

Blackwater Creek

STREAM HABITAT ASSESSMENT, STREAM CONDITIONS INDEX, RAPID PERIPHYTON SURVEY AND WATER QUALITY

David Eilers, Abdullah AlNaggar, Alvy Ochoa | USF Water Institute | April 3, 2025

Methods

STUDY AREA ANALYISIS

The watershed containing the stream being assessed was analyzed using ESRI ArcGIS Pro. Using this software with 2023 Hillsborough County aerial, 2020 Land Use/ Land Cover (LULC) and Waterbody ID (WBID) layers courtesy of the Florida Department of Environmental Protection (FDEP). The Landscape Development Intensity Index (LDI) was calculated for the 100 meter buffer around the stream from the sampling site to 10km upstream. From FDEP (https://floridadep.gov/dear/bioassessment/content/bioassessment-ldi-hdg-bcg) "The Landscape Development Intensity index (LDI) is an estimate of how much humans have altered an area of interest around a waterbody. Various land use types (low density residential, row crops, industrial and natural) are assigned coefficients of land use intensity based on estimates of the amount of human energy that is put into those land use types."

The LDI is calculated by multiplying each land use coefficient by the percentage of the area of interest occupied by that land use, and then summing the results. The FDEP uses the LDI as a tool to estimate potential land use impacts on streams, lakes, and wetlands. LDI values less than two (≤ 2) can be considered minimally disturbed." In the Florida framework, the maximum LDI index score is approximately 42.

HABITAT AND VEGETATION ASSESSMENT

For small streams that are not easily navigated by Jonboat for bathymetric mapping and vegetation analysis, Hillsborough County requested the implementation of the FDEP methods for Stream and River Habitat Assessment (FT 3100) (http://www.dep.state.fl.us/water/sas/sop/sops.htm) using forms FD 9000-3, FD 9000-4 and FD 9000-5, Rapid Periphyton Survey (FS 7230) using form FD 9000-25 and Linear Stream Vegetation Survey (FS 7320) using form FD 9000-32. These methods were utilized on one sampling location on each stream, typically near access points along roadways.

Stream and River Habitat Assessment per FT3100 receives a score calculated in Form FD 9000-5. This score results from the ranking of the primary habitat components (substrate diversity, substrate availability, water velocity and habitat smothering) and secondary habitat components (Artificial channelization, bank stability, riparian buffer zone width and riparian zone vegetation quality). The maximum score possible in this method is a 160.

Two metrics are utilized in the Linear Vegetation Survey (LVS). The Mean Coefficient of Conservatism (CoC) applies a score of 0-10 to each species based on its ecological tolerances and fidelity to pre-settlement conditions. Species with higher scores show a high fidelity to native, undisturbed habitats and are typically sensitive to alterations. Available CoC scores can be obtained from Table LVI 1000-1 from the Florida Department of Environmental Protection at: http://www.dep.state.fl.us/water/sas/sop/sops.htm. The Percent Florida Exotic Pest Plant Council (% FLEPPC) metric calculates the percent invasive exotics as the number of occurrences of FLEPPC Category I or II in the 100 m reach divided by the total number of taxa occurrences in the 100 m reach. The FLEPPC list can be found in FDEP LVI 1000-1.

STREAM CONDITION INDEX ASSESSMENT

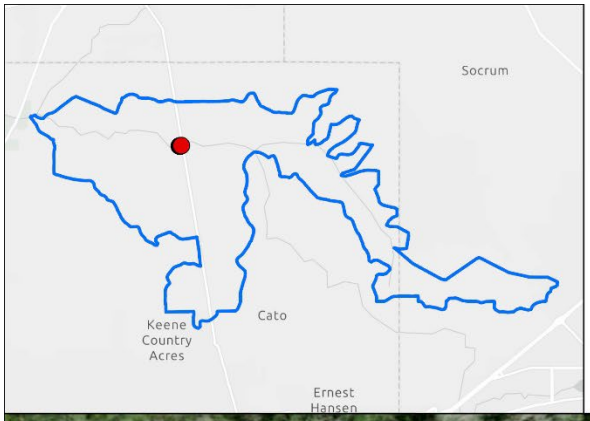
The Stream Condition Index (SCI) was sampled and calculated per DEP SOP SCI 1000. The SCI consists of collecting macroinvertebrates via 20 D-frame dipnet sweeps (0.5 m in length) in the most productive habitats in a 100 m reach of stream. The organisms are sub-sampled, and identified to the lowest practical taxonomic level. The SCI is composed of ten metrics, eight of which decrease in response to human disturbance, with two metrics (% very tolerant and % dominant) increasing in response to human disturbance. According to DEP SOP SCI 1000, the SCI scores greater than 35 are considered healthy. Proposed biological health assessment criteria state that a WBID is considered to meet designated uses if the average of the two most recent SCI scores is 40 or higher and neither of the most recent of those scores is less than 35.

