

TOWNHOUSE POND

2019 SAMPLING HIGHLIGHTS

Milton, NH



Blue = Excellent = Oligotrophic

Yellow = Fair = Mesotrophic

Red = Poor = Eutrophic

Gray = No Data

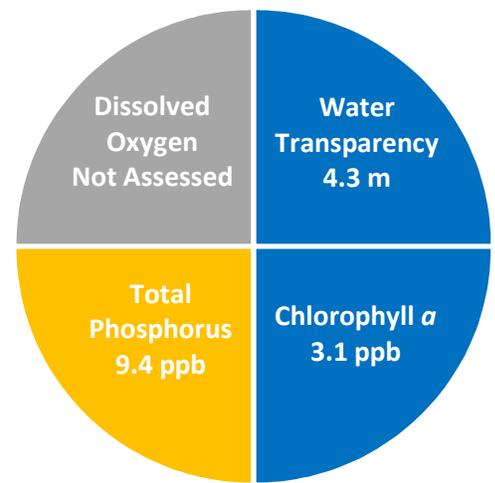


Figure 1. Townhouse Pond Water Quality (2019)

Table 1. 2019 Townhouse Pond Seasonal Averages and NH DES Aquatic Life Nutrient Criteria¹

Parameter	Oligotrophic "Excellent"	Mesotrophic "Fair"	Eutrophic "Poor"	Townhouse Pond Average (range)	Townhouse Pond Classification
Water Clarity (meters)	4.0 – 7.0	2.5 - 4.0	< 2.5	4.3 meters (3.7 – 6.0)	Oligotrophic
Chlorophyll <i>a</i> ¹ (ppb)	< 3.3	> 3.3 – 5.0	> 5.0 – 11.0	3.1 ppb (2.2 – 3.4)	Oligotrophic
Total Phosphorus ¹ (ppb)	< 8.0	> 8.0 – 12.0	> 12.0 – 28.0	9.4 ppb (7.5 – 11.1)	Mesotrophic
Dissolved Oxygen (mg/L)	5.0 – 7.0	2.0 – 5.0	<2.0	No Data	Not Assessed

Table 2. 2019 Townhouse Pond Seasonal Average Accessory Water Quality Measurements

Parameter	Assessment Criteria					Townhouse Pond Average (range)	Townhouse Pond Classification
Color (color units)	< 10 uncolored	10 – 20 slightly colored	20 – 40 lightly tea colored	40 – 80 tea colored	> 80 highly colored	27.6 color units (range: 22.6 – 31.9)	Lightly tea 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	8.1 mg/L (range: 8.0 – 8.5)	Moderately vulnerable
pH (Std units)	< 5.5 suboptimal for successful growth and reproduction		6.5 – 9.0 optimal range for fish growth and reproduction			No Data	-----
Specific Conductivity (uS/cm)	< 50 uS/cm Minimally impacted		50-100 uS/cm Some human influence	> 100 uS/cm Experiencing human disturbances		No Data	-----

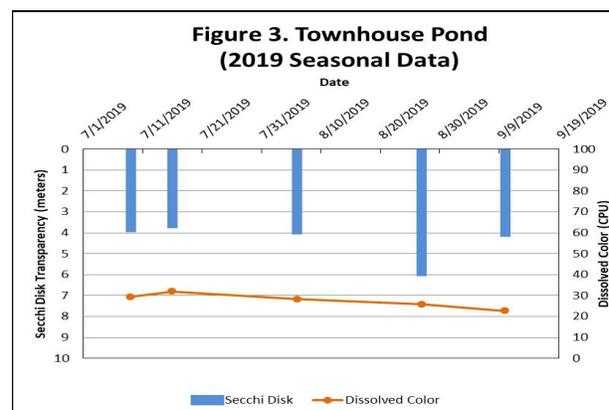
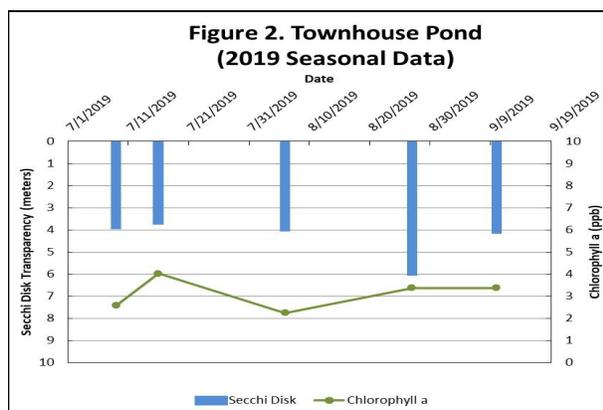


