

# LAKE WINNIPESAUKEE

## (LONG ISLAND)

### 2017 SAMPLING HIGHLIGHTS

#### Station 49 Greens Boathouse

Moultonborough, NH



**Blue** = Excellent =  
Oligotrophic

**Yellow** = Fair =  
Mesotrophic

**Red** = Poor = Eutrophic

**Gray** = Not Assessed

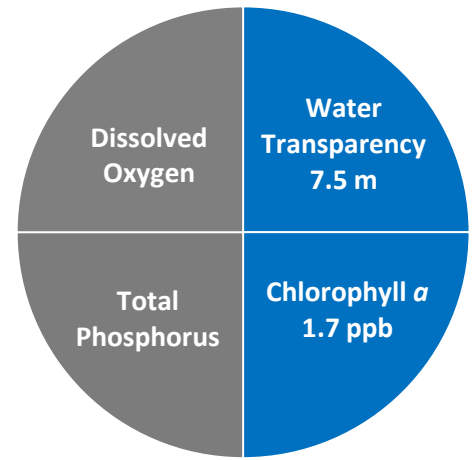


Figure 1. Long Island Water Quality (2017)

Table 1. 2017 Long Island Seasonal Averages and NH DES Aquatic Life Nutrient Criteria<sup>1</sup>

Parameter	Oligotrophic "Excellent"	Mesotrophic "Fair"	Eutrophic "Poor"	49 Greens Boathouse Average (range)	49 Greens Boathouse Classification
Water Clarity (meters)	4.0 – 7.0	2.5 - 4.0	< 2.5	7.5 meters (7.0 – 8.1)	Oligotrophic
Chlorophyll <i>a</i> <sup>1</sup> (ppb)	< 3.3	> 3.3 – 5.0	> 5.0 – 11.0	1.7 ppb (0.7 – 5.7)	Oligotrophic
Total Phosphorus <sup>1</sup> (ppb)	< 8.0	> 8.0 – 12.0	> 12.0 – 28.0	Not Sampled	Not Assessed
Dissolved Oxygen (mg/L)	5.0 – 7.0	2.0 – 5.0	<2.0	Not Sampled	Not Assessed

Table 2. 2017 Long Island Seasonal Average Accessory Water Quality Measurements

Parameter	Assessment Criteria					49 Greens Boathouse Average (range)	49 Greens Boathouse Classification
	< 10 uncolored	10 – 20 slightly colored	20 – 40 lightly tea colored	40 – 80 tea colored	> 80 highly colored		
Color (color units)	< 10 uncolored	10 – 20 slightly colored	20 – 40 lightly tea colored	40 – 80 tea colored	> 80 highly colored	10.0 color units (range: 7.1 – 14.3)	Slightly colored
Alkalinity (mg/l)	< 0.0 acidified	0.1 – 2.0 extremely vulnerable	2.1 – 10 moderately vulnerable	10.1 – 25.0 low vulnerability	> 25.0 not vulnerable	8.6 mg/L (range: 8.3 – 8.9)	Moderately Vulnerable