WATER QUALITY ASSESSMENT

Physical water quality samples were taken using a Eureka Manta Sub-2 multiprobe pre and post calibrated daily. Measurements taken with this device include: depth, conductivity, pH, Dissolved Oxygen (mg/l and % Saturation) and salinity. Chemical water parameters were collected and preserved on ice by USF Water Institute staff and analyzed at the Hillsborough County Public Utilities Laboratory. Analysis include; Chlorophyll (a, b, c, t and corrected), Alkalinity, Color, E. Coli, Enterococci, Ammonia, Nitrates/Nitrites, Total Phosphorous, Kjeldahl Nitrogen and Total Nitrogen. Results will be discussed in the Florida Department of Environmental Protection's Numeric Nutrient Criteria framework and combined with the monthly sampling from the Hillsborough County Environmental Protection Commission Monthly sampling data.

Study Area

Blackwater Creek is located in north eastern Hillsborough County in the Hillsborough Bay Watershed. Its headwaters are located east of Tom Mathews Road in eastern Hillsborough County. The outfall of Blackwater Creek is in the Hillsborough River. The assessment of Blackwater Creek was conducted west of Highway 39 on April 3, 2025 at that time, the water levels were normal for the dry season. The Blackwater Creek WBID covers 23.6 square miles (19,746 acres) and the 100-meter buffer around the stream is dominated by forest/natural (54.4%), field/pasture (33.5%) and residential (6.4%) land uses. The resulting calculated landscape development intensity index score was a 2.38.



Blackwater Creek
WBID 1482

Blackwater Creek
Area - 19,746 Acres, (23.63 Sq miles)
Landscape Development (100m buffer)
Intensity - 2.38
Stream Habitat Assessment - 96
Rapid Periphyton Survey -
% ranked 4-6 - 46%
Linear Vegetation Survey
< 2 square meters of rooted vegetation
Mean Coefficient of Conservatism - N/A
% FLEPPC - N/A
Stream Condition Index - 81



Figure 1 2025 Blackwater Creek Study Area Map



Figure 2 Photograph of the Blackwater Creek Sample Site showing the typical shoreline and normal water conditions.

Habitat and Vegetation Assessment

The region of Blackwater Creek where the assessment was conducted is west of Highway 39. The region was moderately shaded with a mean canopy cover measurement of 54.2%. Blackwater Creek averaged 0.4 meters in depth and approximately 10.7 meters wide with a flow of 0.17 m/s.

The primary habitat components of the FDEP Habitat Assessment focus on in-water habitat. The primary habitat components score in the suboptimal category for Water Velocity (0.17 m/s), Substrate Diversity (three major productive habitats (fine roots, snags, rock) and Habitat Smothering (adequate number of stable pools but > 25% of habitats affected by sand/silt/algae). Substrate Availability was scored as poor for having major productive habitats in only 4.4% of the stream. Minor habitats included leaf and sand deposits. The total score for the primary habitat components was a 41 out of 80.

The secondary habitat components of the FDEP Habitat Assessment focus on the surrounding features of the stream. The secondary habitat components scored in the marginal category for Artificial Channelization for having poor sinuosity with spoil banks or evidence of straightening. Bank stability for both banks scored in the suboptimal category as each met 2 of the 3 measures of bank stability. Riparian zone vegetation quality for both banks scored in the suboptimal category due to an increase in invasive species. Riparian buffer zone width scored in the optimal category with > 18 meters of buffer on each bank. The secondary components received a score of 55 out of 80. The resulting FDEP Habitat Assessment score was 96.

