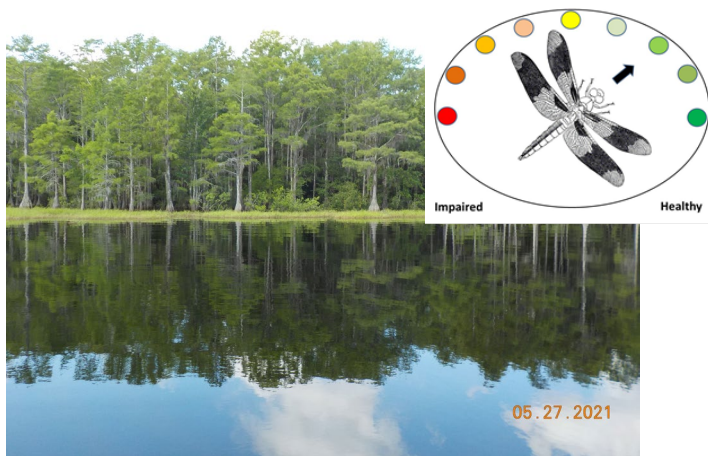


## Waterbody: Lake Hiawatha



## Basin: Lake Munson

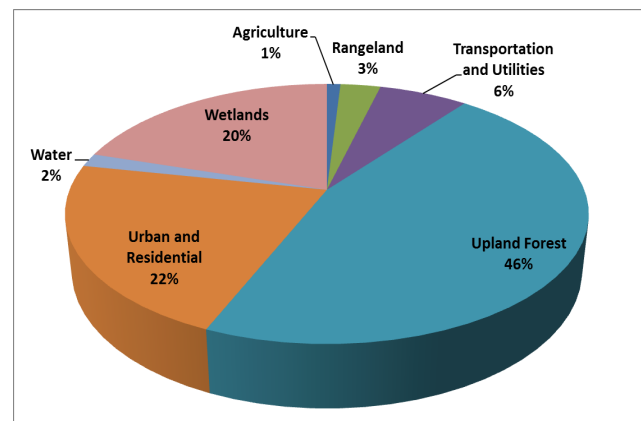
The Bradford Brook Chain of Lakes is composed of the cypress rimmed, dark water Lakes Bradford (179 acres), Hiawatha (51 acres) and Cascade (124 acres) and is located in western Leon County. Water typically flows east via Bradford Brook into Lake Cascade. Lake Hiawatha receives flow from Lake Cascade via a culvert beneath Capital Circle Southwest. Much of the water entering Lake Bradford is via Lake Hiawatha, though at times Grassy Lake flows into Lake Bradford. On occasion, flow is reversed and Lake Bradford flows into Lake Hiawatha which then flows into Lake Cascade. In addition, groundwater sources of flow are possible.

As shown in the following pie chart, approximately 32% of land uses in the 17,023-acre Lake Hiawatha watershed are agriculture, rangeland, transportation, utilities, urban and residential. Increases in stormwater runoff and waterbody nutrient loads can often be attributed to these types of land uses.

### Background

Healthy, well-balanced lake communities may be maintained with some level of human activity, but excessive human disturbance may result in waterbody degradation. Human stressors may include increased inputs of nutrients, sediments, and/or

other contaminants from watershed runoff, adverse hydrologic alterations, undesirable removal of



habitat or riparian buffer vegetation, and introduction of exotic plants and animals. State water quality standards are designed to protect designated uses of the waters of the state (e.g., recreation, aquatic life, fish consumption), and exceedances of these standards are associated with interference of the designated use.

### Methods

Surface water and sediment sampling were conducted to determine the health of Lake Hiawatha and met the requirements of the Florida Department of Environmental Protection (FDEP).