Figure 2 and 3. Seasonal Secchi disk transparency, chlorophyll *a* changes and dissolved color concentrations. Figures 2 and 3 illustrate the interplay among Secchi Disk transparency, chlorophyll *a* and dissolved color. Shallower water transparency measurements oftentimes correspond to increases in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

LONG TERM TRENDS

WATER CLARITY: The Townhouse Pond water clarity measurements, measured as Secchi Disk transparency, have oscillated among years while the long-term trend is relatively stable (Figure 4).

CHLOROPHYLL: The Townhouse Pond chlorophyll *a* concentrations, a measure of microscopic plant life within the lake, have oscillated among years while the long-term trend is relatively stable (Figure 4).

TOTAL PHOSPHORUS: Phosphorus is the nutrient most responsible for microscopic plant growth. The Northeast Pond total phosphorus concentrations display a trend of decreasing concentrations (Figure 5).

COLOR: The Townhouse Pond color data, the result of naturally occurring “tea” color substances from the breakdown of soils and plant materials, have oscillated among years while the long-term trend is relatively stable (Figure 5).

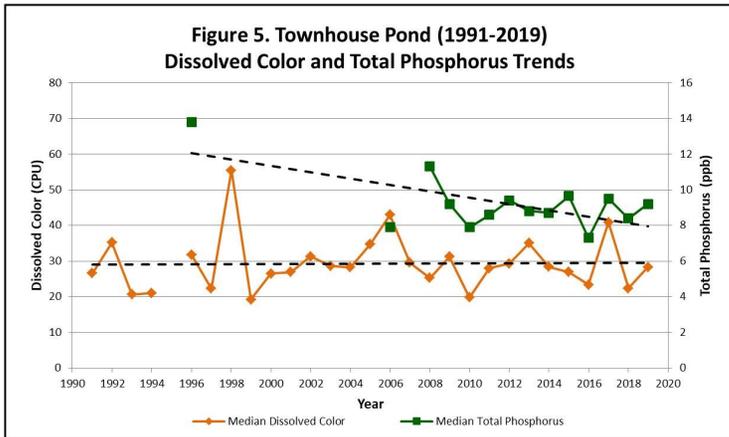
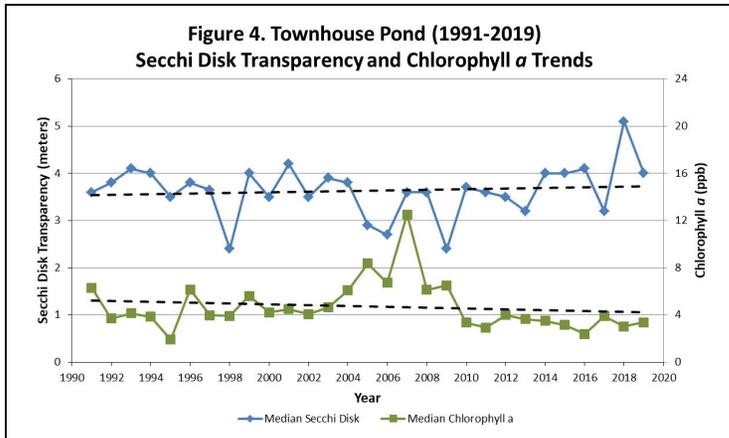
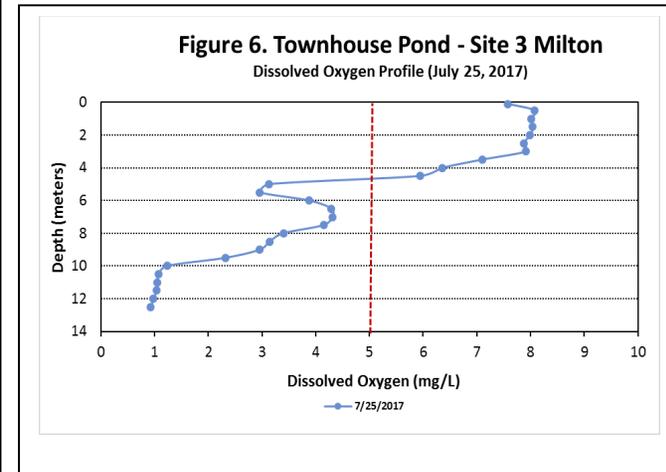


