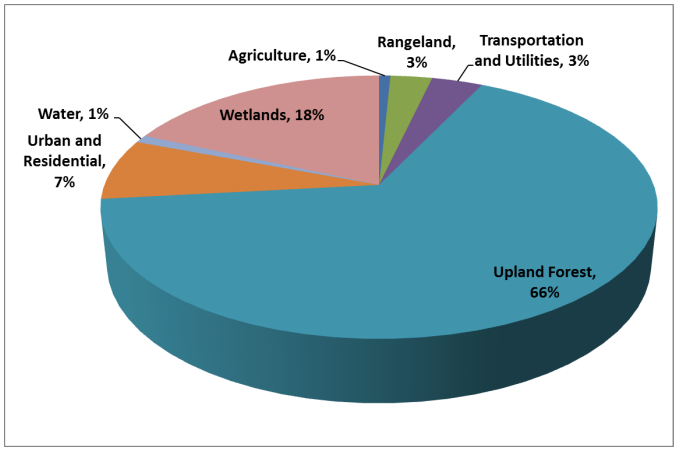
Waterbody: Chicken Branch

Basin: St. Marks River

Chicken Branch is located in southeastern Leon County. The stream is partially fed by Chicken Branch Spring and flows southeast, eventually draining into the St. Marks River.

While the following pie chart shows the majority of the 6,572-acre watershed is relatively undeveloped, agriculture, rangeland, transportation, utilities, urban and residential uses make up approximately 14% of the watershed. Increases in stormwater runoff and waterbody nutrient loads can often be attributed to these types of land uses. Watershed land use is changing; logging in the area adjacent to Chicken Branch and its spring impacted the system and may continue to do so.



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. 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 sampling was conducted to determine the health of Chicken Branch and met the collection and analysis requirements of the Florida Department of Environmental Protection (FDEP).

Results

The nutrient thresholds and results are found in Table 1. According to FDEP requirements, Numeric Nutrient Criteria (NNC) (expressed as an annual geometric mean) cannot be exceeded more than once in a three-year period. Due to low water conditions, four temporally independent samples per year could not always be collected from this station. When sampling conditions were conducive to collecting the required number of samples, the State criteria were not exceeded for either parameter. While not exceeding the NNC threshold, the 2017 geometric mean nitrogen levels are the highest on record; the June 2017 result (0.81 mg/L) is the third highest individual result since sampling begin in 2006. Substantial rainfall in the area immediately prior to the sampling could have affected nitrogen values via increased runoff into the system. The elevated color levels during the same event (150 PCU vs. a median of 40 PCU) suggest that runoff was a factor in the

results. The 2018, 2019, and 2021 geometric mean nitrogen results were considerably lower, so the elevated total nitrogen value in 2017 was probably an isolated event. Low water levels in 2020 prevented staff from collecting the appropriate number of samples to calculate the NNC.

Table 1. FDEP's total nitrogen and phosphorus criteria for streams applied to Chicken Branch. The absence of data means there was not enough data collected (due to lack of water) to fulfill data requirements.

Chicken Branch	Total Nitrogen Threshold 1.03 mg/L	Total Phosphorus Threshold 0.18 mg/L
2006- 2008	-	-
2009	0.15	0.04
2010	0.43	0.05
2011- 2012	-	-
2013	0.27	0.03
2014	0.41	0.05
2015	-	-
2016	0.38	0.05
2017	0.50	0.05
2018	0.40	0.04
2019	0.30	0.06
2020	-	-
2021	0.38	0.05

Dissolved Oxygen

As Figure 1 shows, Chicken Branch did not always meet the Class III criteria for dissolved oxygen (DO). Low DO levels are typical of Florida spring-run streams and are considered normal for Chicken Branch.

Stream Condition Index and Habitat Assessment

The 2020 Stream Condition Index (SCI) score matches the natural channel condition of the habitat. The presence of a varied and reasonably rich biological community with several sensitive taxa resulted in a SCI score (64) in the Healthy range. Interestingly, this score is seven points lower than the SCI score received in 2017, dropping the station from the lower end of the Exceptional range into the higher end of the Healthy range. This is likely due to drought conditions experienced in the system during the spring. The two most abundant macroinvertebrate taxa collected in both vials were the Asellid isopod *Caecidotea* sp. and the mayfly *Caenis diminuta*. From the total taxa collected, six are listed as sensitive taxa by the FDEP and four as very tolerant. The Ephemeroptera, Plecoptera, Trichoptera (EPT) fauna are widely regarded as the groups of aquatic insects that contain a large number of pollution sensitive taxa. No Plecoptera (stoneflies) were noted in the SCI. Three Ephemeropteran (mayflies) species were collected, including the "sensitive" genus *Stenacron*. The Trichoptera (caddisflies) were also represented by two species: *Cheumatopsyche* and *Oxyethria*.

The results of the Habitat Assessment score (127) characterize the stream habitat as Suboptimal. Given the natural, non-dredged condition of the system, this score reflects a limitation on the availability of some of the major habitats within the channel. The system still displays impacts within the riparian zone as result of extensive timbering of the surrounding swamp forest. Numerous downed trees in the channel allow for increased light to reach the stream. This increased light combined with the dry/non-flowing channel conditions in the spring supported the growth of wetland herbaceous plants within the channel to an extent not previously noted in this system.

For more information about the SCI and Habitat Assessment, click Here.

