

NEWFOUND LAKE

2015 SAMPLING HIGHLIGHTS

Whittemore Brook Subwatershed



Refer to the Newfound Lake Watershed Assessment (2013) for additional information,

<https://drive.google.com/file/d/0B3ZgrJ7Tv9sZRTJwaVk3S2HMFE/view?pli=1>

Blue = Excellent

Yellow = Fair

Red = Poor

Light Gray = No Data

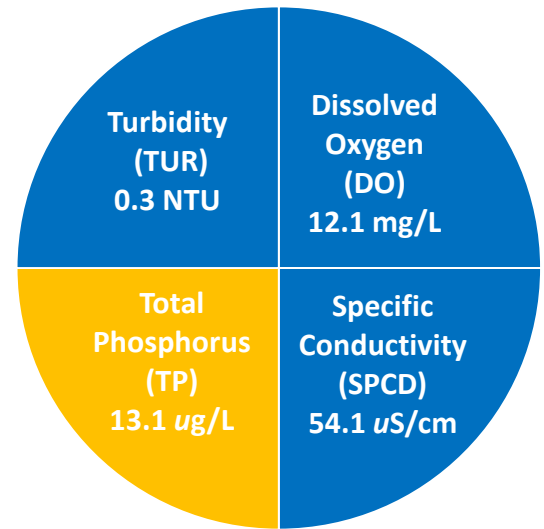


Figure 1. Whittemore Brook Subwatershed Average Water Quality (2015)

Table 1. 2015 Whittemore Brook Subwatershed Seasonal Average Water Quality Measurements.

| Parameter | Assessment Criteria | | | | | Whittemore Brook Subwatershed Average (range) | Whittemore Brook Subwatershed Classification |
|---------------------------------|--|-------------------------|---|--|---|---|---|
| | < 0 - 5.0 Desirable | 6 - 10 Low Impact | 11 - 50 Moderate impact | 51 - 100 Moderate - high impact | > 101 High impact | | |
| Turbidity * (NTU) | < 0 - 5.0 Desirable | 6 - 10 Low Impact | 11 - 50 Moderate impact | 51 - 100 Moderate - high impact | > 101 High impact | 0.3 NTU (range: 0.2 - 0.5) | Desirable |
| pH (standard units) | < 5.5 suboptimal for successful fish growth and reproduction | | 5.5 - 6.5 sufficient for successful fish growth and reproduction | | 6.5 - 8.5 optimal range for fish growth and reproduction | 6.0 standard units (range: 5.8 - 6.2) | Sufficient for successful fish growth and reproduction |
| Dissolved Oxygen (mg/L) | < 5 Suboptimal for successful brook trout growth and survival | | | > 5 Typically sufficient for successful brook trout growth and survival | | 12.1 mg/L (range: 9.7 - 14.4) | Typically sufficient for successful brook trout growth and survival |
| Specific * Conductivity (uS/cm) | 0 - 100 Normal | 101 - 200 Low Impact | 201 - 500 Moderate Impact | > 501 High Impact | | 54.1 uS/cm (range: 18.5 - 118.5) | Normal |
| Total * Phosphorus (ug/L) | < 10 ug/L Ideal | 11 - 25 Average | 26.0 - 50.0 More than desirable | > 51 Excessive | | 13.1 ug/L (range: 4.1 - 45.8) | Average |

* Water quality assessment criteria are provided by the New Hampshire Department of Environmental Services for general guidance only. Natural variations among rivers and streams will occur and should be considered when interpreting the water quality data.

Table 2. 2015 Whittemore Brook Subwatershed Seasonal Average Water Quality Inter-comparison among Sampling Stations.

| Site ID * | Average Turbidity (NTU) | Average Specific Conductivity (uS/cm) | Average Total Phosphorus (ug/L) | Average Dissolved Oxygen (mg/L) | Average pH (standard units) |
|-----------|-------------------------|---------------------------------------|---------------------------------|---------------------------------|-----------------------------|
| WTB H04 | 0.2 | 56.1 | 8.9 | 12.3 | 6.0 |
| WTB U10 | 0.3 | 52.8 | 15.9 | 11.9 | 6.0 |

* Refer to Figure 4 for a map of the sampling locations.

