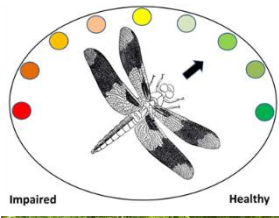


Chicken Branch EcoSummary



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.

As shown in **Figure 1**, 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.

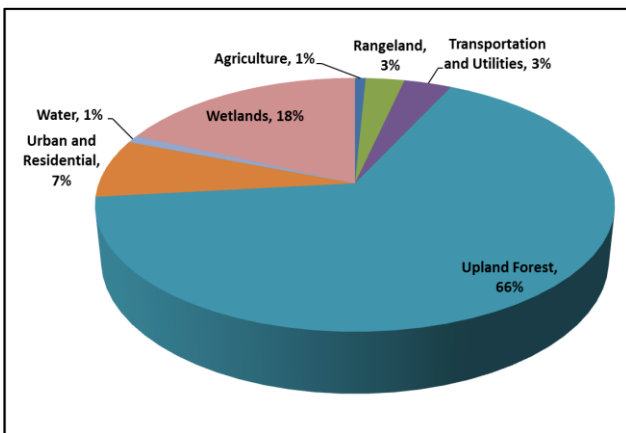


Figure 1. Chicken Branch watershed land use.

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). The latest biological survey was conducted in 2020 to evaluate the health of aquatic invertebrate communities in the system. This information is used to determine the health of Chicken Branch 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.

The nutrient thresholds and results are found in **Table 1**. When data requirements were met, nutrient values were shown to not exceed the state criteria. 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 began 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 following years' nitrogen results were considerably lower, so the elevated Total Nitrogen value in 2017 was probably an isolated event.

Table 1. Total Nitrogen and Phosphorus criteria and results for Chicken Branch.

Chicken Branch	TN Threshold 1.03 mg/L	TP 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
2022	0.35	0.05
2023	0.34	0.06

Dissolved Oxygen

As **Figure 2** 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 (SCI) and Habitat Assessment

The results of the Habitat Assessment score (139) for Chicken Branch characterize the stream habitat as high suboptimal to the low optimal categories (**Table 2**). Given the natural, non-dredged condition of the system, this is a score that reflects a limitation on the availability of some of the major habitats within the channel. During this sample event, the system expressed signs of normal to above average rainfall with waters extending into the adjacent wetlands. Samples were deliberately collected within the tree lined section of the stream to avoid sampling areas that had not experienced a significant colonization period. Samples were also collected lower in the water column due to similar concerns of increased water level. The system displays some impacts within the riparian zone as result of extensive timbering of the surrounding swamp forest beyond the immediate channel. Storms can now impact trees that are less wind hardened due to the removal of outer forest areas. Resultant downed trees in the channel allow for increased light to reach the stream. This increased light, combined with the dry/non-flowing channel conditions during drought, increased the growth of wetland herbaceous plants within the wetted channel.

The SCI score matches the natural channel condition of the habitat (**Table 3**). The presence of a varied and reasonably rich biological community with several sensitive taxa resulted in a SCI score of 52.88, which resides in the healthy range. This compares to the score of 63.98 for the event in 2020 and 70.94 in the event completed in 2017. The 2023 and 2020 sample events received categorical scores of Healthy, while the 2017 event received a

categorical score of Exceptional. The decrease in the overall SCI score is due, in part to the rising stream stage due to recent rains at the station, and potentially due to the season in which the samples were collected.

The two most abundant macroinvertebrate taxa collected in both vials were the Asellid isopod *Caecidotea* sp. and the freshwater snail *Micromenetus dilatatus*. Of the 309 total individuals collected in both vials, 98 of the invertebrates were *Caecidotea* sp., representing 31.7% of the sample. The combination of the two most abundant taxa represents 143 individuals or 46.36% of the sample. Of interesting note, *Caecidotea* sp. is an FDEP sensitive species while *Micromenetus dilatatus* is an FDEP very tolerant species. From the total taxa collected, seven are listed as sensitive taxa by the FDEP and ten taxa are listed 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. Four Ephemeropteran (mayflies) species were collected, including the “sensitive” genus *Stenacron* (likely *S. interpunctatum*). Conversely, *Caenis diminuta*, present in both vials of the SCI sample, is one of the two most tolerant mayfly species but is not listed as very tolerant by FDEP. The Trichoptera (caddisflies) were also represented by two species. The EPT score for the site is six, which is moderate. A single specimen of the exotic, invasive, tropical gastropod *Mieniplotia scabra* is tentatively reported. If this proves true it is a point of concern for area streams. In south Florida it has become problematic as it can produce very large numbers that can overwhelm a habitat.

[Click here for more information about the Stream Condition Index and Habitat Assessments.](#)

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 NNC 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 2023 SCI was in the Healthy range and showed the presence of a varied and reasonably rich biological community with several sensitive taxa.

Table 2. Habitat Assessment results for Chicken Branch.

