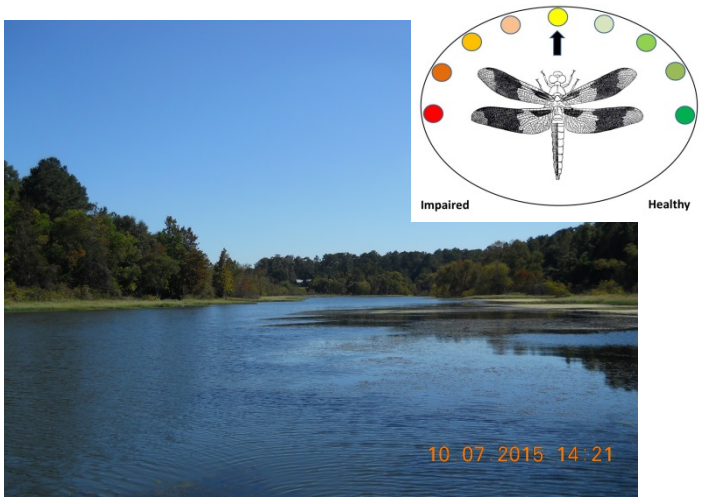
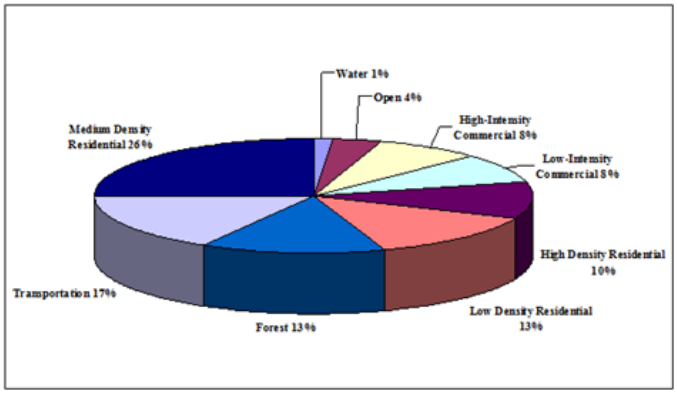
Waterbody: Meginnis Creek



Basin: Lake Jackson

Meginnis Creek is a substantially altered, nitrogen-limited stream located in the northern part of Tallahassee and drains into Lake Jackson.

As shown in the figure below, residential, commercial, and transportation uses make up approximately 82% of the 2,510 acre watershed. Increases in stormwater runoff and waterbody nutrient loads can often be attributed to these types of land uses.



Background

Healthy, well-balanced stream 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 nuisance (generally exotic) plants and animals. Water quality standards are designed to protect designated uses of the waters of the state (e.g., recreation, aquatic life use support), and exceedances of these standards is associated with interference with the designated use.

Methods

Surface water samples were collected to determine the health of Meginnis Creek and met the requirements of the Florida Department of Environmental Protection (FDEP).

Results

According to FDEP requirements, Numeric Nutrient Criteria (NNC) (expressed as annual geometric means) cannot be exceeded more than once in a three year period. Due to low water conditions, four temporally independent samples per year were not collected from the original sampling station. Staff established the new Meginnis Arm station in April 2010, so the 1st quarter sample was not collected for that year. Low water levels precluded staff from collecting water samples during the latter half of 2011 and all of 2012 and 2013. However sampling resumed in 2014 and in 2015, sampling requirements were met. The values in 2015 showed that neither total nitrogen (0.38 mg/L) nor total phosphorus (0.05 mg/L) exceeded their respective limits (total nitrogen >1.03 mg/L, total phosphorus > 0.18 mg/L).

Other Parameters

Dissolved oxygen rarely meets Class III water quality standards (Figure 1). Specific conductivity and dissolved solids (averaged 117 µhmos/cm and 69.3 mg/L respectively in 2015) were elevated when compared to Lake Jackson (averaged 41 µhmos/cm and 36.0 mg/L respectively in 2015). The combination of relatively high levels of conductivity and dissolved solids with relatively low nutrients suggest

that the dissolved solids may be the result of impervious surfaces in the watershed. Water is more efficiently transported over impervious surfaces where it picks up weathered calcium carbonate (found in concrete) in the increased expanses of impervious surfaces and drainage systems.

