Carlton Branch Creek

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

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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 WBID containing the stream. 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

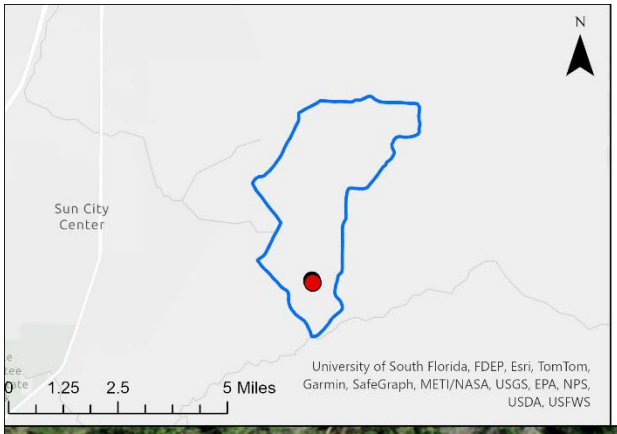
The Stream Condition Index (SCI) was sampled and calculated per DEP SOP SCI 1000. The SCI consists of collecting macroinvertebrates via 20 D-frame dipnet sweeps (0.5 m in length) in the most productive habitats in a 100 m reach of stream. The organisms are sub-sampled, and identified to the lowest practical 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

Carlton Branch Creek is located in south-central Hillsborough County in the Middle Tampa Bay Watershed. Its headwaters are located south of Highway 672 and Dupree Road in Hillsborough County. The outfall of Carlton Branch is in Little Manatee River. The assessment of Carlton Branch Creek was conducted south of State Road 674 and east of Chert Rock Trail in Hillsborough County on April 8th, 2024 and, at that time, the water levels were normal for the dry season. The Carlton Branch Creek WBID covers 7.99 square miles (6,368 acres), and is dominated by forest/natural (51.8%) and field/pasture (29.5%) land uses. The resulting calculated landscape development intensity index score was a 2.93.



Carlton Branch
WBID 1724

Mouth - Little Manatee River
Area - 6368 Acres, (7.981 Sq miles)
Landscape Development Intensity - 59.4
Stream Habitat Assessment - 87
Rapid Periphyton Survey - % ranked 4-6 - 18
Linear Vegetation Survey - Mean Coefficient of Conservatism - 2.93
% FLEPPC - 25%
Stream Condition Index - 80

Figure 1 2023 Carlton Branch Creek Study Area Map

Figure 2 Photograph of the Carlton Branch Creek Sample Site showing the typical sandy sediment of the streambed and normal water conditions.

Habitat and Vegetation Assessment

The region of Carlton Branch where the assessment was conducted is south of State Road 674. The region was moderately shaded with a mean canopy cover measurement of 60.8%. Carlton Branch Creek averaged 0.2 meters in depth and approximately 3.75 meters wide with a flow of 0.27 m/s.

The primary habitat components of the FDEP Habitat Assessment focus on in-water habitat. The primary habitat components score in the optimal category for Water Velocity (0.26 m/s). Habitat Smothering was scored in the suboptimal category for having an adequate number of stable pools with many productive habitats affected by sand smothering. Substrate Diversity was scored in the poor category for having one major productive habitat (snag) present in the stream. Substrate Availability was scored as poor for having major productive habitats in only 4.41% of the stream. Minor habitats included roots, leaf packs/mats 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 suboptimal category for Artificial Channelization for having good sinuosity with spoil banks or evidence of straightening. Riparian Buffer Zone Width for the left bank scored in the optimal category (>18 meters). Riparian Zone Vegetation Quality for the left bank scored in the suboptimal category (visible disruption in plant community). Bank Stability for the left bank (slope is consistently too steep), Riparian Buffer Zone Width for the right bank (average of 6 to 12 meters), and Riparian Zone Vegetation Quality for the right bank (visible disruption in plant community) are scored in the marginal category. Bank Stability for the right bank scored in the poor category (slope is consistently too steep). The secondary components received a score of 46 out of 80. The resulting FDEP Habitat Assessment score was an 87.