Chicken Branch	Score	Category
Substrate Diversity	18	Optimal
Substrate Availability	14	Suboptimal
Water Velocity	14	Suboptimal
Habitat Smothering	15	Suboptimal
Artificial Channelization	20	Optimal
Bank Stability	10, 10	Optimal, Optimal
Riparian Zone Width	10, 10	Optimal, Optimal
Riparian Vegetation Quality	9, 9	Optimal, Optimal
Final Habitat Assessment Score	139	
Interpretation	Suboptimal-Optimal	

Table 3. SCI results for Chicken Branch.

Chicken Branch	Rep 1	Rep 2
Stream Condition Index Metrics Scores		
Total Taxa	8.26	6.96
Ephemeroptera Taxa	8	2
Trichoptera Taxa	2.86	2.86
% Filter Feeder	1.14	1.25
Long-lived Taxa	3.33	3.33
Clinger Taxa	8.75	5.00
% Dominance	6.38	6.43
% Tanytarsini Taxa	6.46	7.08
Sensitive Taxa	7	3
% Tolerant Taxa	3.14	1.97
SCI Vial Score	61.47	44.29
Stream Condition Index Score	52.88	
Score Interpretation	Healthy	

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 2023.](#)

[Click here for a map of the watershed – Sample Site 53.](#)

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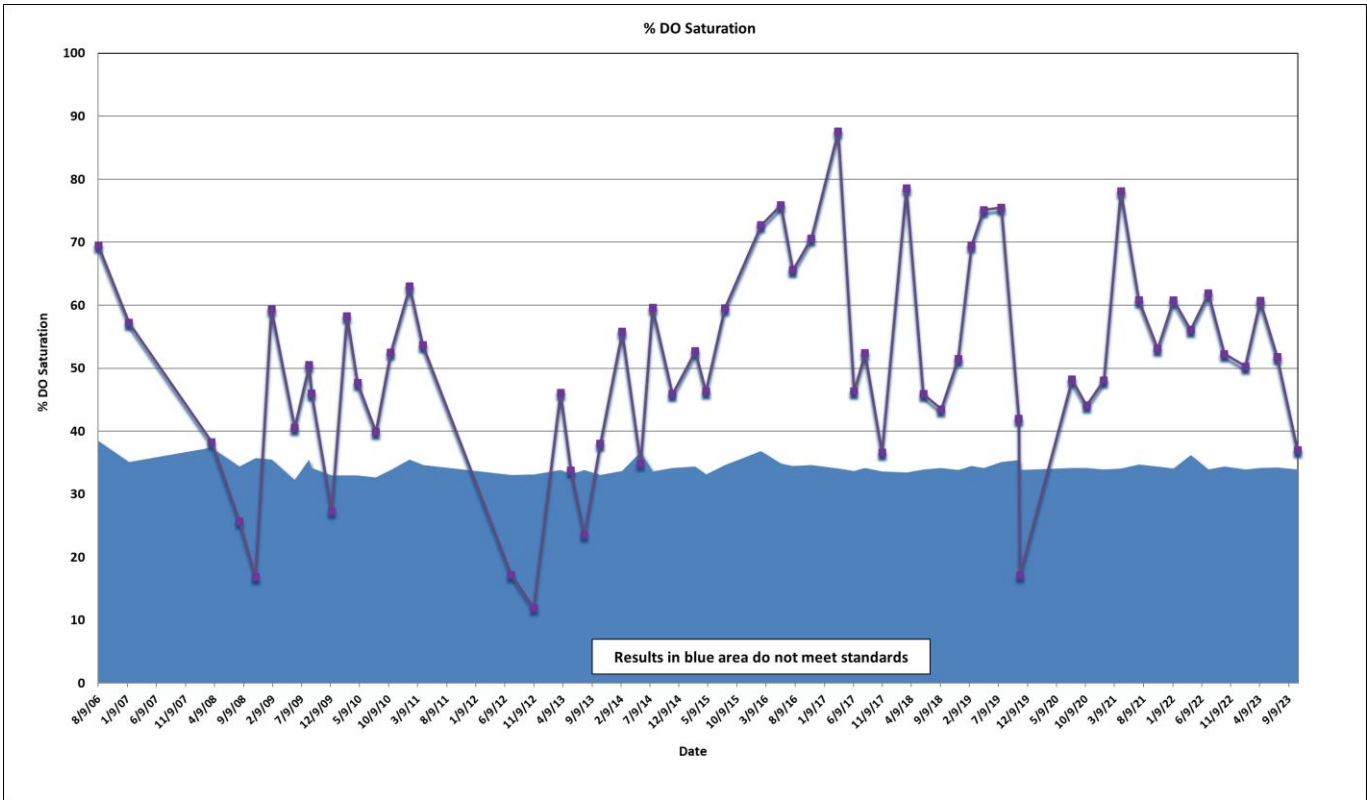


Figure 2. Dissolved Oxygen Percent Saturation results for Chicken Branch.