Table 1 Scoring Summary for the Stream Habitat Assessment

Metric	Score
Primary Habitat Components	
Substrate Diversity	12
Substrate Availability	5
Water Velocity	13
Habitat Smothering	11
Primary Score	**41**
Secondary Habitat Components	
Artificial Channelization	8
Bank Stability - Right Bank	6
Bank Stability - Left Bank	7
Riparian Buffer Zone Width - Right Bank	9
Riparian Buffer Zone Width - Left Bank	9
Riparian Zone Vegetation Quality - Right Bank	8
Riparian Zone Vegetation Quality - Left Bank	8
Secondary Score	**55**
Habitat Assessment Score	**96**

Periphyton was encountered during 53 of the 99 samples taken during the Rapid Periphyton Survey. 8 samples were ranked 3 for being between >1 mm and 6 mm in length. 13 samples were ranked 4 for being between >6 mm and 20 mm in length. 6 samples were ranked 5 for being between > 20 mm and 10 cm in length. 27 samples were ranked 6 for being >10 cm in length. The tree canopy in the assessment area averaged 54.2%. These results indicate an excess of periphyton present in the stream as a result of an imbalance of nutrients. The periphyton present was a mixture of *Cladophora, Ulothrix, Anabaena* and *Merismopedia.*

The FDEP Linear Vegetation Survey encountered less than two square meters of rooted herbaceous vegetation in Blackwater Creek at the time of the assessment.

Table 2 Linear Vegetation Survey Results – Blackwater Creek

Taxa Name	C of C Score	Sample Site										Total Occurrences
		0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	
Less than 2 square meters of vegetation.												



Figure 3 A photograph displaying the periphyton abundance in Blackwater Creek at the time of the assessment.

