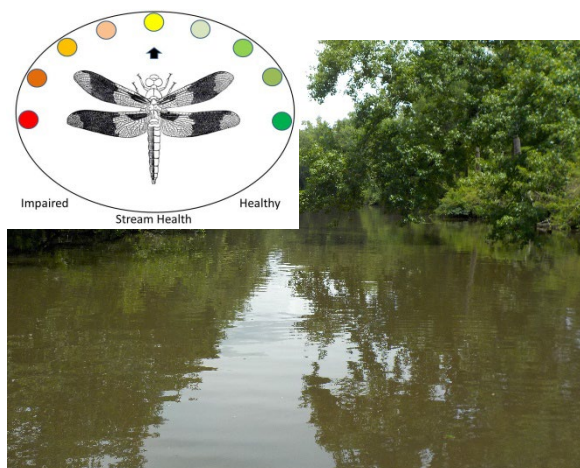


# Ochlockonee River EcoSummary

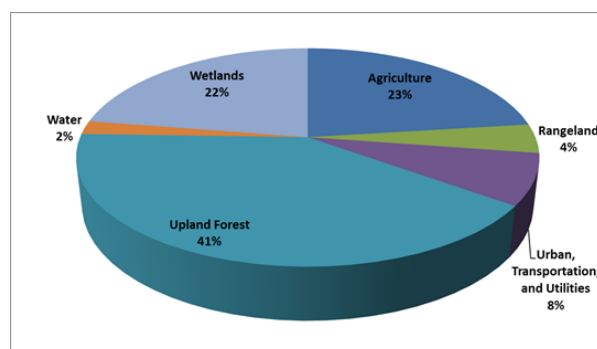


The Ochlockonee River originates in south-central Georgia and flows about 206 miles south to Ochlockonee Bay in Florida, draining approximately 2,400 square miles in all or part of eleven counties between the two states. The river is impounded by the Jackson Bluff Dam, forming Lake Talquin.

The river has been declared an Outstanding Florida Water by the Florida Department of Environmental Protection (FDEP) and identified as an Integrated Wildlife Habitat (formerly known as a Strategic Habitat Conservation Area) by the Florida Fish and Wildlife Conservation Commission. Parts of the Ochlockonee River have been designated critical habitat for mussels by the U. S. Fish and Wildlife Service (F.A.C. 62-302, 2006, and Federal Register, 2007). Unfortunately, past agricultural and silvicultural practices, as well as point source problems, have led to increased turbidity, higher nutrient concentrations, bacterial problems, and increased sedimentation of the river.

Approximately 35% of land use in the 1,019,525-acre Ochlockonee River Basin upstream of the southernmost sample station

is agriculture, rangeland, urban, transportation or utilities (as shown in **Figure 1**). Increases in stormwater runoff and waterbody nutrient loads can often be attributed to these types of land uses.



**Figure 1.** Ochlockonee River 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 Ochlockonee River and meets the requirements of the Florida Department of Environmental Protection (FDEP).

## Results

### *Nutrients*

According to FDEP requirements, Numeric Nutrient Criteria (expressed as an annual geometric mean) cannot be exceeded more than once in a three-year period.

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**. The NNC was exceeded several times for nitrogen at the furthestmost upstream station (Fairbanks Ferry), and the Highway 90 station. NNC phosphorus levels were exceeded only once at the Highway 20 station. This suggests that excessive nutrients are being released into the river in the upper reaches, probably as the result of excessive erosion and/or fertilizer application. As the nutrients move downstream, they are assimilated through biological activity and bind to bottom sediments, as demonstrated by

the lower levels in the downstream stations. The assimilation of nutrients is most noticeable with nitrogen.

Due to hazardous water conditions during the 4<sup>th</sup> quarter of 2018, and low water /backflow condition in 2019 through 2021, the appropriate number of water quality samples to calculate the NNC could not be collected for those years. While sampling requirements could not be met, nutrient levels at all stations appear to be similar to what had been found in previous years.

For illustrative purposes, individual data points were plotted to determine any possible trends (**Figures 2 and 3**). With few exceptions, individual values did not exceed the instream criteria for Total Phosphorus. Total Nitrogen levels, especially in the upstream areas, were consistently higher than the criteria, though data “spikes” have decreased over time.

### *Dissolved Oxygen*

While all three stations occasionally did not meet Class III water quality standards for DO (**Figure 4**), the Highway 20 station (located downstream from the Jackson Bluff Dam) was the most notable. This may be attributed to the operation of the dam. The gates of the dam can release water from either the surface (relatively oxygenated), or middle layer of water (lower levels of oxygen). During events where the water being released is mostly the “middle” layer of water, DO levels would tend to be depressed. Recent results are showing higher oxygen levels at the Highway 20 station. Staff believe that this is the result of changes to the operation of the dam. Low flow conditions can also contribute

to depressed oxygen levels, which may affect all stations along the river.