Whittemore Brook Subwatershed Highlights

The Whittemore Brook subwatershed is the fifth largest stream drainage network that feeds into Newfound Lake. The 2,059-acre Whittemore Brook subwatershed is monitored with two active sampling locations that are positioned at an upstream and a downstream point along Whittemore Brook. Sampling locations were selected to characterize the overall water quality and to screen for potential problem areas within the Whittemore Brook subwatershed.

The 2015 Whittemore Brook water quality measurements generally indicate high water quality between the sampling sites. Variations in average specific conductivity concentrations (a surrogate for salt runoff) between sites are minimal and suggest limited impacts of road salt runoff between sampling locations (Figure 2). Low stream-flow conditions during the 2015 sampling season coincided with increased specific conductivity measurements at both Whittemore Brook sampling locations (Figure 2) that likely reflect the concentration of salts into reduced water volumes. The pattern of elevated 2015 specific conductivity measurements, relative to the 2010-2014 measurements, was common among the majority of the Newfound Lake tributary inlets.

The 2015 average turbidity (suspended soil and other particles) was low while the average total phosphorus (nutrient) concentrations were low to moderate in the Whittemore Brook subwatershed (Figure 3).

Dissolved oxygen concentrations remained sufficient to support successful fish growth and reproduction.

Figure 2. Whittemore Brook Subwatershed Specific Conductivity



Figure 3. Whittemore Brook Subwatershed Total Phosphorus

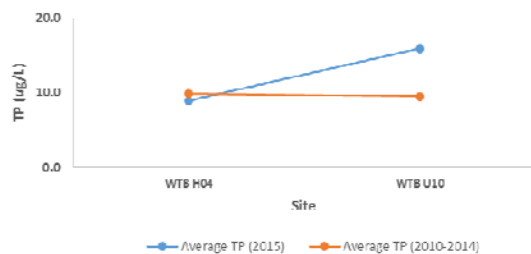


Table 3. Comparison of Seasonal Average Water Quality by Subwatershed (2015)

| Subwatershed | Average * Turbidity (NTU) | Average * Specific Conductivity (uS/cm) | Average * Total Phosphorus (ug/L) | Average * Dissolved Oxygen (mg/L) | Average * pH (Standard Units) |
|-------------------|---------------------------------|--|--|--|--|
| Black Brook | 2.0 | 247.6 | 18.5 | 12.1 | 6.0 |
| Cockermouth River | 0.5 | 40.9 | 9.0 | 12.3 | 6.0 |
| Dick Brown Brook | 0.6 | 35.7 | 12.2 | 11.6 | 6.2 |
| Folwer River | 0.6 | 52.7 | 12.5 | 12.1 | 5.6 |
| Georges Brook | 0.6 | 48.1 | 12.0 | 11.9 | 5.7 |
| Hemlock Brook | 0.4 | 84.6 | 15.3 | 11.7 | 6.2 |
| Whittemore Brook | 0.3 | 54.1 | 13.1 | 12.1 | 6.0 |
| Titlton Brook | 0.4 | 207.6 | 14.4 | 12.0 | 6.3 |