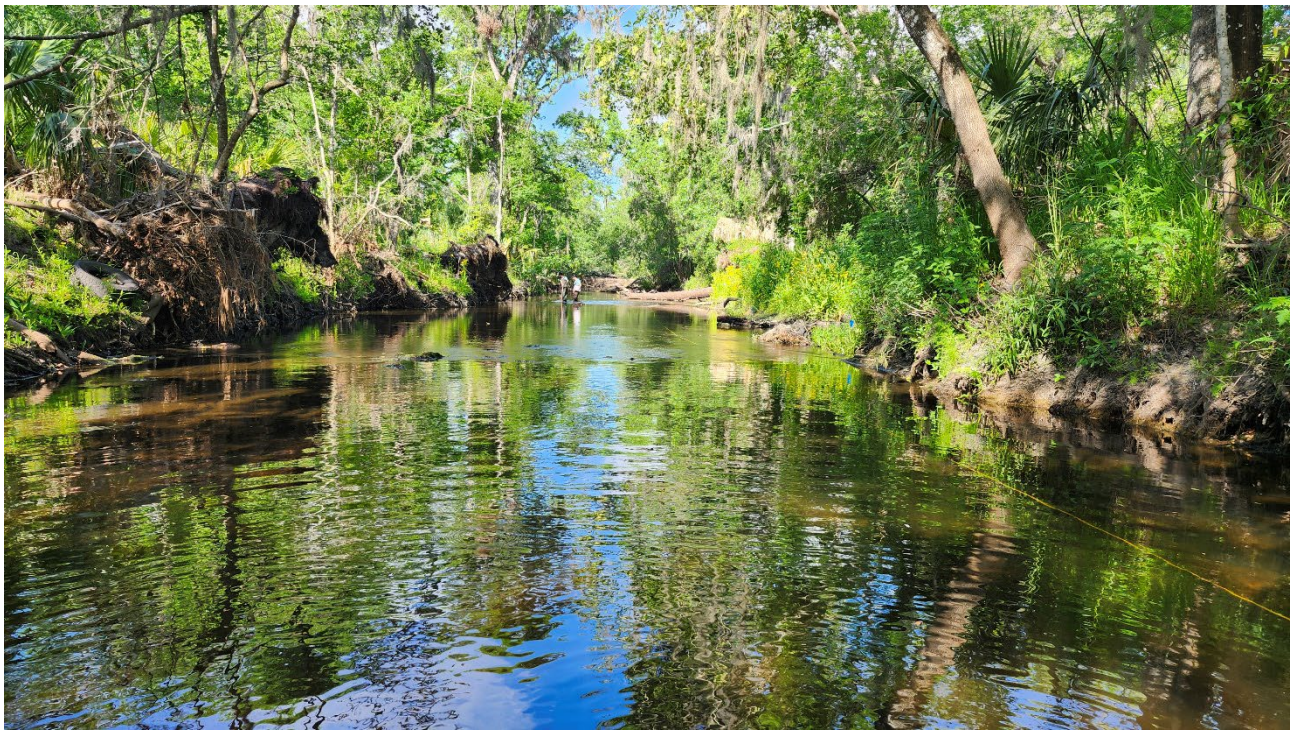


Figure 4 An image showing the artificially straightened nature of the region of the Blackwater Creek assessment site.

Stream Condition Index

The analysis of the SCI sample involves splitting the sample into 2 aliquots for analysis. The SCI metrics are then calculated on each aliquot separately. The final SCI score is an average of the two scores. The SCI score for Blackwater Creek was 81 out of a possible 100 points, corresponding with a "Category 1 - Exceptional" designation, with the expected community of a healthy stream. Both of the 2025 sub samples featured high total taxa, percent dominance and percent tanytarsini. In addition, sample A had high scores for total long-lived taxa and percent very tolerant individuals and sample B had high scores for total ephemeroptera. The full results of the SCI sampling are shown in Table 3 (Sample A) and Table 4 (Sample B) for Blackwater Creek.

Table 2 SCI metric summaries for Blackwater Creek Sample A (top) and Sample B (bottom)

SCI Metric	Raw Totals	SCI scores	Adjusted SCI scores
Total Taxa	37.00	9.17	9.17
Total Ephemeroptera	3.00	6.00	6.00
Total Trichoptera	3.00	4.29	4.29
% Filter Feeders	32.81	7.47	7.47
Total Clingers	4.00	5.71	5.71
Total Long-lived Taxa	4.00	13.33	10.00
% Dominance	23.13	8.18	8.18
% Tanytarsini	32.50	10.33	10.00
Total Sensitive Taxa	3.00	4.29	4.29
% Very Tolerant Individuals	3.13	8.21	8.21

SCI Sum	73.30
Final SCI score	81.45

SCI Metric	Raw Totals	SCI scores	Adjusted SCI scores
Total Taxa	36.00	8.75	8.75
Total Ephemeroptera	6.00	12.00	10.00
Total Trichoptera	2.00	2.86	2.86
% Filter Feeders	25.95	5.87	5.87
Total Clingers	5.00	7.14	7.14
Total Long-lived Taxa	2.00	6.67	6.67
% Dominance	23.42	8.12	8.12
% Tanytarsini	31.01	10.19	10.00
Total Sensitive Taxa	4.00	5.71	5.71
% Very Tolerant Individuals	6.33	6.77	6.77