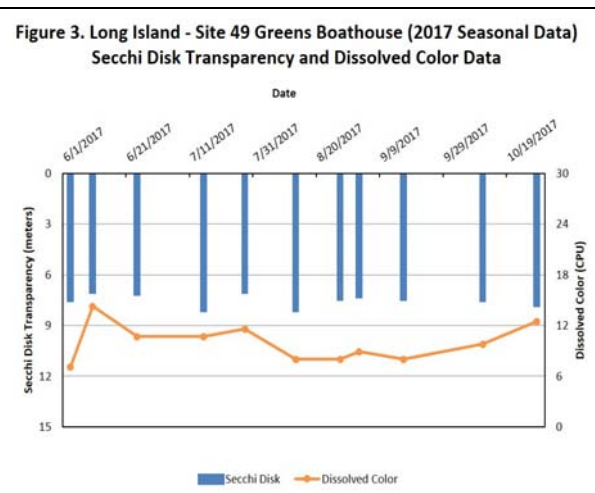
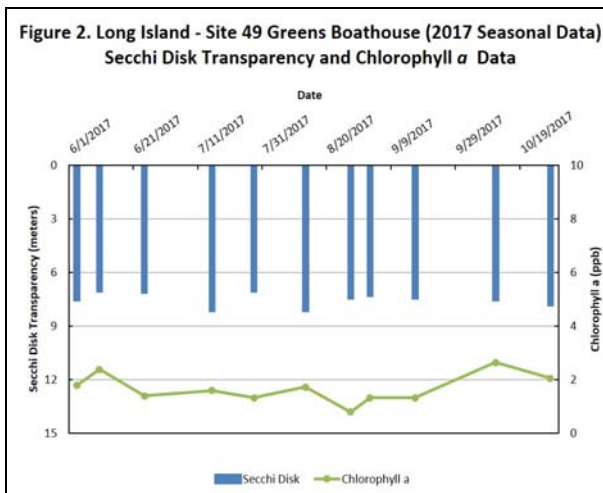


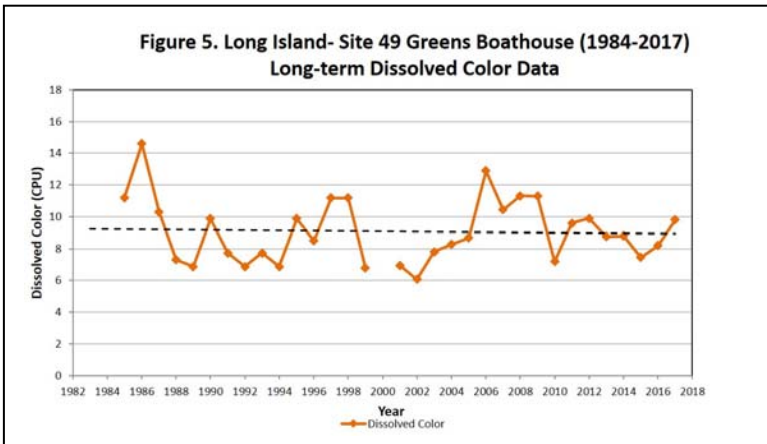
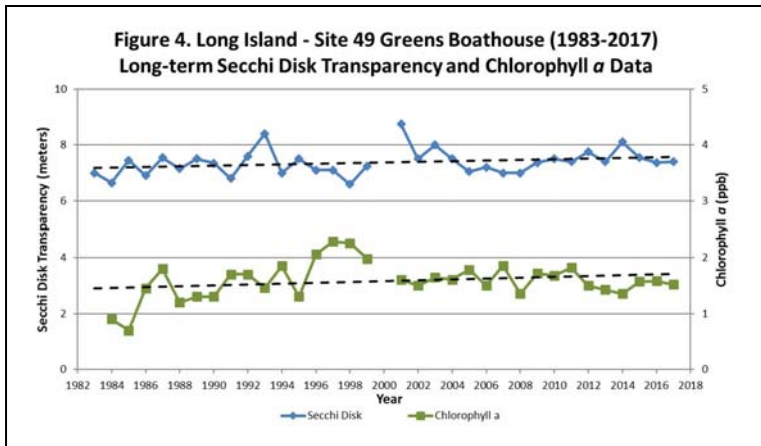
Figure 2 and 3. Seasonal Secchi Disk transparency, chlorophyll *a* and dissolved color concentrations. Figures 2 and 3 illustrate the interplay among Secchi Disk transparency, chlorophyll *a* and dissolved color. Shallower water transparency measurements oftentimes correspond to increases in chlorophyll *a* and/or color concentrations.

## LONG-TERM TRENDS

**WATER CLARITY:** Long Island – Site 49 Greens Boathouse water clarity measurements, measured as Secchi Disk transparency, display a trend of increasing water clarity between 1983 and 2017 (Figure 4).

**CHLOROPHYLL:** Long Island – Site 49 Greens Boathouse chlorophyll *a* concentrations, a measure of microscopic plant life within the lake, display a trend of increasing chlorophyll *a* concentrations between 1983 and 2017 (Figure 4).