Table 3. Milton Three Ponds Seasonal Average Water Quality Inter-Lake Comparison (2019)

Pond	Average (range) Secchi Disk Depth (meters)	Average (range) Total Phosphorus (ppb)	Average (range) Chlorophyll <i>a</i> (ppb)	Average (range) Dissolved Color (CPU)
Depot	3.8 m (3.1 – 5.3)	10.7 ppb (9.0 – 13.1)	2.6 ppb (2.2 – 3.0)	32.6 CPU (19.9 – 41.7)
Northeast	2.9 m (2.5 – 3.2)	14.3 ppb (12.2 – 16.5)	3.4 ppb (2.8 – 3.7)	42.2 CPU (30.8 – 55.9)
Townhouse	4.3 m (3.7 – 6.0)	9.4 ppb (7.5 – 11.1)	3.1 ppb (2.2 – 4.0)	27.6 CPU (22.6 – 31.9)

Figures 4 and 5. Changes in the Townhouse Pond water clarity (Secchi Disk depth), chlorophyll *a*, dissolved color and total phosphorus concentrations measured between 1991 and 2019. **These data illustrate the relationship between plant growth, natural water color and water clarity. Total phosphorus data are also displayed and are oftentimes correlated with the amount of plant growth.** Long-term trends are based on the analysis of annual median values.

Figure 6. Townhouse Pond dissolved oxygen profile collected by the **Center for Freshwater Biology** on July 25, 2017. The vertical red line indicates the oxygen concentration commonly considered the threshold for successful growth and reproduction of cold water fish such as trout and salmon. *Notice the low dissolved oxygen concentrations near the lake bottom.* The July 25, 2017 dissolved oxygen measurements are the most current data available.



Recommendations:

Implement Best Management Practices within the Townhouse Pond watershed to minimize the adverse impacts of polluted runoff and erosion into the lake. 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 suggestions that can help reduce nutrient loading caused by overland run-off.

- https://extension.unh.edu/resources/files/Resource004159_Rep5940.pdf
- <https://www.des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-11-11.pdf>

Figure 7. Townhouse Pond

Milton, NH

2018 Deep water sampling sites and average water clarity

Disclaimer: Due to the COVID-19 pandemic, access to University files needed to update this image are limited. Thus, the 2018 map was used. The sampling locations, average depth, maximum depth and surface area are accurately depicted. However, the year and seasonal average water transparency have not been updated. Once full University resources become available this map will be updated.

The information in the first two pages of this report has been updated to reflect the 2019 conditions.

Average Depth = 17.1 feet
Maximum Depth = 37.1 feet
Surface Area = 125 acres

Townhouse Pond
Secchi Disk Transparency = 14.8 feet

Text

0 0.1 0.2 0.3 0.4 Miles



Extension