SCI Sum	71.89
Final SCI score	79.88

Table 3 SCI full results for Sample A

Stream Condition Index Results for Blackwater Creek SCIA

Phylum	Subphylum	Class	Subclass	Order	Family	Taxa	Abundance	Collapsed Abundance	Taxa Presence	Ephemeroptera Taxa	Trichoptera Taxa	50% Filterer	100% Filterer	Clinger Taxa	Long-lived Taxa	Dominant Taxa	Tanytarsini	Sensitive Taxa	Very Tolerant Individuals
Mollusca		Gastropoda	Caenogastropoda	Littorinimorpha	Amnicolidae	*Amnicola dalli*	11	11	1	0	0	0	0	0	0		0	0	0
Mollusca		Gastropoda	Caenogastropoda	Littorinimorpha	Hydrobiidae	*Pyrgophorus platyrachis*	2	2	1	0	0	0	0	0	0		0	0	2
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Planorbidae	*Menetus dilatatus*	1	1	1	0	0	0	0	0	0		0	0	1
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Planorbidae	*Ferrissia fragilis*	1	1	1	0	0	0	0	0	0		0	0	0
Mollusca		Bivalvia	Autobranchia	Venerida	Cyrenidae	*Corbicula* spp.	6	6	1	0	0	0	6	0	1		0	0	0
Mollusca		Bivalvia	Autobranchia	Sphaeriida	Sphaeriidae	Sphaeriidae spp.	1	1	1	0	0	0	1	0	0		0	0	0
Mollusca		Bivalvia	Autobranchia	Sphaeriida	Sphaeriidae	*Eupera cubensis*	1	1	1	0	0	0	1	0	0		0	0	0
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Decapoda	Palaemonidae	*Palaemon* spp.	1	1	1	0	0	0	0	0	1		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	Baetidae spp.	5	5	1	1	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	*Labiobaetis propinquus*	1	1	1	1	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Leptohyphidae	*Tricorythodes albilineatus*	4	3	1	1	0	0	0	0	0		0	1	0
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Gomphidae	*Phanogomphus* spp.	1	1	1	0	0	0	0	0	1		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Coenagrionidae	*Enallagma* spp.	1	1	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Leptoceridae	*Triaenodes* spp.	2	2	1	0	1	0	0	0	0		0	1	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	Hydropsychidae spp.	3		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Cheumatopsyche* spp.	8	10	1	0	1	0	10	1	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydroptilidae	*Oxyethira* spp.	1	1	1	0	1	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	Elmidae spp.	2		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Dubiraphia* spp.	3	3	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Stenelmis* spp.	3	5	1	0	0	0	0	1	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Microcylloepus* spp.	5	5	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera		Diptera spp.	3		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Chironomidae spp.	5		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Pentaneura inconspicua*	5	5	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cladotanytarsus* spp.	1	1	1	0	0	0.5	0	0	0		1	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus* spp.	4		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus buckleyi*	32	37	1	0	0	18.5	0	0	0		37	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus* sp. L complex	5	6	1	0	0	3	0	0	0		6	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cryptochironomus* spp.	2	2	1	0	0	0	0	0	0		0	0	2
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum scalaenum* group	9	11	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum flavum*	7	9	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheotanytarsus* spp.	6	7	1	0	0	0	7	1	0		7	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tribelos fuscicorne*	2	2	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Stenochironomus* spp.	3	3	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Paratanytarsus* spp.	1	1	1	0	0	0.5	0	0	0		1	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Orthocladius* spp.	1	1	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cricotopus* or *Orthocladius*	2	2	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Simuliidae	*Simulium* spp.	5	5	1	0	0	0	5	1	0		0	1	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Ceratopogonidae	Ceratopogoninae spp.	3	3	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Ceratopogonidae	*Atrichopogon* spp.	1	1	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Megaloptera	Corydalidae	*Corydalus cornutus*	1	1	1	0	0	0	0	0	1		0	0	0
Arthropoda	Chelicerata	Arachnida	Acari	Trombidiformes	Hygrobatidae	*Hygrobates* spp.	2	2	1	0	0	0	0	0	0		0	0	0