### Results

#### Nutrients

The nutrient thresholds and results are found in Table 1. According to FDEP requirements, Numeric Nutrient Criteria (expressed as an annual geometric mean) cannot be exceeded more than once in a three-year period. Due to low water or lack of access, the required number of samples could not always be collected for Lake Hiawatha. The lack of data means that FDEP requirements for determining Numeric Nutrient Criteria could not be calculated for some years. When data requirements were met, nutrient values did not exceed the state criteria. However, nitrogen values in some years have more than doubled since 2004. The highest single total nitrogen result (1.3 mg/L) recorded in Lake Hiawatha was in

February of 2020. Water levels were low (0.8 meters; average is 1.2 meters) during that sampling event, suggesting that nutrients had concentrated as water levels dropped. At the same time, all nitrogen analyzed during the same sampling event was in the organic form and would temporarily be unavailable for nutrient uptake.

**Table 1.** FDEP's chlorophyll-a, total nitrogen and phosphorus criteria for lakes applied to Lake Hiawatha.

Colored Lake	Chlorophyll-a 20 µg/L	Total Nitrogen Threshold 1.27-2.23 mg/L	Total Phosphorus Threshold 0.05-0.16 mg/L
2004	1.6	0.33	0.01
2005	3.4	0.37	0.01
2006	1.9	0.47	0.01
2007	2.4	0.63	0.02
2008	-	-	-
2009	1.9	0.76	0.02
2010	3.2	0.60	0.02
2011-2013	-	-	-
2014	2.2	0.67	0.01
2015	6.7	0.68	0.01
2016	7.1	0.74	0.01
2017	8.3	0.72	0.02
2018	5.5	0.70	0.02
2019	7.7	0.52	0.02
2020	-	-	-
2021	1.5	0.66	0.02

While still relatively low, chlorophyll-a levels steadily increased in the latter half of the sampling period (2015-2020). Chlorophyll-a levels in 2021 sharply dropped.

#### Metals

Elevated lead levels in Lake Hiawatha during the third quarter of 2021 are thought to be due to both relict and potentially current sources. Relict anthropogenic sources of lead in the area include a former shooting range and the former Dale Mabry

airfield, while possible current sources include the Tallahassee Regional Airport (aviation fuel). The acidic nature of these lakes causes increased lead levels in the water due to the enhanced solubility of lead under low pH conditions. Because acidic systems like Lake Bradford Chain of Lakes are more sensitive to metals contamination, exceedance levels tend to be lower and oftentimes more frequent than a similar metal level in a more alkaline system.

[Click here for more information on metal levels in Leon County waterbodies.](#)

#### Floral Assessment

The Lake Vegetation Index score for Lake Hiawatha (LVI) was 93, placing the lake's vegetative community in the Exceptional category.

Nineteen species were found during the survey. The native species pond cypress (*Taxodium ascendens*) and maidencane (*Panicum hemitomon*) were the most dominant species in the lake. Other native shoreline vegetation included red maple (*Acer rubrum*), buttonbush (*Cephalanthus occidentalis*), and myrtle dahoon (*Ilex myrtifolia*). No exotic plants were noted during this survey.

[Click here for more information on the Lake Hiawatha LVI.](#)

[Click here for more information on common exotic and invasive plants in Leon County wetlands and waterbodies.](#)

#### Other Parameters

Other water quality parameters appear to be normal for the area and no other impairments were noted.

#### Conclusions

Based on ongoing sampling, Lake Hiawatha met the nutrient thresholds for the East Panhandle Region. Despite the substantial drop in the 2021 chlorophyll-a level, the more than doubling of nitrogen values

over the sampling period and the elevated chlorophyll-a levels in the last several years continue to be a concern. The Lake Vegetation Index score (LVI) was 93, placing the lake's vegetative community in the Exceptional category.

Thank you for your interest in maintaining the quality of Leon County's water resources. Please feel free to contact us if you have any questions.

**Contact and resources for more information**

[www.LeonCountyWater.org](http://www.LeonCountyWater.org)

[Click here to access the results for all water quality stations sampled in 2021.](#)

[Click here for a map of the watershed – Sample Site BOH.](#)

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