Brushy 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 10.2. Using this software with 2016 Hillsborough County aerial, 2011 Land Use/ Land Cover (LULC) and Watershed boundary (WBID) layers courtesy of the Florida Department of Environmental Protection. The Landscape Development Intensity Index (LDI) was calculated for the WBID containing the stream. From FDEP "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 Florida Department of Environmental Protection (DEP) 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 Florida Department of Environmental Protection 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 two sampling locations 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. 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 LT 7000 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 at: http://www.fleppc.org/list/11list.html

STREAM CONDITION INDEX ASSESSMENT

The Stream Condition Index (SCI) was sampled per DEP SOP FS7420 and calculated per DEP SOP LT7200. 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 LT 7000, the SCI score ranges and categories are: (68-100) Exceptional; (35-67) Healthy; and (0-34) Impaired. Proposed biological health assessment criteria state that a site is considered to meet designated uses if the average of the two most recent SCI scores is 40 or higher and neither 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 Environmental Protection Commission of Hillsborough County 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.

Study Area

Brushy Creek is located in north central Hillsborough County. Its headwaters are located east of Highway 589 and the outfall of Brushy Creek is in Rocky Creek. The assessment of Brushy Creek was conducted on February 5, 2018. At the time of the assessment, the water levels were normal for the time of year. The Brushy Creek WBID covers 5.73 square miles and is dominated by residential (63.5%), natural (15.0%), commercial (5.1%) and institutional (3.3%). The resulting calculated landscape development intensity index score was 6.90.