Table 4 SCI full results for Sample B

Stream Condition Index Results for Blackwater Creek SCIB

Phylum	Subphylum	Class	Subclass	Order	Family	Taxa	Abundance	Collapsed Abundance	Taxa Presence	Ephemeroptera Taxa	Trichoptera Taxa	50% Filterer	100% Filterer	Clinger Taxa	Long-lived Taxa	Dominant Taxa	Tanytarsini	Sensitive Taxa	Very Tolerant Individuals
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	Tubificinae spp.	1	1	1	0	0	0	0	0	0		0	0	0
Mollusca		Gastropoda	Caenogastropoda	Littorinimorpha	Amnicolidae	*Amnicola dalli*	7	7	1	0	0	0	0	0	0		0	0	0
Mollusca		Gastropoda	Caenogastropoda	Littorinimorpha	Hydrobiidae	*Pyrgophorus platyrachis*	6	6	1	0	0	0	0	0	0		0	0	6
Mollusca		Bivalvia	Autobranchia	Venerida	Cyrenidae	*Corbicula* spp.	1	1	1	0	0	0	1	0	1		0	0	0
Mollusca		Bivalvia	Autobranchia	Sphaeriida	Sphaeriidae	Sphaeriidae spp.	1	1	1	0	0	0	1	0	0		0	0	0
Mollusca		Bivalvia	Autobranchia	Sphaeriida	Sphaeriidae	*Eupera cubensis*	1	1	1	0	0	0	1	0	0		0	0	0
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Decapoda	Palaemonidae	*Palaemon* spp.	1	1	1	0	0	0	0	0	1		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	Baetidae spp.	4	4	1	1	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	*Callibaetis floridanus*	2	2	1	1	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	*Labiobaetis propinquus*	1	1	1	1	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	*Acerpenna pygmaea*	1	1	1	1	0	0	0	0	0		0	1	0
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Heptageniidae	Heptageniidae spp.	1		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Heptageniidae	*Stenonema* spp.	2	3	1	1	0	0	0	1	0		0	1	0
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Leptohyphidae	*Tricorythodes albilineatus*	7	7	1	1	0	0	0	0	0		0	1	0
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Coenagrionidae	*Enallagma* spp.	1	1	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Leptoceridae	*Oecetis* spp.	1	1	1	0	1	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	Hydropsychidae spp.	1		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Cheumatopsyche* spp.	5	6	1	0	1	0	6	1	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	Elmidae spp.	2		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Dubiraphia* spp.	6	8	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Stenelmis* spp.	1	1	1	0	0	0	0	1	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Microcylloepus* spp.	4	4	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera		Diptera spp.	5		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Chironomidae spp.	4		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Ablabesmyia mallochi*	1	1	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Pentaneura inconspicua*	2	2	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Labrundinia* spp.	2	2	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cladotanytarsus* spp.	1	1	1	0	0	0.5	0	0	0		1	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus* spp.	2		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus buckleyi*	31	37	1	0	0	18.5	0	0	0		37	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus* sp. L complex	6	7	1	0	0	3.5	0	0	0		7	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cryptochironomus* spp.	1	1	1	0	0	0	0	0	0		0	0	1
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum scalaenum* group	11	13	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum flavum*	13	15	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum illinoense* group	3	3	1	0	0	0	0	0	0		0	0	3
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheotanytarsus* spp.	4	4	1	0	0	0	4	1	0		4	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tribelos fuscicorne*	1	1	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Dicrotendipes* spp.	1	1	1	0	0	0.5	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Axarus* spp.	1	1	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cricotopus* or *Orthocladius*	2	2	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Simuliidae	*Simulium* spp.	5	5	1	0	0	0	5	1	0		0	1	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Ceratopogonidae	Ceratopogoninae spp.	5	5	1	0	0	0	0	0	0		0	0	0

Water Quality Assessment

Recent and long-term water quality data is available for Blackwater Creek. The data that is available was collected by the Hillsborough County Environmental Protection Commission at site 143 between 7/19/2017 and 7/14/2025. The 2025 USF Water Institute Assessment values fall within the range of the previous data collections. Table 6 provides a summary of the Physical/Chemical conditions recorded at the site.

Table 6 Blackwater Creek Physical Water Quality (Field) from 4/3/2025

WATER QUALITY	Depth (m)	Temp (°C)	pH (SU)	D.O. (MG/L)	D.O. Sat (%)	Cond. (µmhos/cm)	Salinity (PPT)	SECCHI (m)
Top:	0.3	21.92	7.6	7.54	85.5	416	0.2	0.5
Mid:								
Bottom:								
Meter ID:								

x VOB

Total Depth 0.5

The chemical water quality analysis for Blackwater Creek is shown in Table 7 with geometric mean values for the previous 3 years for available parameters. To calculate numeric nutrient criteria values there must be at least 4 samples during each year for the past three years.