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

The *E. coli* water quality limit of > 410 in 10% of samples during a 30-day period was exceeded at station OCHat90 during the 4<sup>th</sup> quarter of 2021. This is the first time this station has exceeded the *E. coli* standard since sampling for this parameter began in 2014. It is not known why *E. coli* levels were elevated. There were no exceedances in 2022.

### **Other Parameters**

#### *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 of this year’s Report has been changed to reflect this.

Chlorophyll-a results are consistently elevated at the Ochlockonee River station located below the dam (T02-Och. River at 20) (**Figure 5**). As in previous years, it is

assumed that most of the station’s algal community (which chlorophyll-a indirectly measures) is being flushed out of Lake Talquin and levels would not normally be so elevated in the river.

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

### **Fish Consumption Advisory**

The Florida Department of Health has issued consumption limits for certain fish in the Ochlockonee River due to elevated levels of mercury.

[Click here for more information about fish consumption advisories in Leon County.](#)

### **Conclusions**

Based on ongoing sampling, the upper reaches of the Ochlockonee River did not meet the nitrogen nutrient threshold for the Panhandle East Region for several years. Sample stations occasionally did not meet Class III water quality standards for DO; the Highway 20 station (located downstream from the Jackson Bluff Dam) was the most notable, but oxygen levels have increased in the last two years, probably as the result of changes in the operation of the dam. That same station’s chlorophyll-a concentrations were consistently elevated when compared to the other stations.

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 2022.](#)[Click here for a map of the watershed – Sample Sites 100, OCHat90 and T02.](#)

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**Table 1.** Total Nitrogen and Phosphorus results and thresholds for the Ochlockonee River. Results in bold are exceedances of the NNC.

Ochlockonee River	TN Instream Protection Criteria (1.03 mg/L)			TP Instream Protection Criteria (0.18 mg/L)		
	Och at FF	Och at 90	Och at 20	Och at FF	Och at 90	Och at 20
2000	<b>1.63</b>	-	0.14	<b>0.20</b>	-	0.06
2001	<b>1.21</b>	-	0.75	0.18	-	0.07
2002	<b>2.08</b>	-	0.76	0.14	-	0.08
2003	0.68	-	0.34	0.07	-	0.05
2004	0.68	-	0.64	0.06	-	0.03
2005	0.92	-	0.52	0.07	-	0.04
2006	<b>1.07</b>	<b>1.12</b>	0.70	0.09	0.07	0.04
2007	<b>1.56</b>	<b>1.16</b>	0.68	0.14	0.13	0.07
2008	<b>1.41</b>	1.02	0.70	0.16	0.12	0.07
2009	0.88	0.67	0.79	0.11	0.10	0.07
2010	<b>1.32</b>	<b>1.07</b>	0.72	0.13	0.09	0.06
2011	<b>1.60</b>	0.69	0.80	0.13	0.07	0.06
2012	<b>1.26</b>	0.99	0.77	0.14	0.15	0.06
2013	<b>1.17</b>	0.92	0.85	0.12	0.12	0.11
2014	<b>1.09</b>	0.88	0.68	0.11	0.08	0.06
2015	<b>1.20</b>	<b>1.08</b>	0.73	0.12	0.12	0.07
2016	<b>1.10</b>	<b>1.13</b>	0.79	0.14	0.12	0.07
2017	<b>1.20</b>	<b>1.10</b>	0.77	0.13	0.13	0.07
2018-2019	-	-	-	-	-	-
2020	1.01	-	0.74	0.11	-	0.08
2021	-	-	-	-	-	-
2022	<b>1.07</b>	0.99	0.64	0.13	0.10	0.06