Table 1 Scoring Summary for the Stream Habitat Assessment

Metric	Score
Primary Habitat Components	
Substrate Diversity	8
Substrate Availability	5
Water Velocity	17
Habitat Smothering	11
Primary Score	**41**
Secondary Habitat Components	
Artificial Channelization	12
Bank Stability - Right Bank	3
Bank Stability - Left Bank	5
Riparian Buffer Zone Width - Right Bank	5
Riparian Buffer Zone Width - Left Bank	9
Riparian Zone Vegetation Quality - Right Bank	4
Riparian Zone Vegetation Quality - Left Bank	8
Secondary Score	**46**
Habitat Assessment Score	**87**

Periphyton was encountered during 27 of the 99 samples taken during the Rapid Periphyton Survey. 9 samples were ranked 3 for being between >1 mm and 6 mm in length. 4 samples were ranked 4 for being between >6 mm and 20 mm in length. 3 samples were ranked 5 for being between > 20 mm and 10 cm in length. 8 samples were ranked 6 for being >10 cm in length. The tree canopy in the assessment area averaged 60.8% reducing available light for periphyton to flourish.

The FDEP Linear Vegetation Survey encountered more than two square meters of rooted herbaceous vegetation in Carlton Branch Creek at the time of the assessment. 10 total species were encountered within the total region, with no dominant species being noted.

Table 2 Linear Vegetation Survey Results – Carlton Branch 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	
Acrostichum danaeifolium	5.79			P	P		P					3
Alternanthera philoxeroides	0		P						P	P	P	4
Boehmeria cylindrica	5	P								P		2
Cicuta maculata	4.54								P	P	P	3
Commelina diffusa	2.02	P	P	P	P	P	P	P	P	P	P	10
Drymaria cordata	2.72									P		1
Hydrocotyle	2						P					1
Ludwigia peruviana	0		P				P	P	P			4
Micranthemum umbrosum	5.66	P	P		P	P	P	P		P		7
Urochloa mutica	0	P										1

Figure 3 A photograph of snag (major productive habitat) in Carlton Branch Creek.

Figure 4 typical vegetation community in Carlton Branch Creek.

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 separately. The final SCI score is an average of the two scores. The SCI score for Carlton Branch Creek was 80 out of a possible 100 points, corresponding with a "Category 1 - Exceptional" designation, with the expected community of a healthy stream. Both 2024 sub samples featured high total taxa, total trichoptera, total clingers, % dominance, % tanytarsini metrics. In addition, Sample A had high scores for % very tolerant individuals and Sample B had high scores for the total sensitive taxa metric. The only low scoring metric among the two samples was the total sensitive taxa in sample A. The full results of the SCI sampling are shown in Table 3 (Sample A) and Table 4 (Sample B) for Carlton Branch Creek.

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

SCI Metric	Raw Totals	SCI scores	Adjusted SCI scores
Total Taxa	40.00	10.42	10.00
Total Ephemeroptera	2.00	4.00	4.00
Total Trichoptera	8.00	11.43	10.00
% Filter Feeders	21.10	4.75	4.75
Total Clingers	5.00	7.14	7.14
Total Long-lived Taxa	2.00	6.67	6.67
% Dominance	16.23	9.55	9.55
% Tanytarsini	16.23	8.37	8.37
Total Sensitive Taxa	1.00	1.43	1.43
% Very Tolerant Individuals	5.19	7.19	7.19