Other Parameters

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

Conclusions

Based on ongoing sampling, Chicken Branch met the nutrient thresholds for the Panhandle East Region. Staff considers the occasionally low DO values at Chicken Branch to be a natural condition for spring

fed systems. The 2020 SCI sampling and analysis score resulted in a score in the Healthy range and showed the presence of a varied and reasonably rich biological community with several sensitive taxa.

Table 2. Stream Condition Index results for Chicken Branch.

Chicken Branch	**Rep 1**	**Rep 2**
Stream Condition Index Metrics Scores		
Total Taxa	5.65	3.04
Ephemeroptera Taxa	6	6
Trichoptera Taxa	1.43	2.86
% Filter Feeder	3.21	2.25
Long-lived Taxa	6.67	3.33
Clinger Taxa	7.50	6.25
% Dominance	8.45	7.26
% Tanytarsini Taxa	9.56	8.58
Sensitive Taxa	6	5
% Tolerant Taxa	8.16	7.96
SCI Vial Score	69.59	58.38
Stream Condition Index Score	**64**	
Score Interpretation	**Healthy**	

Table 3. Habitat Assessment results for Chicken Branch.

Chicken Branch	**Score**	**Category**
Substrate Diversity	18	Optimal
Substrate Availability	10	Marginal
Water Velocity	13	Suboptimal
Habitat Smothering	10	Marginal
Artificial Channelization	18	Optimal
Bank Stability	10, 10	Optimal, Optimal
Riparian Zone Width	9, 9	Optimal, Optimal
Riparian Vegetation Quality	10, 10	Optimal, Optimal
Final Habitat Assessment Score	**127**	
Interpretation	**Suboptimal**	

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

Click here to access the results for all water quality stations sampled in 2021.

Click here for a map of the watershed – Sample Site 53.

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

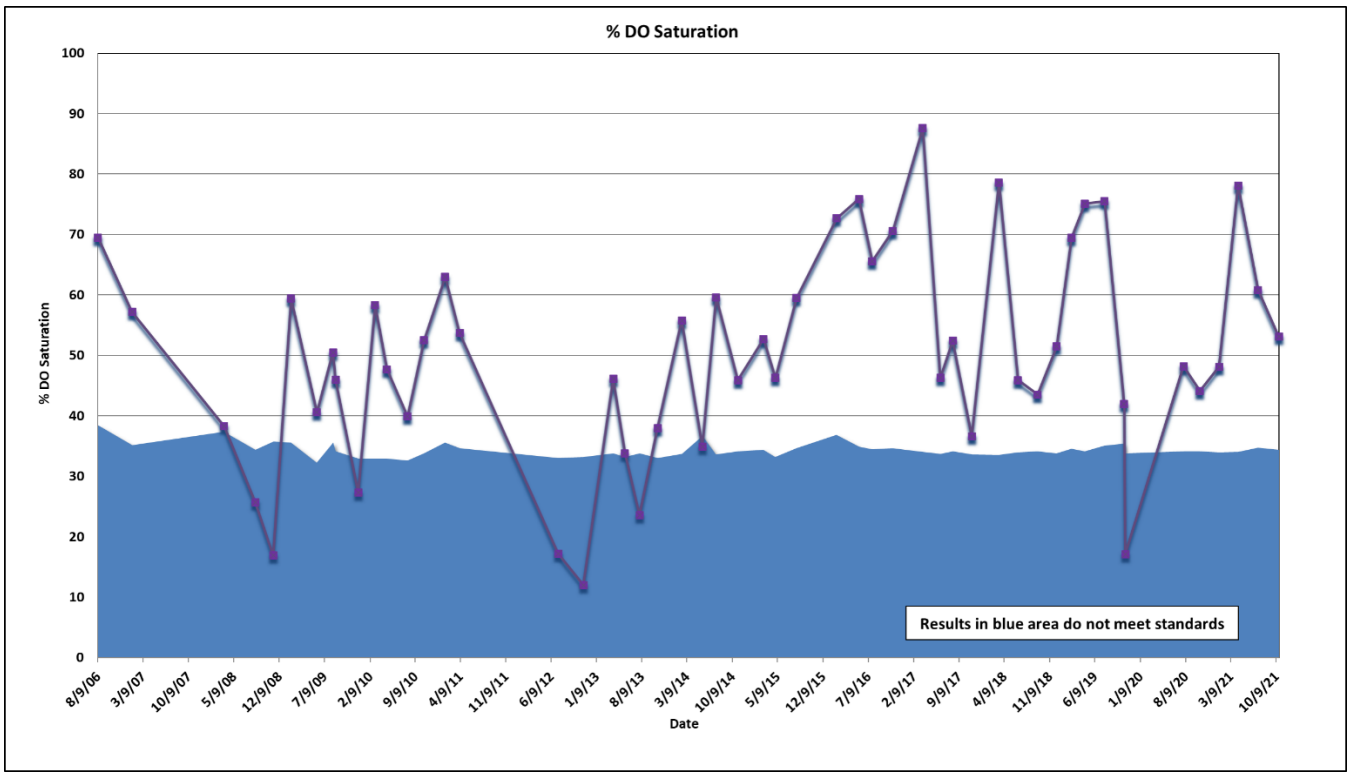


Figure 1. Dissolved Oxygen Percent Saturation results for Chicken Branch.