**COLOR:** Long Island – Site 49 Greens Boathouse color data, the result of naturally occurring “tea” colored substances from the breakdown of soils and plant materials, have oscillated among years but display a relatively stable trend between 1985 and 2017 (Figure 5).

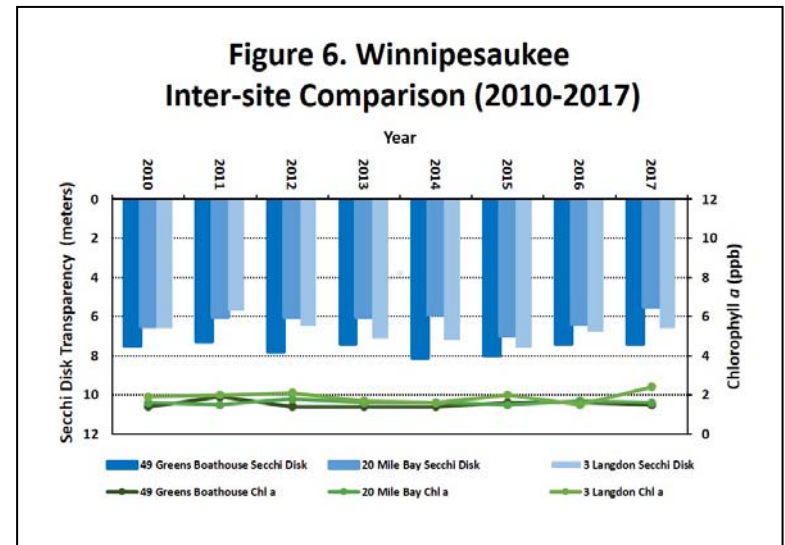


**Table 3. Seasonal Average Water Quality Inter-site Comparison (2017)**

Site	Average (range) Secchi Disk Transparency (meters)	Average (range) Chlorophyll <i>a</i> (ppb)	Average (range) Total Phosphorus (ppb)
49 Greens Boathouse	7.5 (range: 7.0 – 8.1)	1.7 (range: 0.8 – 5.7)	Not Sampled
20 Mile Bay	5.5 (range: 4.5 – 6.6)	1.7 (range: 1.1 – 2.8)	7.9 (range: 5.2 – 14.9)
3 Langdon	6.6 (range: 5.7 – 7.6)	2.4 (range: 2.1 – 2.7)	6.8 (range: 4.6 – 8.5)

Figures 4 and 5. Changes in the Long Island – Site 49 Greens Boathouse water clarity (Secchi Disk depth), chlorophyll *a*, and dissolved color concentrations measured between 1983 and 2017. These data illustrate the relationship among plant growth, water color and water clarity.

Figure 6. Lake Winnepesaukee inter-site comparison between Sites 49 Greens Basin, 3 Langdon Cove, and 20 Mile Bay. Both the Secchi Disk transparency and chlorophyll *a* measurements are displayed.



## Recommendations

Implement Best Management Practices within the Lake Winnepesaukee watershed to minimize the adverse impacts of polluted runoff and erosion into Lake Winnepesaukee. Refer to “Landscaping at the Water’s Edge: An Ecological Approach” and “New Hampshire Homeowner’s Guide to Stormwater Management: Do-It-Yourself Stormwater Solutions for Your Home” for more information on how to reduce nutrient loading caused by overland run-off.

- [http://extension.unh.edu/resources/files/Resource004159\\_Rep5940.pdf](http://extension.unh.edu/resources/files/Resource004159_Rep5940.pdf)
- <http://soaknh.org/wp-content/uploads/2016/04/NH-Homeowner-Guide-2016.pdf>

**Figure 7. Lake Winnepesaukee - Long Island**  
Moultonborough, NH  
2017 sampling sites and seasonal average water clarity



0 0.7 1.4 2.1 2.8 Miles

Aerial Orthophoto Source: NH GRANIT  
Site location GPS coordinates collected by the UNH Center for Freshwater Biology

