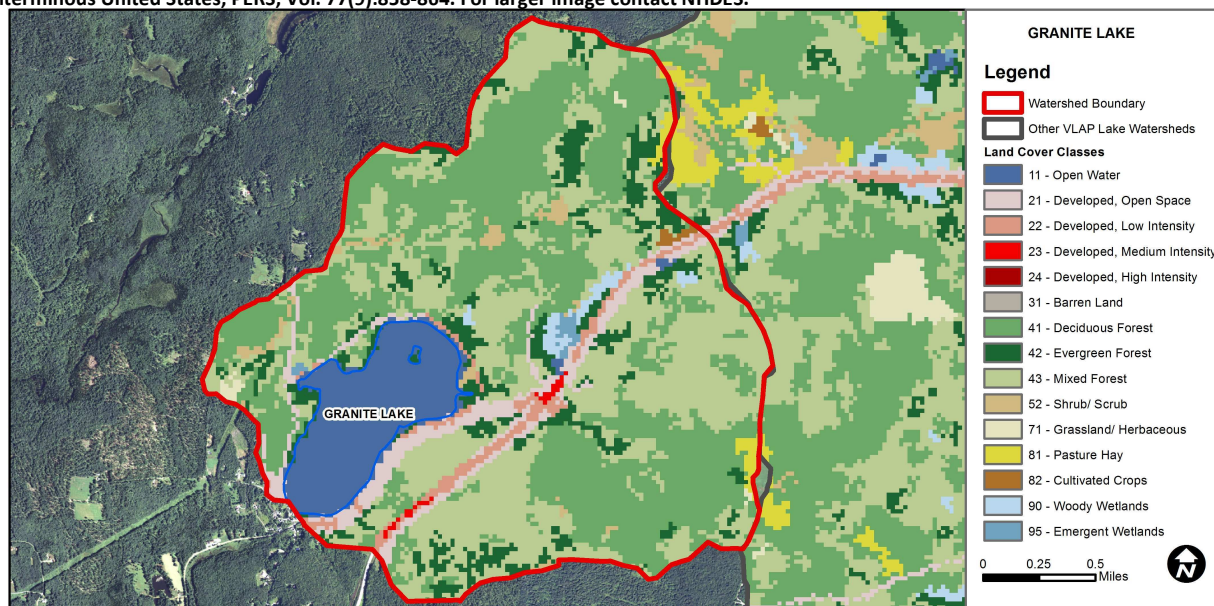
|  |
|--|
|  |
|  |
|  |

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](http://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           | Encouraging | There are < 10 samples with 0 exceedances of criteria. More data needed.  |
|                            | Dissolved oxygen saturation | Encouraging | There are < 10 samples with 0 exceedances of criteria. More data needed.  |
|                            | Chlorophyll-a               | Very Good   | The calculated median is from 5 or more samples and is <= 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.   |

### 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

### 2015 DATA SUMMARY

**RECOMMENDED ACTIONS:** Water quality was good in 2015 and representative of Oligotrophic, or high quality water, conditions. The dry weather conditions in 2015 may have contributed to the lower phosphorus levels and algal growth and corresponding high water clarity. This highlights the importance of managing stormwater runoff in the watershed and installing stormwater management controls to minimize stormwater runoff into the lake and tributaries. Consider becoming a partner with DES' Soak up the Rain New Hampshire program <http://soaknh.org/> to plan and implement stormwater management projects in the watershed. Keep up the great work!

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

- ◆ **CHLOROPHYLL-A:** Chlorophyll levels were very low in July, increased slightly in August and then decreased in September. Average chlorophyll levels were very low, decreased slightly from 2014, and were much less than the state median. Historical trend analysis indicates relatively stable chlorophyll levels with moderate variability between years.
- ◆ **CONDUCTIVITY/CHLORIDE:** Deep spot, Little Granite Lake Outlet and Outlet in Stream conductivity and chloride levels were slightly greater than the state medians but not above a level of concern. Historical trend analysis indicates relatively stable epilimnetic (upper water layer) conductivity with moderate variability between years. Nye Meadow Outlet, 305 North Shore Rd., North Shore End, and Outlet in Stream conductivity and chloride levels were within a low to average range. Inlet conductivity and chloride levels were slightly elevated. Townline Inlet conductivity and chloride levels were elevated and much greater than the state medians.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic and Metalimnetic (middle water layer) phosphorus levels were stable and low from July through September. Historical trend analysis indicates highly variable epilimnetic phosphorus since monitoring began. Hypolimnetic (lower water layer) phosphorus levels were low in July and August and slightly elevated in September. 305 North Shore Rd., Little Granite Lake Outlet, North Shore End, Outlet in Stream, and Townline Inlet phosphorus levels remained low. Inlet phosphorus levels were stable from July through September and within an average range. Nye Meadow Outlet phosphorus levels were average in July.
- ◆ **TRANSPARENCY:** Transparency was low in June and then increased (improved) in July and August. Average transparency measured without the viewscope (NVS) was high (good), improved from 2014 and was much better than the state median. Historical trend analysis indicates relatively stable transparency with moderate variability between years. Transparency measured with the viewscope (VS) was much better than that measured without in August and September and likely a better representation of actual conditions.
- ◆ **TURBIDITY:** Epilimnetic and Hypolimnetic turbidities were low throughout the summer, however Metalimnetic turbidity was slightly elevated in July indicating a layer of algae at that depth. Tributary turbidities were all within a low to average range.
- ◆ **PH:** Epilimnetic pH fluctuated below the desirable range 6.5-8.0 units in August however average epilimnetic pH was within the desirable range. Historical trend analysis indicates highly variable epilimnetic pH since monitoring began. Metalimnetic, Hypolimnetic, and tributary pH levels were all less than desirable and slightly acidic.

| Station Name                  | Table 1. 2015 Average Water Quality Data for GRANITE LAKE |                 |                  |                |                 |             |      |              |      |
|-------------------------------|---|-----------------|------------------|----------------|-----------------|-------------|------|--------------|------|
|                               | Alk.<br>mg/l  | Chlor-a<br>ug/l | Chloride<br>mg/l | Cond.<br>uS/cm | Total P<br>ug/l | Trans.<br>m |      | Turb.<br>ntu | pH   |
|                               |   |                 |                  |                |                 | NVS         | VS   |              |      |
| Epilimnion                    | 3.5   | 1.05            | 14               | 73.6           | 3               | 8.03        | 8.67 | 0.60         | 6.52 |
| Metalimnion                   |   |                 |                  | 68.1           | 3               |             |      | 1.10         | 6.17 |
| Hypolimnion                   |   |                 |                  | 69.3           | 8               |             |      | 0.54         | 5.79 |
| 305 North Shore Rd            |   |                 |                  | 20.8           | 4               |             |      | 0.54         | 6.12 |
| Inlet                         |   |                 | 34               | 149.4          | 11              |             |      | 1.17         | 5.99 |
| Little Granite Lake<br>Outlet |   |                 | 8                | 52.4           | 9               |             |      | 1.37         | 5.94 |
| North Shore End               |   |                 | 3                | 21.3           | 8               |             |      | 0.80         | 6.45 |
| Nye Meadow Outlet             |   |                 | 6                | 45.4           | 11              |             |      | 0.92         | 5.67 |
| Outlet In Stream              |   |                 | 14               | 69.2           | 3               |             |      | 0.49         | 6.37 |
| Townline Inlet                |   |                 | 105              | 415.5          | 6               |             |      | 0.45         | 5.09 |

**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

**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 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.     |