SCI Sum	69.10
Final SCI score	76.78

SCI Metric	Raw Totals	SCI scores	Adjusted SCI scores
Total Taxa	42.00	11.25	10.00
Total Ephemeroptera	3.00	6.00	6.00
Total Trichoptera	6.00	8.57	8.57
% Filter Feeders	18.75	4.20	4.20
Total Clingers	6.00	8.57	8.57
Total Long-lived Taxa	2.00	6.67	6.67
% Dominance	13.82	10.04	10.00
% Tanytarsini	13.82	7.93	7.93
Total Sensitive Taxa	5.00	7.14	7.14
% Very Tolerant Individuals	8.55	6.11	6.11

SCI Sum	75.19
Final SCI score	83.54

Table 3 SCI full results for Sample A

Stream Condition Index Results for Carlton Branch 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
Platyhelminthes						Platyhelminthes spp.	1	1	1	0	0	0	0	0	0		0	0	0
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	Tubificinae spp.	2	2	1	0	0	0	0	0	0		0	0	0
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Aulodrilus pluriseta*	2	2	1	0	0	0	0	0	0		0	0	0
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Stylaria fossularis*	2	2	1	0	0	0	0	0	0		0	0	0
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Slavina appendiculata*	1	1	1	0	0	0	0	0	0		0	0	0
Mollusca		Gastropoda	Caenogastropoda	Littorinimorpha	Hydrobiidae	*Pyrgophorus platyrachis*	1	1	1	0	0	0	0	0	0		0	0	1
Mollusca		Bivalvia	Autobranchia	Venerida	Cyrenidae	*Corbicula* spp.	4	4	1	0	0	0	4	0	1		0	0	0
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Amphipoda	Hyalellidae	*Hyalella* spp.	3	3	1	0	0	0	0	0	0		0	0	0
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Decapoda	Atyidae	*Neocaridina denticulata*	4	4	1	0	0	0	0	0	1		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Caenidae	*Caenis* spp.	1	1	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	Odonata	Coenagrionidae	Coenagrionidae spp.	3	2	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Coenagrionidae	*Argia sedula*	2	3	1	0	0	0	0	0	0		0	0	3
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Leptoceridae	*Oecetis persimilis*	4	4	1	0	1	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Leptoceridae	*Nectopsyche pavida*	1	1	1	0	1	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Leptoceridae	*Nectopsyche candida/exquisita*	2	2	1	0	1	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Leptoceridae	*Triaenodes* spp.	2		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Leptoceridae	*Triaenodes ignitus*	1	3	1	0	1	0	0	0	0		0	1	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	Hydropsychidae spp.	2		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	Trichoptera	Hydroptilidae	*Hydroptila* spp.	4	4	1	0	1	0	0	1	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydroptilidae	*Neotrichia* spp.	1	1	1	0	1	0	0	1	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Dubiraphia* spp.	5	5	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Stenelmis* spp.	5	5	1	0	0	0	0	1	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Microcylloepus* spp.	25	25	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Chironomidae spp.	1		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Pentaneura inconspicua*	1	1	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cladotanytarsus* cf. *davesi*	18	19	1	0	0	9.5	0	0	0		19	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum* spp.	1		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum scalaenum* group	7	8	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum flavum*	10	10	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum illinoense* group	1	1	1	0	0	0	0	0	0		0	0	1
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum fallax* group	7	7	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheotanytarsus* spp.	1		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheotanytarsus exiguus* group	5	6	1	0	0	0	6	1	0		6	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	*Stenochironomus* spp.	2	2	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Paracladopelma* spp.	1	1	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Ceratopogonidae	Ceratopogoninae spp.	1	1	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	Heteroptera	Veliidae	Veliidae spp.	1		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Heteroptera	Veliidae	*Rhagovelia* spp.	2	3	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Heteroptera	Nepidae	*Ranatra* spp.	1	1	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Lepidoptera		Lepidoptera spp.	2	1	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Lepidoptera	Crambidae	*Neargyractis slossonalis*	2	3	1	0	0	0	3	0	0		0	0	3