Vegetation

Several species of exotic plants are associated with the Meginnis Creek stream corridor including *Colocasia* sp. (Taro), *Alternanthera philoxeroides* (alligator weed), *Sapium sebiferum*, and *Hydrilla verticillata* (hydrilla). In many cases exotic plants will crowd out native plants which in turn stress native wildlife which has evolved to depend on native plants for food and shelter. The native wildlife may move away or perish if the native vegetation is replaced by exotic plants. The Florida Fish and Wildlife Commission have an aquatic plant management program that manages the creek and the greater Lake Jackson area. The program is effective to the degree that the exotic vegetation does not overwhelm the native vegetation, but staff recommends that the problem of exotic plants be more aggressively pursued in this area of the watershed.

Conclusions

Due to limited sampling, conclusions regarding Meginnis Creek are tentative. Samples collected in 2015 show that the geometric mean of total nitrogen and total phosphorus were below the NNC. Specific conductivity and dissolved solids were elevated when compared to Lake Jackson in 2015. The combination of relatively high levels of conductivity and dissolved solids with relatively low nutrients suggest that the dissolved solids may be the result of impervious surfaces in the watershed. Dissolved oxygen rarely meets Class III water quality standards. Several species of exotic plants are associated with the Meginnis Creek stream corridor. The Florida Fish and Wildlife Commission have an aquatic plant management program that manages the creek and the greater Lake Jackson area. And it is hoped that the program will become more aggressive in the maintenance of the invasive plants in the area.

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

Contact and resources for more information

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www.LeonCountyFL.gov/WaterResources

Click here to access the results for all water quality stations sampled in 2015.

Click here for map of watershed – Sample station JL01.

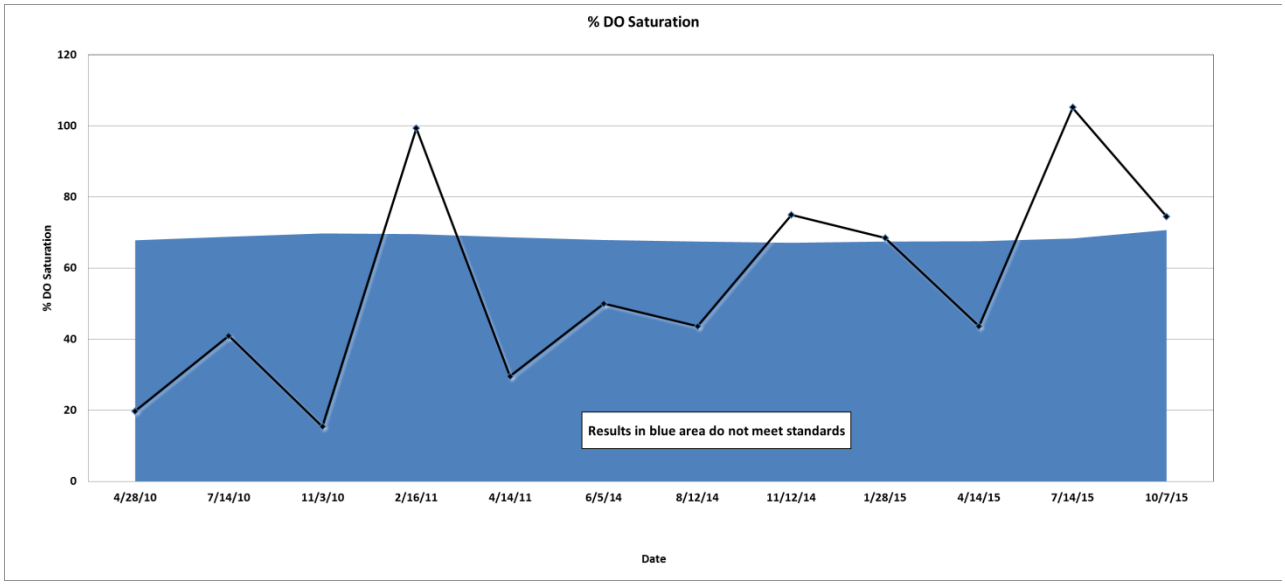

Figure 1. Dissolved Oxygen Percent Saturation results for Meginnis Creek.