

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

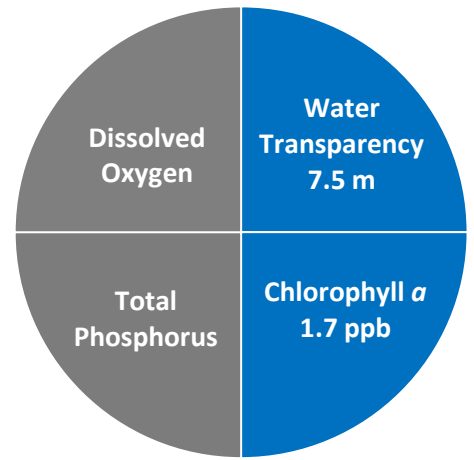


Figure 1. Long Island Water Quality (2017)

Table 1. 2017 Long Island Seasonal Averages and NH DES Aquatic Life Nutrient Criteria¹

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> ¹ (ppb)	< 3.3	> 3.3 – 5.0	> 5.0 – 11.0	1.7 ppb (0.7 – 5.7)	Oligotrophic
Total Phosphorus ¹ (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

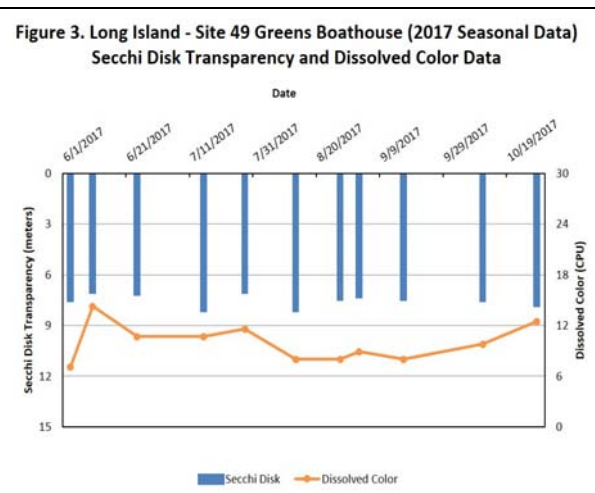
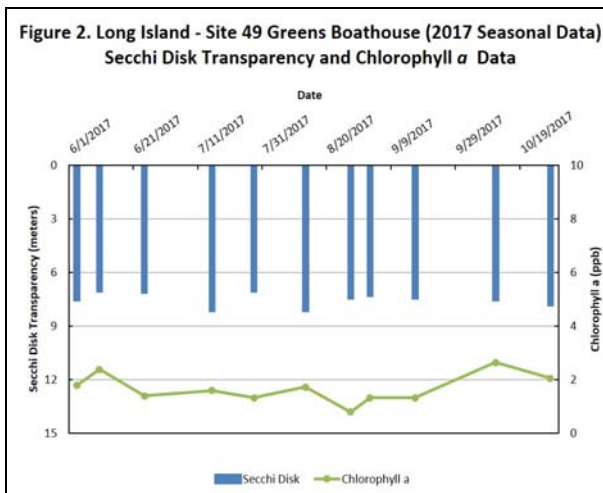


Figure 2 and 3. Seasonal Secchi Disk transparency, chlorophyll *a* and dissolved color concentrations. Figures 2 and 3 illustrate the interplay among Secchi Disk transparency, chlorophyll *a* and dissolved color. Shallower water transparency measurements oftentimes correspond to increases in chlorophyll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

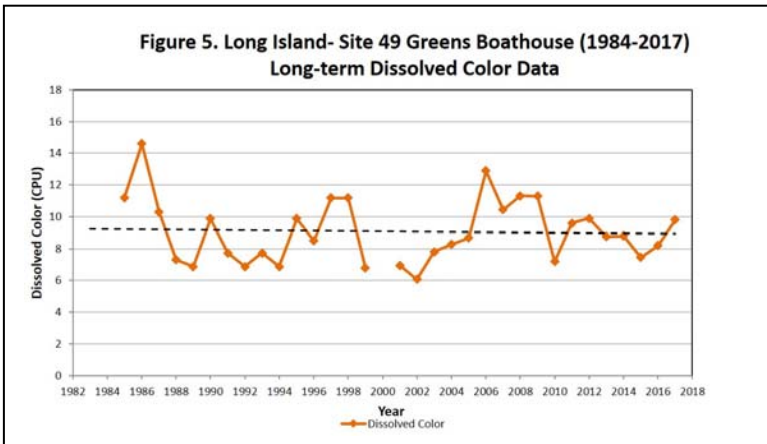
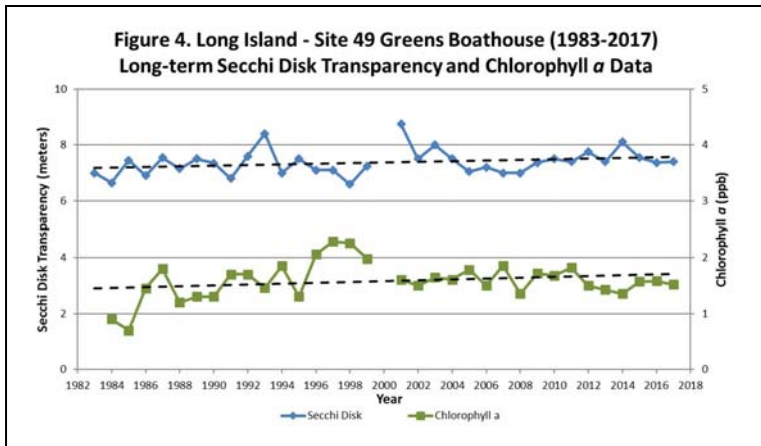
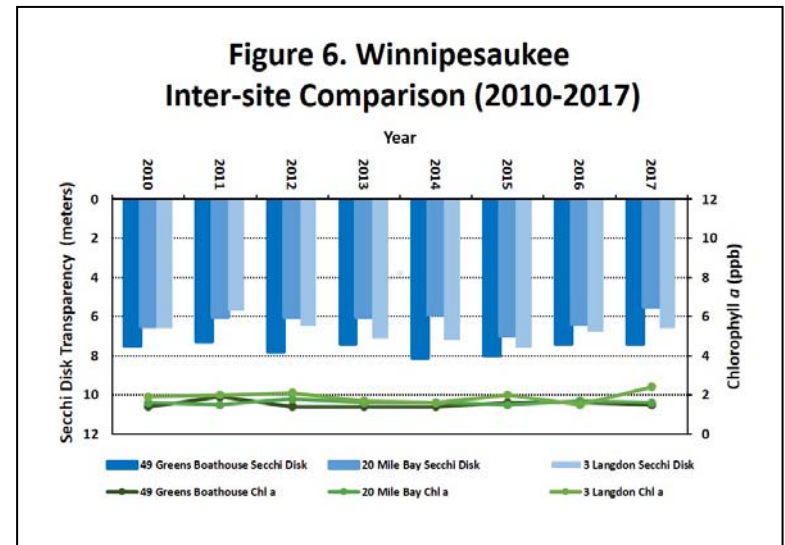


Table 3. Seasonal Average Water Quality Inter-site Comparison (2017)

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://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

