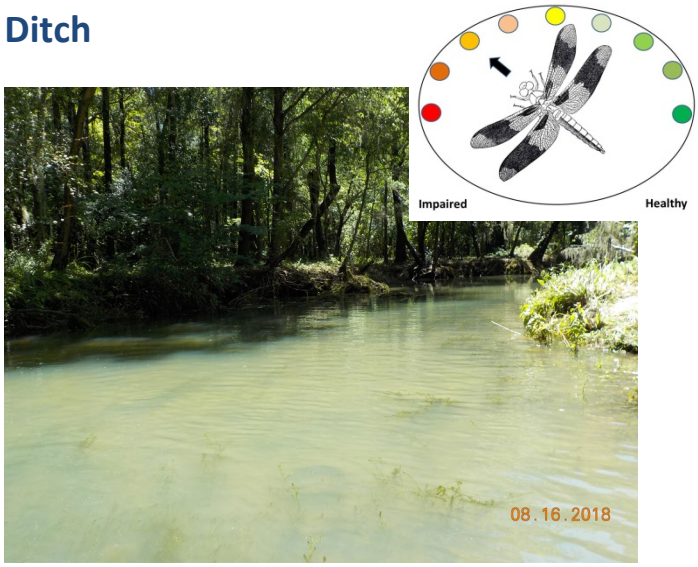
Waterbody: Northeast Drainage Ditch

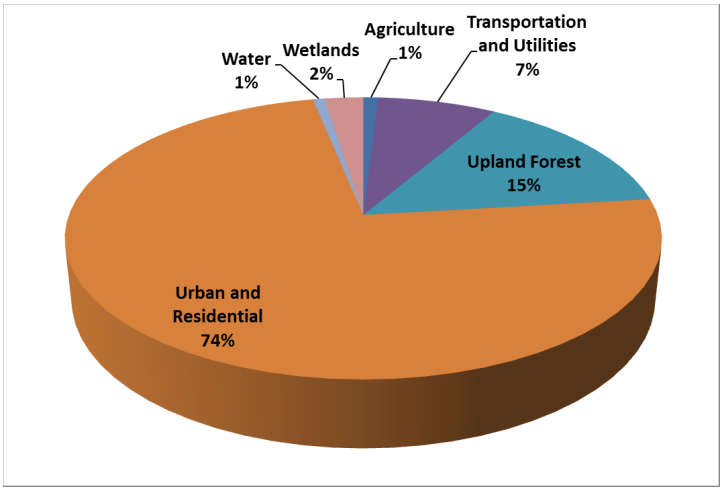


Basin: Lake Lafayette

The Northeast Drainage Ditch is a heavily urbanized stream located within the City of Tallahassee. The stream flows east and eventually enters Upper Lake Lafayette. Directly upstream of the water quality sampling station is a stormwater facility known as Weems Pond Regional Stormwater Treatment Facility (Weems Pond). The City of Tallahassee converted Weems Pond into an alum-injection facility that was brought online in October 2015. The retrofit of the facility will reduce pollutant loads leaving the pond, which flow downstream through the Northeast Drainage Ditch and into Upper Lake Lafayette.

Portions of the Northeast Drainage Ditch west of Weems Road were historically altered for mosquito control and/or drainage purposes. The greatly altered flow conditions create channel scour during storms, and also contribute to low base flow east of Weems Road. In comparison, the area east of Weems Road is relatively unaltered; the effects of upstream canalization extend only a short distance downstream of Weems Road. However, effects of the upstream modifications are reflected in the altered flow conditions of the stream.

As shown in the following pie chart, approximately 82% of land use in the 7,851 acre Northeast Drainage Ditch watershed upstream of the sample station is agriculture, 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 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 exotic plants and animals. 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.

In late 2006, the U.S. Environmental Protection Agency (EPA) set a Total Maximum Daily Load (TMDL) target for fecal and total coliforms. The TMDL establishes the allowable loadings to the creek that would restore the creek to applicable water quality thresholds. In this case, fecal coliforms would have to be reduced by 63% to meet the criterion of fecal coliforms not exceeding 400/100 mL Most Probable Number (MPN) in 10 percent of the samples. When the TMDL was established, the EPA ex-

pected a reduction of 52% to meet the criterion for total coliform. However, the fecal coliform standard in Florida has been supplanted by standards developed for *Escherichia coli* as an indicator of bacterial contamination. Since standards no longer exist for fecal coliforms, FDEP is planning on delisting waterbodies for fecal coliforms, including the Northeast Drainage Ditch.

Methods

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

Results

Nutrients

Due to low water conditions, FDEP data requirements for the Numeric Nutrient Criteria (NNC) could not always be met (Table 1). When requirements were met, nutrient values did not exceed the state criteria. The 2018 geometric means (based on two sampling events) for total nitrogen (0.20 mg/L) and total phosphorus (0.02 mg/L) suggest that nutrient levels would continue to meet the NNC.

Fecal coliforms and Escherichia coli

As mentioned previously, the EPA set a fecal coliform TMDL for the Northeast Drainage Ditch. While fecal coliforms were elevated above the 400/100 mL Class III limit in 12.9% of the samples for Class III waters, there has only been two exceedances since December 2009, with the latest being the June 11th 2015 event (530/100 mL). The adopted *E. coli* water quality limit of > 126 in 10% of samples collected over a 30 day period was exceeded (158/100 mL) during the August 3, 2016 sampling event. State criteria for *E. coli* were not exceeded in 2017 or 2018.

Table 1. FDEP's total nitrogen and phosphorus criteria for streams applied to the Northeast Drainage Ditch.

Northeast Drainage Ditch	Total Nitrogen Threshold 1.03 mg/L	Total Phosphorus Threshold 0.18 mg/L
2006-2008	-	-
2009	0.17	0.07
2010-2011	-	-
2012	0.81	0.10
2013	0.30	0.09
2014	-	-
2015	0.35	0.11
2016	0.27	0.03
2017	0.23	0.02
2018	-	-

Other Parameters

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

Conclusions

Based on ongoing sampling, the Northeast Drainage Ditch met the nutrient thresholds for the East Panhandle Region. The greatly altered flow conditions continue to create channel scour during storms and contribute to low base flow east of Weems Road. Other water quality parameters appear to be normal for the area and no other impairments were noted.

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.LeonCountyFL.gov/WaterResources

Click here to access the results for all water quality stations sampled in 2018.

Click here for a map of the watershed – Sample Site NE Ditch at Weems.

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