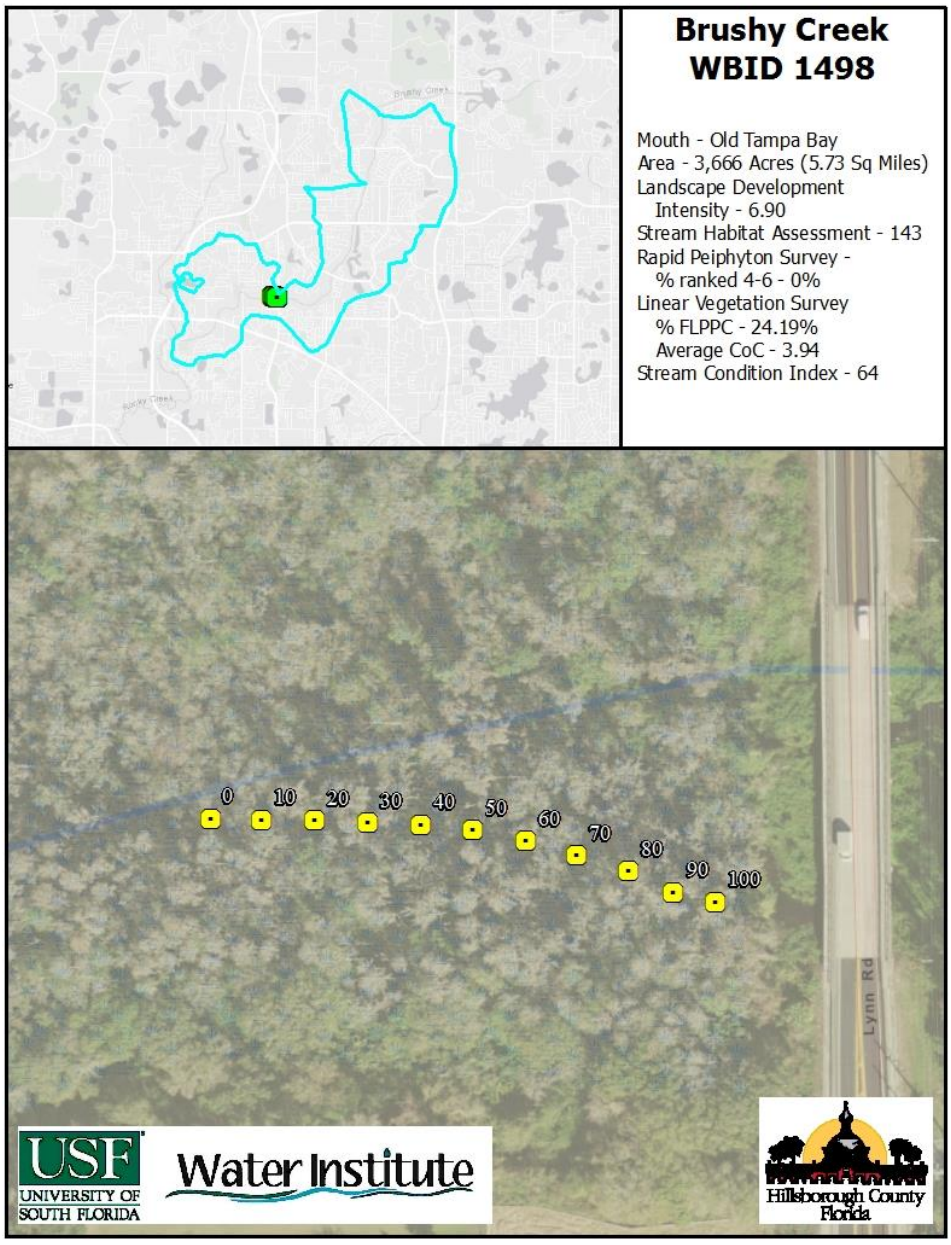

Figure 1 2019 Brushy Creek Study Area Map

Habitat and Vegetation Assessment

The region of Brushy Creek where the assessment was conducted is in a dominant residential area with a natural buffer immediately surrounding the stream. The region was heavily shaded with a mean canopy cover measurement of 84.0%. Brushy Creek averaged 0.30 meters in depth, approximately 17 meters wide with a flow of 0.35 m/s. In this region, Brushy Creek was split into multiple braided channels.

The primary habitat components of the FDEP Habitat Assessment focus on in-water habitat. The primary habitat components score in the optimal category for Substrate Diversity (4 major productive habitats) and Water Velocity (0.35 m/s). Substrate Availability (24.5% of streams surface area) and Habitat Smothering scored in the suboptimal category due to amount of productive habitat and minor sand smothering with sufficient pools. Major habitats included aquatic macrophytes, roots, leaf packs and snag. Minor habitats included sand and silt. The total score for the primary habitat components was a 67 out of 80.

The secondary habitat components of the FDEP Habitat Assessment focus on the surrounding features of the stream. Brushy Creek flows through a corridor area of preserved property. At the water level at the time of assessment, Brushy Creek flows as a braided channel through a forested flood plain. The secondary habitat components scored in the optimal category for Artificial Channelization, Bank Stability, Riparian Buffer Width and Riparian Zone Vegetation Quality. The riparian buffer zone surrounding the stream was greater than 18 meters on both banks and consisted of native trees including *Taxodium, Nyssa* and *Fraxinus*. The vegetation in the stream itself was dominated by *Hygrophila polysperma,* a non-native invasive species likely from an upstream source. The secondary habitat components received a score of 76 out of 80. The resulting FDEP Habitat Assessment score was a 143 which is classified as 'Exceptional'.

Periphyton was not encountered during the 99 samples taken during the Rapid Periphyton Survey. The tree canopy in the assessment area averaged 84.0% limiting available sunlight.

The FDEP Linear Vegetation Survey encountered 22 herbaceous species rooted in the wetted area in Brushy Creek, five of which were non-native species. *Hygrophila polysperma* dominated the vegetation community accounting for 17.5 square meters. This non-native, invasive species are typically transmitted from upstream sources. Five of the species are considered sensitive native species with coefficient of conservatism values above 6.

Table 1 Linear Vegetation Survey Results – Brushy 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	
Blechnum serrulatum	5.5	1	1	1	1	1	1	1	1	1	1	10
Hygrophila polysperma	0	D	D	D	D	D	D	D	D	D	D	10
Limnophila sessiliflora	0	1	1	1	1	1	1	1	1	1	1	10
Mikania scandens	1.95	1	1	1	1	1	1	1	1	1	1	10
Orontium aquaticum	8.39	1	1	1	1	1	1	1	1	1	1	10
Osmunda regalis	7.6	1	1	1	1	1	1	1	1	1	1	10
Carex lupuliformis	5.5	1	1		1	1	1	1	1	1	1	9
Pontederia cordata	5.38	1		1	1	1	1	1	1	1	1	9
Hydrocotyle ranunculoides	2	1		1	1	1	1	1	1	1		8
Ilex cassine	6	1	1	1	1		1	1		1	1	8
Saururus cernuus	6.5	1	1	1	1	1	1	1				7
Alternanthera philoxeroides	0					1	1		1	1		4
Polygonum hydropiperoides	2.5	1		1				1		1		4
Ludwigia peruviana	0					1	1				1	3
Osmunda cinnamomea	6.44			1	1	1						3
Lemna	1	1	1									2
Schinus terebinthifolius	0								1		1	2
Symphyotrichum carolinianum	3.93							1	1			2
Boehmeria cylindrica	5										1	1
Rumex verticillatus	3.17						1					1
Urochloa mutica	0										1	1

Figure 3 Hygrophila polysperma dominated the vegetation community rooted in Brushy 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 Brushy Creek was 64 out of a possible 100 points, corresponding with an "Exceptional" designation, with the expected community of a healthy stream.

