

Waterbody: Ochlockonee River



Basin: Ochlockonee River

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), identified as an Integrated Wildlife Habitat (formerly known as a Strategic Habitat Conservation Area) by the Florida Fish and Wildlife Conservation Commission, and 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.

Background

Healthy, well-balanced river 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.

Methods

Surface water sampling was conducted to determine the health of the Ochlockonee River and met the collection and analysis requirements of the 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 nutrient thresholds and results are found in Table 1. The State criteria were exceeded several times for nitrogen at the furthestmost upstream site (*Fairbanks Ferry Station*), four times (2006, 2007, 2010 and 2015) at the *Highway 90* station and exceeded phosphorus levels only once at the *Fairbanks Ferry 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, as demonstrated by the lower levels in the downstream stations. The assimilation of nutrients is most noticeable with nitrogen, while recent phosphorus results (2015) show that levels are being assimilated relatively slowly.

Table 1. FDEP’s total nitrogen and phosphorus criteria for rivers applied to Ochlockonee River. Results in bold signify exceedances of the State criteria.

Ochlockonee River	Instream Protection Criteria TN (1.03 mg/L)			Instream Protection Criteria TP (0.18 mg/L)		
	Och at FF	Och at 90	Och at 20	Och at FF	Och at 90	Och at 20
2000	1.63	-	0.14	0.20	-	0.06
2001	1.21	-	0.75	0.18	-	0.07
2002	2.08	-	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	1.07	1.12	0.70	0.09	0.07	0.04
2007	1.56	1.16	0.68	0.14	0.13	0.07
2008	1.41	1.02	0.70	0.16	0.12	0.07
2009	0.88	0.67	0.79	0.11	0.10	0.07
2010	1.32	1.07	0.72	0.13	0.09	0.06
2011	1.60	0.69	0.80	0.13	0.07	0.06
2012	1.26	0.99	0.77	0.14	0.15	0.06
2013	1.17	0.92	0.85	0.12	0.12	0.11
2014	1.09	0.88	0.68	0.11	0.08	0.06
2015	1.20	1.08	0.73	0.12	0.12	0.07

Dissolved Oxygen (DO)

While all three stations occasionally did not meet Class III water quality standards for DO (Figure 1), 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 Jackson Bluff Dam have the ability to

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. Low flow conditions can also contribute to depressed oxygen levels, which may affect all stations along the river.

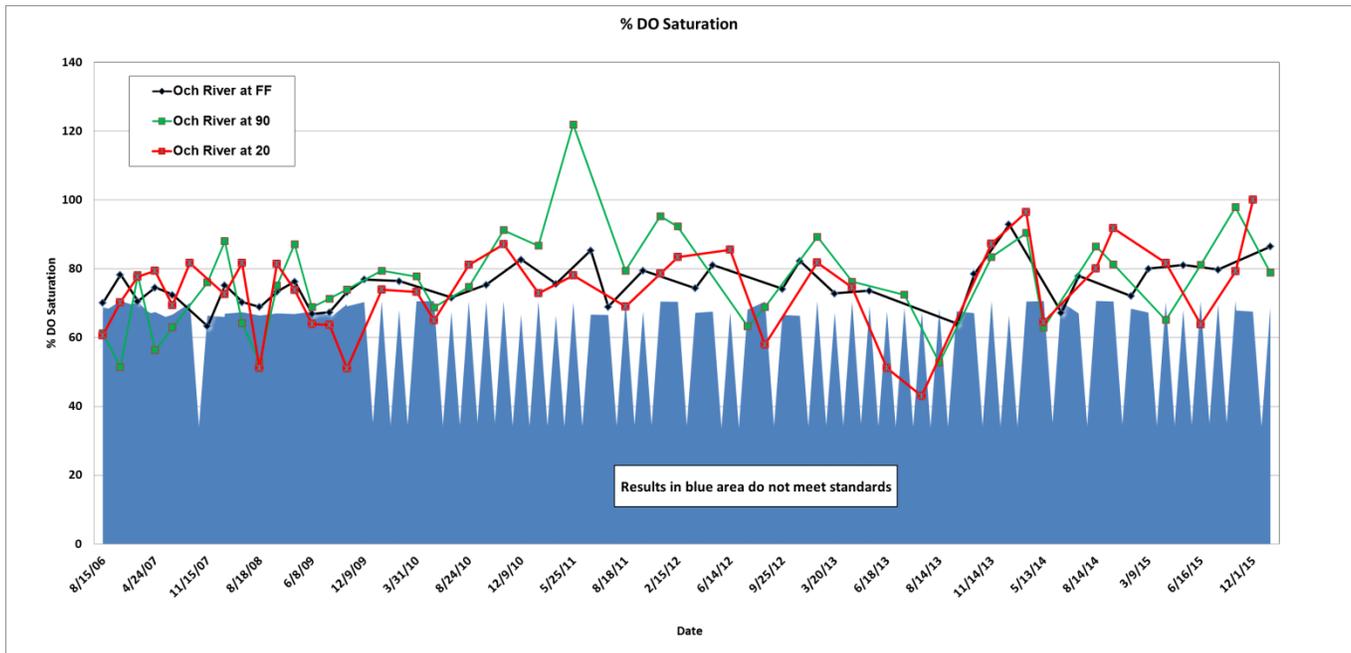


Figure 1. Dissolved Oxygen Percent Saturation results for the Ochlockonee River.

Escherichia coli

Recently, *E. coli* standards supplanted fecal coliform standards in Florida. The recently adopted *E. coli* water quality limit of > 126 in 10% of samples collected over a 30 day period was exceeded (136/100 mL) at the *Och at FF* (Fairbanks Ferry) Station during the December 2015 sampling event.

Metals

Station *T02* (located downstream of the Jackson Bluff Dam, just north of Highway 20) showed high levels of cadmium, copper, and lead during the 2nd quarter of 2013. Though not as high as the 2nd quarter, moderate levels of copper and lead were detected at station *T02* during the 1st quarter of 2013. Lead levels were elevated at Station *100* (Ochlockonee River at Fairbanks Ferry Road) during the 2nd and 3rd quarter of 2013. It is assumed that the elevated results were associated with anthropogenic activities. Metal analysis continued into 2015, and results did not exceed Class III criteria at the Ochlockonee stations for 2015.

Other Parameters

Chlorophyll-*a* results for the station *Och at 20* were elevated during March (22.9 µg/L) and December

(23.6 µg/L) 2015 sampling events. Since the station is relatively close to the dam, it is assumed that the majority of the algal population (that chlorophyll-*a* indirectly measures) is being flushed out of Lake Talquin and levels would not normally be so elevated in the river. Chlorophyll-*a* levels at station *Och River at 90* were also elevated (22.2 µg/L) during the September 2015 sampling event. 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. Phosphorus levels exceeded the nutrient threshold only once in the 13 years the river has been monitored. Ongoing metals analysis showed no criteria exceeded Class III water quality standards in

2015. All three 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. Chlorophyll-*a* results for the station *Och at 20* were elevated during March and December 2015 sampling events. Chlorophyll-*a* levels at station *Och River at 90* were also elevated during the September 2015 sampling event.

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 2015.](#)

[Click here for map of watershed – Sample sites 100, OCHat90 and T02.](#)

Johnny Richardson, Water Resource Scientist
(850) 606-1500
Richardsonjo@leoncountyfl.gov