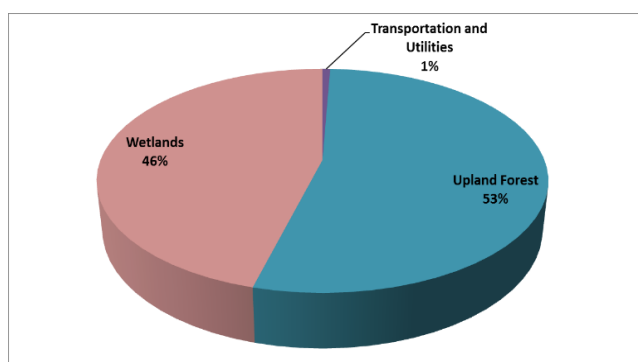


# Freeman Creek EcoSummary



Freeman Creek is a tannic, slightly acidic, phosphorus-limited stream that flows into Lake Talquin and is located in western Leon County.

The majority of the 4,013-acre watershed is relatively undeveloped (as shown in **Figure 1**). Transportation and utilities land uses make up approximately 1% of the watershed upstream of the sampling location. These types of land uses are often attributed to increases in stormwater runoff and higher nutrient loads.



**Figure 1.** Freeman Creek watershed land use.

## 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. Stressors can also include 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 samples are collected quarterly (as field conditions allow). This information is used to determine the health of the Creek and meets the requirements of the Florida Department of Environmental Protection (FDEP).

## Results

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.

## Nutrients

The nutrient thresholds and results are found in **Table 1**. The NNC criteria were not exceeded for either parameter. It does appear that nitrogen levels are increasing. It is unknown at this time what the cause(s) may be.

In June 2021, and for the first time since sampling began in 2006, Freeman Creek was not flowing with water levels low enough that the stream was composed of a series of disconnected

puddles. In contrast, the creek was flooded and had extended far into the floodplain during September 2021 sampling event. Because sampling conditions were not appropriate in either case, water quality samples were not collected, which prevented the Numeric Nutrient Criteria from being calculated.

**Table 1.** Total Nitrogen and Phosphorus results and NNC thresholds for Freeman Creek.

<b>Freeman Creek</b>	<b>TN Threshold 1.03 mg/L</b>	<b>TP Threshold 0.18 mg/L</b>
2006	0.19	0.00
2007	0.27	0.00
2008	0.27	0.00
2009	0.24	0.00
2010	0.34	0.01
2011	0.44	0.01
2012	0.44	0.01
2013	0.42	0.00
2014	0.44	0.01
2015	0.50	0.01
2016	0.48	0.01
2017	0.59	0.01
2018	0.48	0.01
2019	0.30	0.01
2020	0.54	0.01
2021	-	-
2022	0.43	0.01
2023	0.54	0.01

### *Dissolved Oxygen*

Freeman Creek’s percent dissolved oxygen (DO) saturation values were below the criteria several times during the sampling period (**Figure 2**). Staff believes that this condition is natural since Freeman Creek has passed several bioassessments and there appears to be no anthropogenic causes of the low DO levels.

### *Escherichia coli (E. coli)*

The *E. coli* water quality limit of > 410, 10% threshold value of samples collected over a 30-

day period was exceeded (5,400/100 mL) during the November 2016 sampling event. It is probable that the extremely high number was the result of wildlife in the area or possibly due to laboratory error. No exceedances have been noted since.

### *Other Parameters*

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

### **Conclusions**

Based on ongoing sampling, Freeman Creek met the NNC thresholds for the Big Bend Bioregion. The DO saturation values were below the criteria several times during the sampling period. Staff believes that this condition is natural since Freeman Creek has passed several bioassessments and there appear to be no anthropogenic causes of the low DO levels (e.g., elevated nutrient levels).

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**

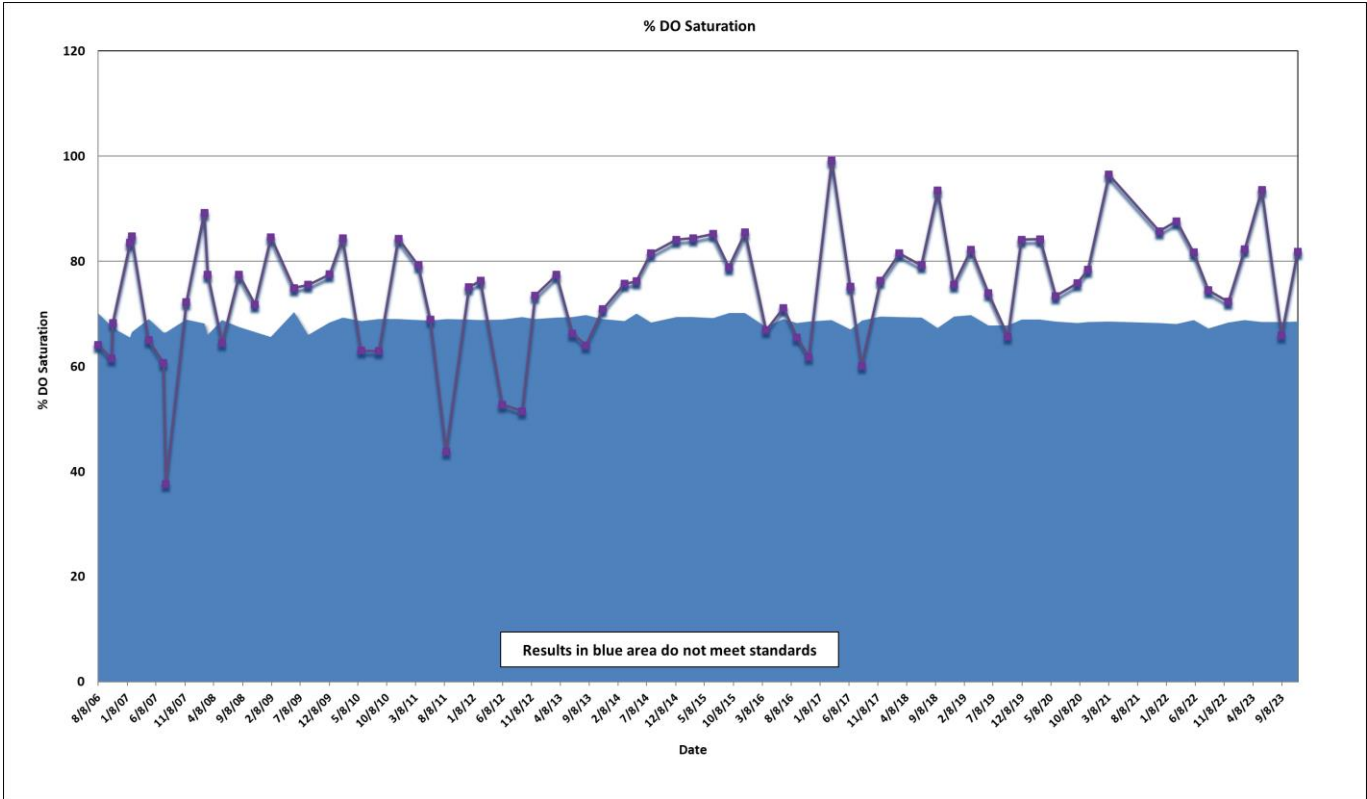
[www.LeonCountyWater.org](http://www.LeonCountyWater.org)

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

[Click here for a map of the watershed – Sample Site 44.](#)

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**Figure 3.** Dissolved Oxygen Percent Saturation results for Freeman Creek.