High scores were achieved for the Total Ephemeroptera, % Dominance and % Tanytarsini metrics in both subsamples. Both subsamples also contained sensitive taxa (1 in sample A, 2 in sample B). Both subsamples also contained Long Lived Taxa. Table 2 shows the metric calculations for the two subsamples. The full results of the SCI sampling are shown in Table 3 (Sample A) and Table 4 (Sample B) for Brushy Creek.

Table 2 SCI metric summaries for Brushy Creek

SCI Metric	Raw Totals	SCI scores	Adjusted SCI scores
Total Taxa	24.00	3.75	3.75
Total Ephemeroptera	4.00	8.00	8.00
Total Trichoptera	2.00	2.86	2.86
% Filter Feeders	25.63	5.80	5.80
Total Clingers	3.00	4.29	4.29
Total Long-lived Taxa	2.00	6.67	6.67
% Dominance	19.38	8.93	8.93
% Tanytarsini	16.88	8.48	8.48
Total Sensitive Taxa	1.00	1.43	1.43
% Very Tolerant Individuals	4.38	7.55	7.55

SCI Sum	57.74
Final SCI score	64.15

SCI Metric	Raw Totals	SCI scores	Adjusted SCI scores
Total Taxa	27.00	5.00	5.00
Total Ephemeroptera	4.00	8.00	8.00
Total Trichoptera	2.00	2.86	2.86
% Filter Feeders	28.00	6.35	6.35
Total Clingers	3.00	4.29	4.29
Total Long-lived Taxa	1.00	3.33	3.33
% Dominance	22.67	8.27	8.27
% Tanytarsini	21.33	9.14	9.14
Total Sensitive Taxa	2.00	2.86	2.86
% Very Tolerant Individuals	5.33	7.14	7.14

SCI Sum	57.22
Final SCI score	63.58

Table 3 SCI full results for Sample A

Stream Condition Index Results for Brushy Creek @ Turner Road SCIA

Phylum	Subphylum	Class	Subclass	Order	Family	Taxa	Abundance	Collapsed Abundance	Taxa Presence	Ephemeroptera	Trichoptera Taxa	50% Filterer	100% Filterer	Clinger Taxa	Long-lived Taxa	Dominant Taxa	Tanytarsini	Sensitive Taxa	Very Tolerant	Specimen Notes
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Slavina appendiculata*	2	2	1	0	0	0	0	0	0		0	0	0	
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Ancylidae	Ancylidae spp.	25	25	1	0	0	0	0	0	0		0	0	0	Damaged
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Physidae	*Physella cubensis*	1	1	1	0	0	0	0	0	0		0	0	1	
Mollusca		Gastropoda	Caenogastropo	Littorinimorpha	Hydrobiidae	*Pyrgophorus platyrachis*	1	1	1	0	0	0	0	0	0		0	0	1	
Mollusca		Gastropoda	Caenogastropo	Littorinimorpha	Hydrobiidae	*Amnicola dalli*	4	4	1	0	0	0	0	0	0		0	0	0	
Mollusca		Bivalvia	Heterodonta	Veneroida	Corbiculidae	*Corbicula* spp.	2	2	1	0	0	0	2	0	1		0	0	0	
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Amphipoda	Dogielinotidae	*Hyalella azteca* sp. complex	5	5	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Decapoda	Palaemonidae	*Palaemon* spp.	3	3	1	0	0	0	0	0	1		0	0	0	Damaged
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Caenidae	*Caenis* spp.	1	1	1	1	0	0	0	0	0		0	0	0	Immature
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	Baetidae spp.	1	1	1	1	0	0	0	0	0		0	0	0	Damaged, not A. pygmaea or L. propinquus
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*	5	5	1	1	0	0	0	0	0		0	1	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Coenagrionidae	Coenagrionidae spp.	3	3	1	0	0	0	0	0	0		0	0	0	Damaged and/or immature
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	Hydropsychidae spp.	3		0	0	0	0	0	0	0		0	0	0	Damaged and/or immature
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Cheumatopsyche* spp.	9	12	1	0	1	0	12	1	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydroptilidae	*Neotrichia* spp.	5	5	1	0	1	0	0	1	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Dubiraphia* spp.	4	4	1	0	0	0	0	0	0		0	0	0	2 larvae, 2 adults
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Microcylloepus* spp.	16	16	1	0	0	0	0	0	0		0	0	0	15 larvae, 1 adult
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera		Diptera spp.	1		0	0	0	0	0	0	0		0	0	0	pupa, no posterior end
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Chironomidae spp.	1		0	0	0	0	0	0	0		0	0	0	pupa
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum flavum*	31	31	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum illinoense* group	5	5	1	0	0	0	0	0	0		0	0	5	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheotanytarsus exiguus* group	27	27	1	0	0	0	27	1	0		27	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	*Corynoneura* spp.	3	3	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Thienemanniella* spp.	1	1	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Nanocladius* spp.	1	1	1	0	0	0	0	0	0		0	0	0	