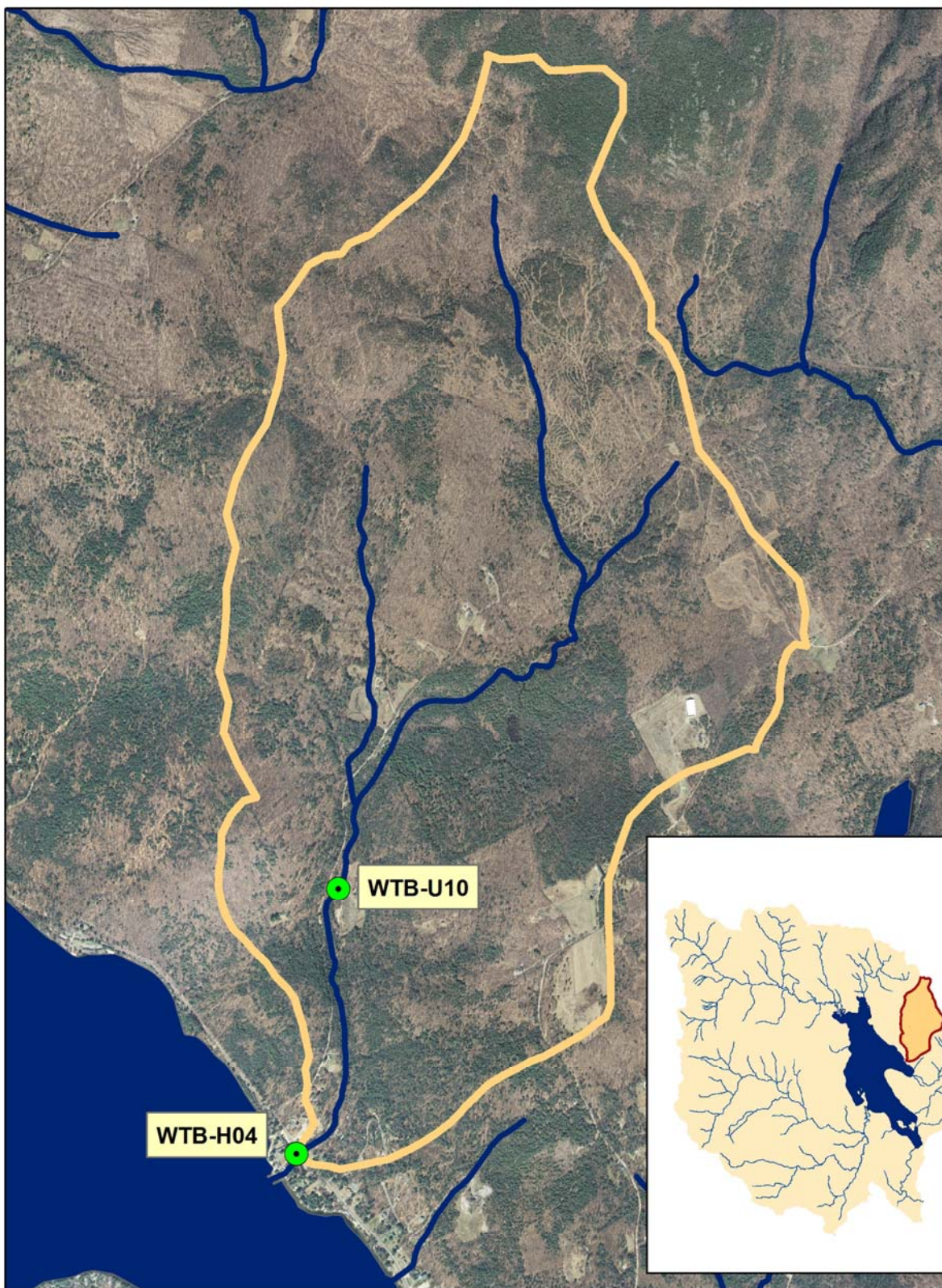
* The displayed water quality results are average values for all sampling locations within the respective subwatersheds.

Recommendations for Property Owners:

Implement Best Management Practices within the Newfound Lake 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 more information on how to reduce nutrient loading caused by overland run-off.

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

Figure 4.
2015 Sampling Highlights - Whittemore Brook Subwatershed



0 0.1 0.2 0.4 0.6 0.8
Miles

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