Table 4 SCI full results for Sample B

Stream Condition Index Results for Carlton Branch 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
Platyhelminthes						Platyhelminthes spp.	2	2	1	0	0	0	0	0	0		0	0	0
Nemertea		Hoplonemertea		Monostilifera	Prostomatidae	*Prostoma* spp.	1	1	1	0	0	0	0	0	0		0	0	1
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	Tubificinae spp.	2	2	1	0	0	0	0	0	0		0	0	0
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Aulodrilus pluriseta*	1	1	1	0	0	0	0	0	0		0	0	0
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Pristina americana*	1	1	1	0	0	0	0	0	0		0	0	0
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Nais communis*	4	4	1	0	0	0	0	0	0		0	0	4
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Stylaria fossularis*	3	3	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	Physidae	*Physa acuta*	3	3	1	0	0	0	0	0	0		0	0	3
Mollusca		Bivalvia	Autobranchia	Venerida	Cyrenidae	*Corbicula* spp.	4	4	1	0	0	0	4	0	1		0	0	0
Mollusca		Bivalvia	Autobranchia	Sphaeriida	Sphaeriidae	Sphaeriidae spp.	1	1	1	0	0	0	1	0	0		0	0	0
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Decapoda	Atyidae	*Neocaridina denticulata*	5	5	1	0	0	0	0	0	1		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Caenidae	*Caenis* spp.	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*	2	2	1	1	0	0	0	0	0		0	1	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Polycentropodidae	*Neureclipsis crepuscularis*	1	1	1	0	1	0.5	0	1	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Leptoceridae	Leptoceridae spp.	1		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Leptoceridae	*Oecetis persimilis*	9	9	1	0	1	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Leptoceridae	*Nectopsyche candida/exquisita*	4	5	1	0	1	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Leptoceridae	*Triaenodes* spp.	2		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Leptoceridae	*Triaenodes ignitus*	1	3	1	0	1	0	0	0	0		0	1	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	Hydropsychidae spp.	5		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Cheumatopsyche* spp.	4	9	1	0	1	0	9	1	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydroptilidae	*Hydroptila* spp.	9	9	1	0	1	0	0	1	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	3	1	0	0	0	0	1	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Microcylloepus* spp.	21	21	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Curculionidae	Curculionidae spp.	1	1	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Chironomidae spp.	1		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	Chironominae spp.	2		0	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	*Cladotanytarsus* cf. *davesi*	13	15	1	0	0	7.5	0	0	0		15	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* spp.	1		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum scalaenum* group	3	3	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum flavum*	7	8	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum illinoense* group	2	2	1	0	0	0	0	0	0		0	0	2
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum fallax* group	6	7	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheotanytarsus* spp.	2		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheotanytarsus exiguus* group	3	5	1	0	0	0	5	1	0		5	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Stenochironomus* spp.	2	2	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Orthocladiinae spp.	2	1	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheocricotopus robacki*	1	1	1	0	0	0	0	0	0		0	1	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cricotopus* or *Orthocladius*	1	2	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Simuliidae	*Simulium* spp.	1	1	1	0	0	0	1	1	0		0	1	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Ceratopogonidae	*Atrichopogon* spp.	2	2	1	0	0	0	0	0	0		0	0	0
Arthropoda	Chelicerata	Arachnida	Acari	Trombidiformes	Lebertiidae	*Lebertia* spp.	1	1	1	0	0	0	0	0	0		0	1	0
Arthropoda	Chelicerata	Arachnida	Acari	Trombidiformes	Clathrosperchonidae	*Clathrosperchon* spp.	1	1	1	0	0	0	0	0	0		0	0	0

Water Quality Assessment

Long-term water quality data is available for Carlton Branch Creek. The data that is available was collected by the Hillsborough County Environmental Protection Commission, US Geological Survey and Florida Department of Environmental Protection. The available dataset at Carlton Branch Creek at Highway 674 begins in 1988 and continues through present. The 2024 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 Carlton Branch Creek Physical Water Quality (Field)