Table 4 SCI full results for Sample B

Stream Condition Index Results for Brushy Creek @ Turner Road SCIB

Phylum	Subphylum	Class	Subclass	Order	Family	Taxa	Abundance	Collapsed Abundance	Taxa Presence	Ephemeroptera	Trichoptera Taxa	50% Filterer	100% Filterer	Clinger Taxa	Long-lived Taxa	Dominant Taxa	Tanytarsini	Sensitive Taxa	Very Tolerant	Specimen Notes
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Aulodrilus pigueti*	1	1	1	0	0	0	0	0	0		0	0	0	
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Nais communis*	1	1	1	0	0	0	0	0	0		0	0	1	
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Ancylidae	Ancylidae spp.	17	17	1	0	0	0	0	0	0		0	0	0	Damaged and/or immature
Mollusca		Gastropoda	Caenogastropo	Littorinimorpha	Hydrobiidae	Hydrobiidae spp.	1	1	1	0	0	0	0	0	0		0	0	0	not A. dalli
Mollusca		Gastropoda	Caenogastropo	Littorinimorpha	Hydrobiidae	*Amnicola dalli*	3	3	1	0	0	0	0	0	0		0	0	0	
Mollusca		Bivalvia	Heterodonta	Veneroida	Corbiculidae	*Corbicula* spp.	2	2	1	0	0	0	2	0	1		0	0	0	
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Amphipoda	Dogielinotidae	*Hyalella azteca* sp. complex	4	4	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Caenidae	*Caenis diminuta*	2	2	1	1	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	Baetidae spp.	1	1	1	1	0	0	0	0	0		0	0	0	Damaged, not A. pygmaea or L. propinquus
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*	4	4	1	1	0	0	0	0	0		0	1	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Coenagrionidae	Coenagrionidae spp.	4	4	1	0	0	0	0	0	0		0	0	0	Damaged and/or immature
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Leptoceridae	*Triaenodes* spp.	1	1	1	0	1	0	0	0	0		0	1	0	Immature
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	Hydropsychidae spp.	2		0	0	0	0	0	0	0		0	0	0	Immature
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Cheumatopsyche* spp.	7	9	1	0	1	0	9	1	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Dubiraphia* spp.	4	4	1	0	0	0	0	0	0		0	0	0	1 larva, 3 adults
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Stenelmis* spp.	1	1	1	0	0	0	0	1	0		0	0	0	larva
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Microcylloepus* spp.	15	15	1	0	0	0	0	0	0		0	0	0	14 larvae, 1 adult
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Dryopidae	Dryopidae spp.	1	1	1	0	0	0	0	0	0		0	0	0	larva
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus* spp.	1	1	1	0	0	0.5	0	0	0		1	0	0	not T. sp L Epler
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus* sp. L	1	1	1	0	0	0.5	0	0	0		1	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum flavum*	34	34	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum illinoense* group	7	7	1	0	0	0	0	0	0		0	0	7	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Rheotanytarsus exiguus*	30	30	1	0	0	0	30	1	0		30	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	*Stenochironomus* spp.	2	2	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Corynoneura* spp.	1	1	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cricotopus* or *Orthocladius*	1	1	1	0	0	0	0	0	0		0	0	0	

Water Quality Assessment

Limited long-term water quality data is available for Brushy Creek. The data that is available was collected by the Hillsborough County Environmental Protection Commission. Values for the physical water parameters begin in 2005 and continue through present. Values for the laboratory water parameters begin in 2005 through present including the sample taken along with this assessment. The 2019 USF Water Institute Assessment fall within the range of the previous data collections. Table 5 provides a summary of the Physical/Chemical conditions recorded at the site.

