

North Archie Creek

STREAM HABITAT ASSESSMENT, STREAM CONDITIONS INDEX, 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

North Archie Creek is located in south-central Hillsborough County in the Hillsborough Bay Watershed. Its headwaters are located southwest of Highway 301 and Interstate 75 in Riverview. The outfall of North Archie Creek is in Hillsborough Bay. The assessment of North Archie Creek was conducted east of S 78th Street and south of Flower Avenue in Hillsborough County on March 3, 2025 at that time, the water levels were normal for the dry season. The North Archie Creek WBID covers 4.71 square miles (7,324 acres) and is dominated by forest/natural (65.3%), residential (17.4%) and industry (7.3%) land uses. The resulting calculated landscape development intensity index score was a 3.85.

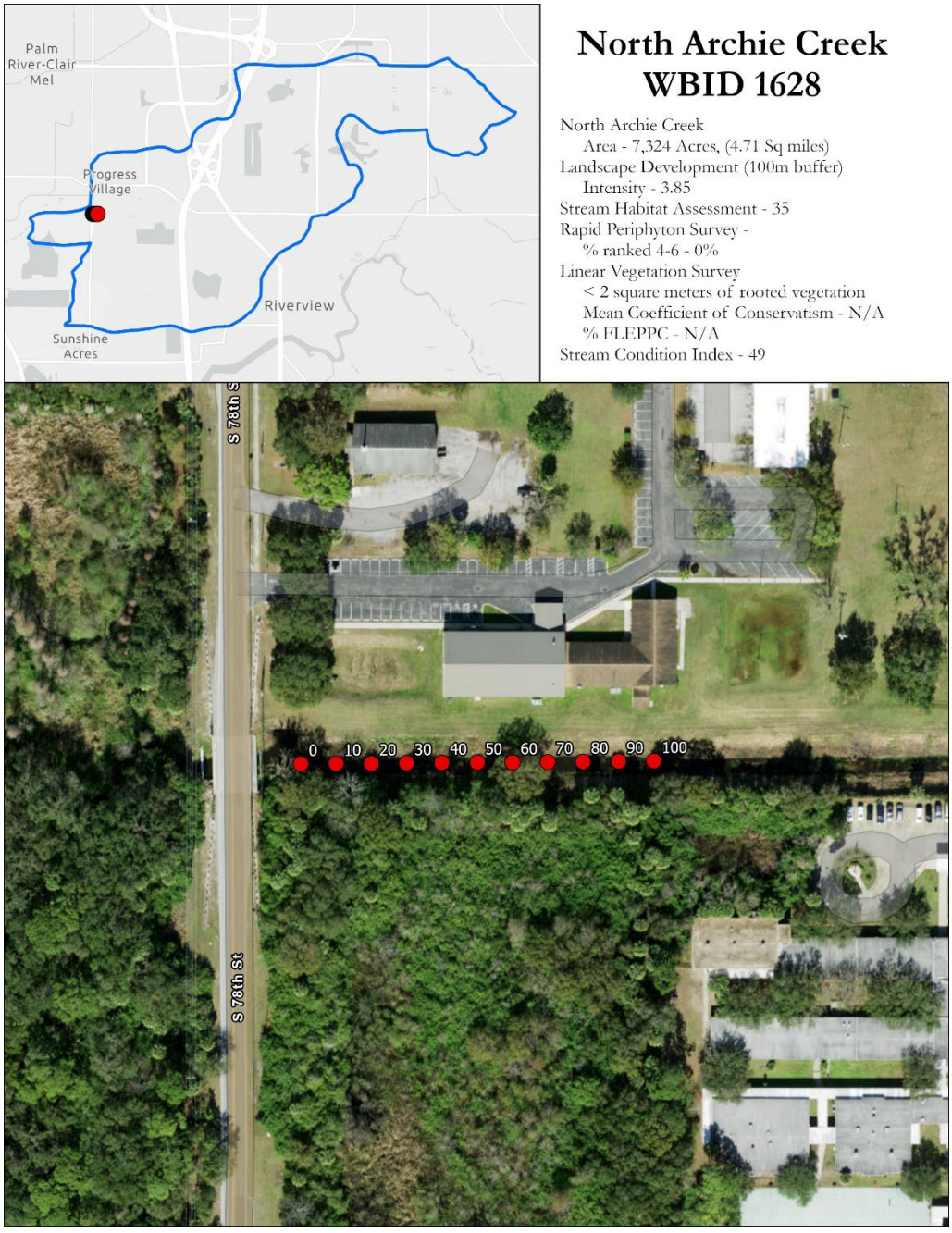

Figure 1 2025 North Archie Creek Study Area Map



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

Habitat and Vegetation Assessment

The region of North Archie Creek where the assessment was conducted is east of S 78th Street. The region was sparsely shaded with a mean canopy cover measurement of 16.4%. North Archie Creek averaged 0.25 meters in depth and approximately 5.5 meters wide with a flow of 0.16 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 (0.16 m/s). Habitat Smothering was scored in the poor category for having an absence 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 0.3% of the stream. Minor habitats included roots, submersed aquatic vegetation and sand deposits. The total score for the primary habitat components was a 17 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 poor category for Artificial Channelization for having poor sinuosity with spoil banks or evidence of straightening. Riparian Buffer Zone Width for the left bank scored in the poor category (<6 meters). Riparian Zone Vegetation Quality for the left bank scored in the poor category (visible disruption in plant community). Bank Stability for the left bank (bank is visibly eroded, lacks armor) and Riparian Zone Vegetation Quality for the right bank (visible disruption in plant community) are scored in the poor category. Riparian Buffer Zone Width for the right bank (>18 meters) scored in the optimal category. Bank Stability for the right bank scored in the poor category (slope is consistently too steep, visibly eroded, lacks armor). The secondary components received a score of 18 out of 80. The resulting FDEP Habitat Assessment score was 35.

