

Lake Hiawatha EcoSummary



Located in western Leon County, 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). 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.

Approximately 32% of land uses in the 17,023-acre Lake Hiawatha watershed comes from agriculture, rangeland, transportation, utilities, urban and residential (as shown in **Figure 1**). These types of land uses are often attributed to increases in stormwater runoff and higher nutrient loads.

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.

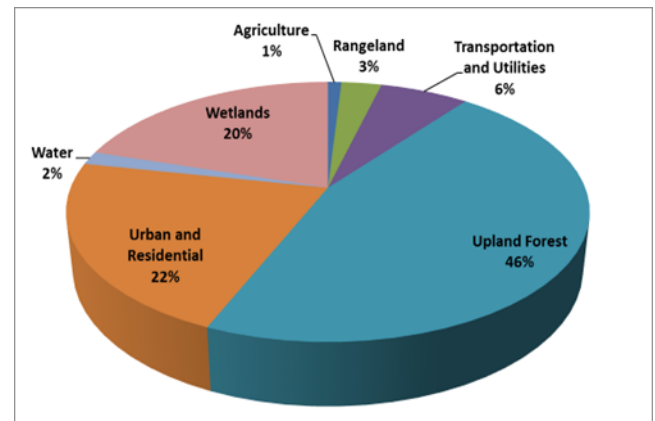


Figure 1. Lake Hiawatha watershed land use.

Methods

Surface water samples are collected quarterly (as field conditions allow) and sediment samples are collected annually. Leon County also conducts an annual vegetation survey to evaluate the health of floral (plant) communities in the County lakes. This information is used to determine the health of Leon County waterbodies and meets the requirements of the Florida Department of Environmental Protection (FDEP).

Results

Nutrients

The State of Florida uses Numeric Nutrient Criteria (NNC) to evaluate nutrients in

waterbodies. NNC thresholds are set based on waterbody-specific characteristics and are used to determine if a waterbody meets water quality standards. The results of the four quarterly samples from a single year are used to calculate the annual geometric mean. According to FDEP requirements, the NNC threshold cannot be exceeded more than once in a three-year period.

The nutrient thresholds and results are found in **Table 1**. Low water levels in the 3rd and 4th quarter of 2023 prevented samples from being collected during those quarters. 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 (2.6 mg/L) recorded in Lake Hiawatha was in December of 2022. The nitrogen analyzed during the sampling event was in the organic form and would temporarily be unavailable for nutrient uptake.

Chlorophyll-a data

Water quality samples collected by Leon County are analyzed by Pace Analytical Services – Ormond Beach (Pace), with the analysis results provided back to the County for submission to FDEP. In June 2022, FDEP conducted a routine audit of the chlorophyll-a data. This audit revealed that from October 2014 through December 2020, the chlorophyll-a data was reported as “uncorrected chlorophyll-a” and not “corrected chlorophyll-a”, as it should have been. Pace has since rectified this error and beginning in January 2021, the chlorophyll-a data were properly reported as “corrected chlorophyll-a”. The laboratory also provided Leon County with the “correct chlorophyll-a” data from the affected dates and the information in **Table 1** of this year’s Report has been changed to reflect this. This has resulted in chlorophyll-a numbers that are lower than past

Reports, which in turn has led to changes to the current Report’s narrative.

Table 1. NNC thresholds and sample results for Lake Hiawatha.

Colored Lake	Chlorophyll-a 20 µg/L	TN Threshold 1.27-2.23 mg/L	TP 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	1.5	0.67	0.01
2015	3.5	0.68	0.01
2016	2.7	0.74	0.01
2017	2.8	0.72	0.02
2018	2.7	0.70	0.02
2019	2.7	0.52	0.02
2020*	-	-	-
2021	1.5	0.66	0.02
2022	2.7	0.81	0.01
2023*	-	-	-

* Due to low water conditions or access restrictions associated with the COVID-19 pandemic, staff could not collect the appropriate number of samples and thus could not determine the NNC for the noted years.

Floral Assessment

The following floral assessment was conducted in 2022. Low water levels in the latter half of 2023 prevented a floral assessment for 2023.

The Lake Vegetation Index (LVI) score for Lake Hiawatha was 95, placing the lake’s vegetative community in the Exceptional category.

Seventeen species were found during the survey. The native species pond cypress (*Taxodium ascendens*) and maidencane (*Panicum hemitomom*) 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.](#)

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 continued to meet the NNC. The more than doubling of nitrogen values over the sampling period in the last several years continue to be a concern. The 2022 LVI score placed 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

[Click here to access the results for all water quality stations sampled in 2023.](#)

[Click here for a map of the watershed – Sample Site B0H.](#)

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