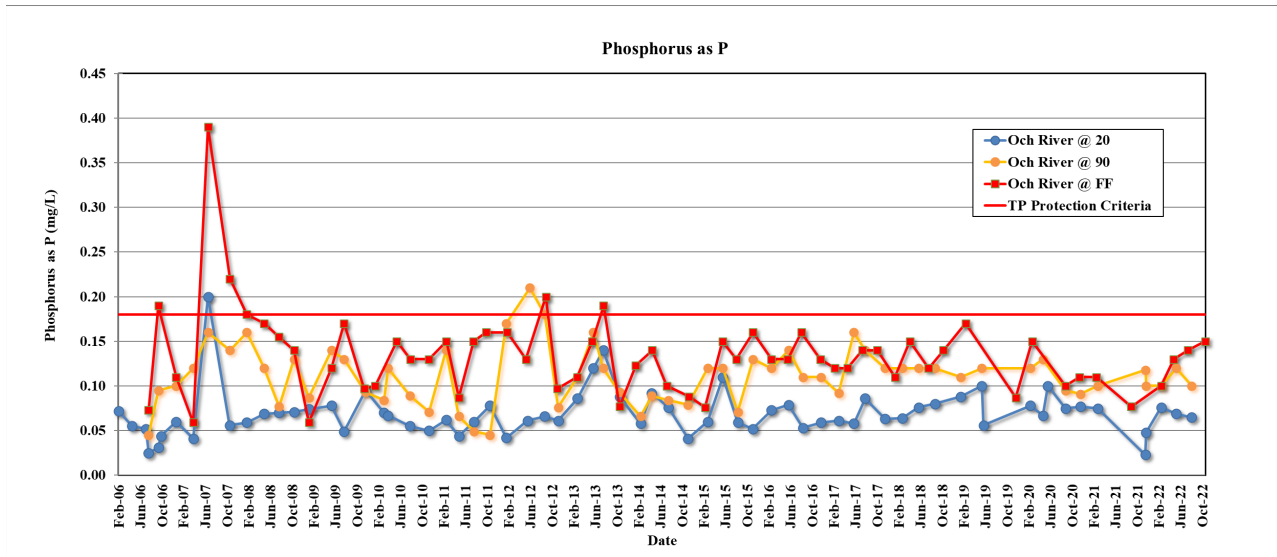


Figure 2. Total Phosphorus results for the Ochlockonee River.

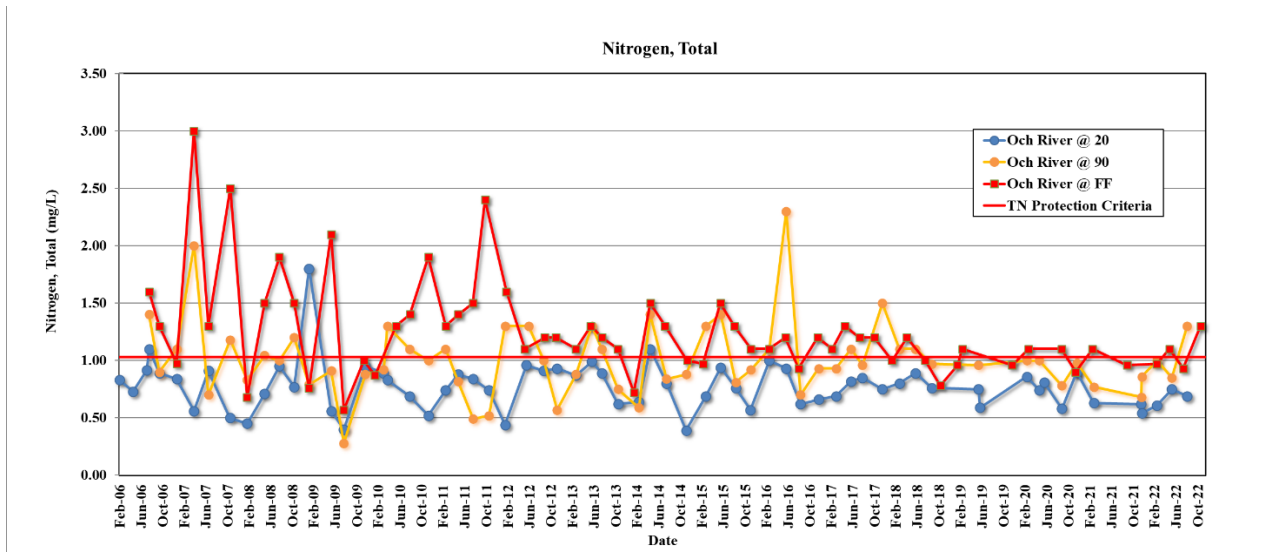


Figure 3. Total Nitrogen results for the Ochlockonee River.