WATER QUALITY	Depth (m)	Temp (°C)	pH (SU)	D.O. (MG/L)	D.O. Sat (%)	Cond. (µmhos/cm)	Salinity (PPT)	SECCHI (m)
Top:								1.4
Mid:	0.2	19.36	6.95	9.29	94.6	180.1	0.08	
Bottom:								
Meter ID:								

VOB

Total Depth

The chemical water quality analysis for Carlton Branch Creek is shown in Table 7 with geometric mean values for the previous 3 years for available parameters. The previous 3-year geometric mean values for Total Phosphorous values were below the nutrient region threshold developed by FDEP of 0.49 mg/L with a geometric mean value of 0.106 mg/L (2022), 0.154 mg/L (2023) and 0.088 mg/L (2024). Total Phosphorous values for the period of record samples was 0.148 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 1.359 mg/L (2022), 1.629 mg/L (2023) and 1.498 mg/L (2024). The Total Nitrogen value from the period of record data was below the threshold with a concentration of 1.364 mg/L. Chlorophyll-a corrected values fall below the site specific evaluation range of 3.2 µg/l to 20 µg/l for the most recent 3-years of samples (1.3 µg/l in 2022, 1.84 µg/l in 2023, 1.3 µg/l in 2024). For sites with Chlorophyll-a values in this range, the assessment is indicating conditions reflecting a balance in flora.

An elevated biomass of the bacterial parameters was observed in the 3-year dataset with E. Coli having a geometric mean of 987.8 colonies/100 ml, 2,464/100 ml for Enterococci.

Table 7 Carlton Branch Creek Water Quality (Laboratory)

Parameter	2021	2022	2023	2024	Period of Record	Units
E. Coli	468.6	749.4	1629.6	584.5	727.6	#/100 ml
Enterococci	1557.2	1681.9	4910.4	800	2108.7	#/100 ml
Chlorophyll-a	1.67	1.3	1.84	1.3	1.56	µg/L
Chlorophyll-b	0.47	0.25	0.27	0.2	0.63	µg/L
Chlorophyll-c	0.87	0.62	0.6	0.6	0.65	µg/L
Chlorophyll-a Corrected	1.62	1.5	1.5	1.5	1.86	µg/L
Ammonia	0.04	0.06	0.06	0.05	0.03	mg/L
Kjeldahl Nitrogen	0.44	0.53	0.51	0.44	0.49	mg/L
Total Nitrogen	0.90	1.36	1.63	1.50	1.36	mg/L
Nitrates/Nitrites	0.32	0.79	1.00	10.3	0.85	mg/L
Total Phosphorous	0.15	0.11	0.15	0.09	0.15	mg/L

Conclusion

Carlton Creek at Highway 674 is located in a predominantly natural easement near agriculture 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 a natural sinuous channel with steep banks and alterations to the vegetation community. Snag was the most common productive habitat present. The Habit Assessment resulted in a suboptimal score of 87. Disruption to the vegetation community was not observed in the results of the Linear Vegetation Survey with the Mean CofC score and Percent FLEPPC metrics both being met. Carlton Branch Creek met the metrics for the rapid periphyton survey with 18% of samples being ranked between 4 and 6 due in part to the moderate canopy coverage in the region. The recent water quality record for Carlton Branch 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 the nutrient sampling, floristic sampling, habitat assessment and SCI.

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

Measure		Carlton Branch Creek	2022	2023	2024	Threshold
Total Phosphorous (mg/l)			0.11	0.15	0.09	< 0.49
Total Nitrogen (mg/l)			1.36	1.63	1.50	< 1.65
RPS (% Rank 4-6)		18%				< 25%
LVS	**Avg C of C**	2.93				≥ 2.5
	FLEPPC %	25.0%				< 25%
Chlorophyll-a Corrected (µg/l)			1.5	1.5	1.5	< 20 µg/l
Habitat Assessment		87				> 34
SCI		80				> 34