The previous 3-year geometric mean values for Total Phosphorus values were below the nutrient region threshold developed by FDEP of 0.49 mg/L with a geometric mean value of 0.273 mg/L (2022), 0.304 mg/L (2023) and 0.343 mg/L (2024). The incomplete 2025 data have a geometric mean value of 0.342 mg/L. The period of record geometric mean value for total phosphorus was 0.336 mg/L.

Total Nitrogen values were below the nutrient region threshold developed by FDEP of 1.65 mg/L for the previous three-year period with a mean value of 0.753 mg/L (2022), 0.798 mg/L (2023) and 1.024 mg/L (2024). The incomplete 2025 data have a geometric mean value of 1.087 mg/L. The Total Nitrogen value from the period of record data was below the threshold with a concentration of 0.851 mg/L.

Chlorophyll-a corrected values fall below the site specific evaluation range of 3.2 µg/L to 20 µg/l for two of the most recent 3-years of samples (2.03 µg/L in 2022, 3.00 µg/L in 2023, 4.63 µg/L in 2024). The incomplete 2025 data have a geometric mean value of 5.01 µg/L. For sites with Chlorophyll-a values in this range, the assessment indicates conditions reflecting a balance in flora. The period of record geometric mean value for Chlorophyll-a corrected is 2.95 µg/L.

An low biomass of the bacterial parameters was observed in the 3-year dataset with Escherichia Coli having a geometric mean 143 colonies/100 ml, 299 colonies/100 ml for Enterococci.

Table 7 Blackwater Creek Water Quality (Laboratory)

Parameter	2022	2023	2024	2025	Period of Record	Units
E. Coli	91	100	71	90	97	#/100 ml
Enterococci	168	157	166	143	228	#/100 ml
Chlorophyll-a	2.40	3.50	5.71	5.75	3.62	µg/L
Chlorophyll-b	0.22	0.33	0.52	0.53	0.52	µg/L
Chlorophyll-c	0.6	0.67	0.69	0.67	0.65	µg/L
Chlorophyll-a Corrected	2.03	3.00	4.63	5.01	3.18	µg/L
Ammonia	0.037	0.059	0.068	0.057	0.038	mg/L
Kjeldahl Nitrogen	0.629	0.632	0.741	0.783	0.702	mg/L
Total Nitrogen	0.753	0.798	1.024	1.087	0.851	mg/L
Nitrates/Nitrites	0.103	0.152	0.230	0.301	0.153	mg/L
Total Phosphorus	0.273	0.304	0.343	0.342	0.336	mg/L

Conclusion

Blackwater Creek at Highway 39 is located in a mixture of natural, residential and field/pasture land uses. At the time of the habitat assessment, the water levels were normal for the dry season. The 100-meter region where the assessment was conducted was characterized by an artificially straightened channel with steep banks and some alterations to the vegetation community. Snag, fine roots and rock were the most common productive habitat present. The Habit Assessment resulted in a suboptimal score of 96. Disruption to the vegetation community was not assessed in the results of the Linear Vegetation Survey due to less than two square meters of rooted vegetation present in the currently wet portion of the stream. Blackwater Creek did not meet the metrics for the rapid periphyton survey with 46% of samples being ranked between 4 and 6. The recent water quality record for Blackwater Creek showed concentrations of Chlorophyll-a corrected, Total Phosphorous and Total Nitrogen below the FDEP thresholds. The results of the SCI sampling indicate that the stream is "exceptional" based on the macroinvertebrate community. Table 8 summarizes the results of nutrient sampling, floristic sampling, habitat assessment and SCI.

Table 8 Summary of Water Quality, Floristic Surveys and Habitat Assessments

Measure		Blackwater Creek	2022	2023	2024	Threshold
Total Phosphorous (mg/l)			0.273	0.304	0.343	< 0.49
Total Nitrogen (mg/l)			0.753	0.798	1.024	< 1.65
RPS (% Rank 4-6)		46%				< 25%
LVS	**Avg C of C**	<2 meters				≥ 2.5
	FLEPPC %	<2 meters				< 25%
Chlorophyll-a Corrected (µg/l)			2.03	3.00	4.63	< 20 µg/l
Habitat Assessment		96				> 34
SCI		81				> 34