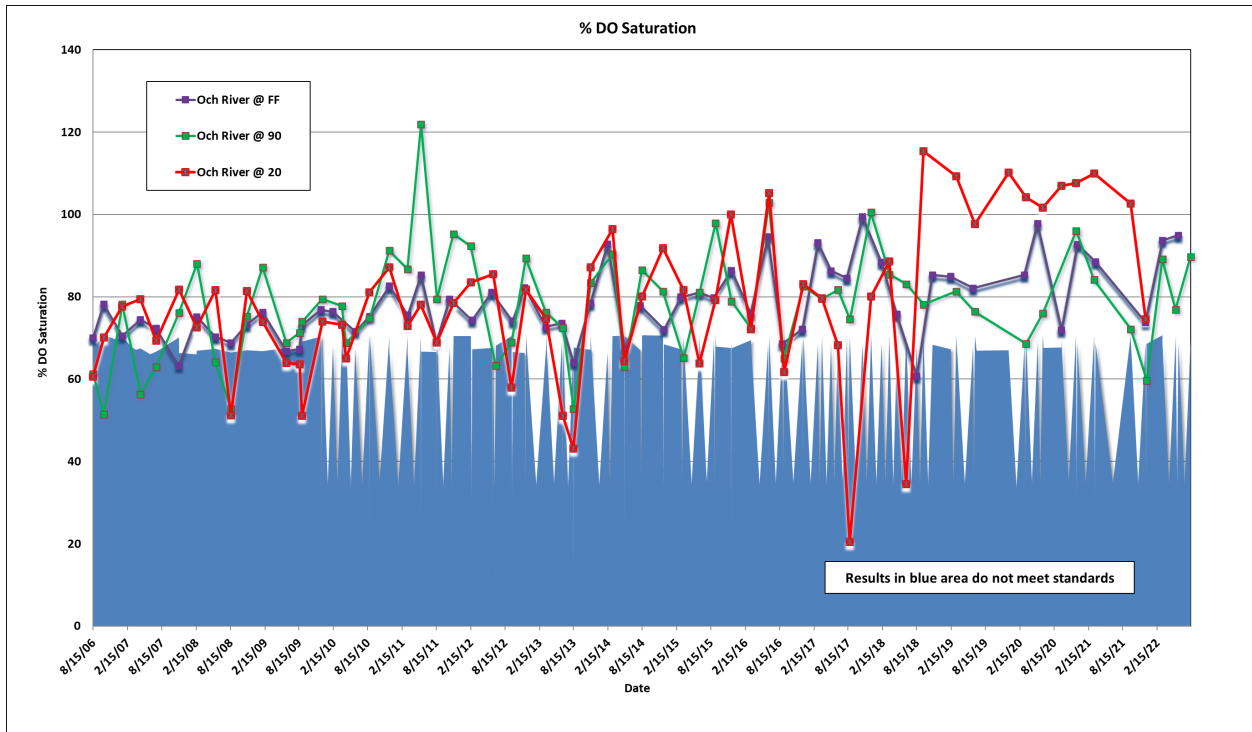


Figure 4. Dissolved Oxygen Percent Saturation results for the Ochlockonee River.

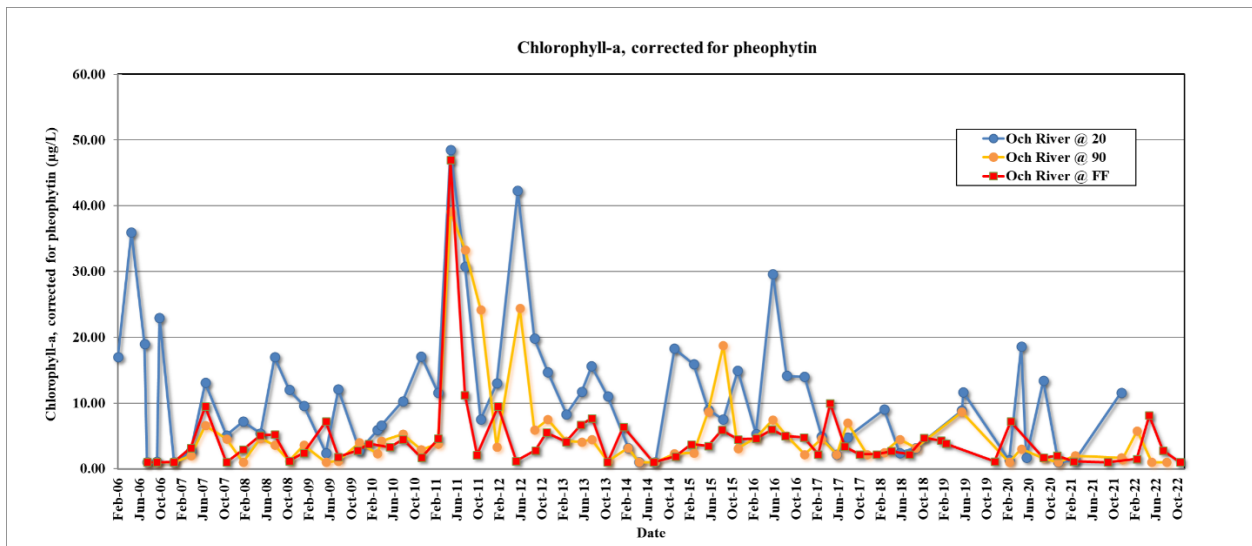


Figure 5. Chlorophyll-a results for the Ochlockonee River.