Table 5 Brushy Creek Physical Water Quality (Field)

Brushy Creek								
Date	**Depth (m)**	**Temp (°C)**	**pH**	**DO (mg/L)**	**DO (% Sat)**	**Cond (UMHO/cm**	**Salinity (PPT)**	**Secchi Depth (m)**
2/5/19	0.49	14.27	7.95	9.12	87.4	196.8	0.09	0.5 VOB
Mean POR		26.71	7.28	6.65	76.12	373.7	0.18	0.43

The chemical water quality analysis for Brushy Creek is shown in Table 6 along with mean values for the period of record for available parameters. Period of record mean and the sample for this assessment for Total Phosphorous values were below the nutrient region threshold developed by FDEP of 0.49 mg/L with a mean value of 0.098 mg/L (2005-2019). The three year geometric mean of Total Phosphorous was 0.078 mg/L. Total Phosphorous values for the sample from this assessment were 0.059 mg/L. Total Nitrogen values were below the nutrient region threshold developed by FDEP of 1.65 mg/L with a mean value of 1.012 mg/L (2005-2019). The three year geometric mean of Total Nitrogen was 0.838 mg/L. The Total Nitrogen value from the assessment was well below the threshold with a concentration of 0.943 mg/L. Chlorophyll-a corrected values fall within the site specific evaluation range of 3.2 µg/l to 20 µg/l for the period of record (3.38 µg/l 2005-2019), and below that value for the most recent sample (4.1 µg/l) . For sites with Chlorophyll-a values in this range, the assessment is inconclusive of conditions reflecting an imbalance in flora. Elevated biomass of the bacterial parameters was observed in the long term dataset (Enterococci 540/100 ml and E. Coli 314/100 ml).

Table 6 Brushy Creek Water Quality (Laboratory)

Parameter	Brushy Creek	POR Mean	Units
Alkalinity	38.0		mg/LCaCO3
Nitrates/Nitrites	0.071	0.202	mg/L
E. Coli	300	314	#/100 ml
Enterococci	273	540	#/100 ml
Chlorophyll a	3.5	3.52	ug/L
Chlorophyll b	0.5	1.38	ug/L
Chlorophyll c	0.4	0.86	ug/L
Chlorophyll t	3.8	5.03	ug/L
Chlorophylla Corr	4.1	3.38	ug/L
Chlorophyll-pheo	5.4	2.89	ug/L
Ammonia	0.021	0.051	mg/L
Kjeldahl Nitrogen	0.872	0.779	mg/L
Total Nitrogen	0.943	1.012	mg/L
Total Phosphorus	0.059	0.098	mg/L
Color(345)F.45	41.2	34.9	Pt/Co

Conclusion

Brushy Creek at Turner Rd is located in a residential dominated region with a preserve corridor surrounding the stream. The stream itself was primarily unaltered in the region assessed. At the time of the habitat assessment, the water levels were low, corresponding to the end of the dry season, however sufficient habitat for macroinvertebrates was observed. The Habit Assessment resulted in an optimal score of 143. Slight disruption to the vegetation community was observed in the results of the Linear Vegetation Survey with Brushy Creek meeting both metrics for Average Coefficient of Conservatism or the Percent FLEPPC, but was dominated by a non-native invasive species. Brushy Creek met standards for the rapid periphyton survey with 0% of samples being ranked between 4 and 6. The historical water quality record for Brushy Creek showed acceptable concentrations of Total Phosphorous and Total Nitrogen. The results of the SCI sampling indicate that the stream is "exceptional" based on the macroinvertebrate community. Table 7 summarizes the results of the nutrient sampling, floristic sampling, habitat assessment and SCI.

Table 7 Summary of Water Quality, Floristic Surveys and Habitat Assessments

Measure		Brushy Creek	Mean POR	Threshold
Total Phosphorous (mg/l)		0.059	0.098	< 0.49
Total Nitrogen (mg/l)		0.943	1.012	< 1.65
RPS (% Rank 4-6)		0.00%		< 25%
LVS	Avg C of C	3.94		≥ 2.5
	FLEPPC %	24.19%		< 25%
Chlorophyll (µg/l)		4.1	3.38	< 20 µg/l
Habitat Assessment		143		> 34
SCI		64		> 34