Table 1 Scoring Summary for the Stream Habitat Assessment

Metric	Score
Primary Habitat Components	
Substrate Diversity	2
Substrate Availability	1
Water Velocity	12
Habitat Smothering	2
Primary Score	**17**
Secondary Habitat Components	
Artificial Channelization	1
Bank Stability - Right Bank	2
Bank Stability - Left Bank	1
Riparian Buffer Zone Width - Right Bank	9
Riparian Buffer Zone Width - Left Bank	1
Riparian Zone Vegetation Quality - Right Bank	3
Riparian Zone Vegetation Quality - Left Bank	1
Secondary Score	**18**
Habitat Assessment Score	**35**

Periphyton was encountered during 0 of the 99 samples taken during the Rapid Periphyton Survey. 0 samples were ranked 3 for being between >1 mm and 6 mm in length. 0 samples were ranked 4 for being between >6 mm and 20 mm in length. 0 samples were ranked 5 for being between > 20 mm and 10 cm in length. 0 samples were ranked 6 for being >10 cm in length. The tree canopy in the assessment area averaged 16.4%.

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

Table 2 Linear Vegetation Survey Results – North Archie 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 absence of productive habitat due to sand in North Archie Creek.



Figure 4 typical vegetation community in North Archie 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 aliquot separately. The final SCI score is an average of the two scores. The SCI score for North Archie Creek was 49 out of a possible 100 points, corresponding with a "Category 1 - Healthy" designation, with the expected community of a healthy stream but noticeable alterations from an exceptional stream. Both of the 2025 sub samples featured high total taxa, low total trichoptera, low percent filter feeders and no sensitive species. The full results of the SCI sampling are shown in Table 3 (Sample A) and Table 4 (Sample B) for North Archie Creek.

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

SCI Metric	Raw Totals	SCI scores	Adjusted SCI scores
Total Taxa	34.00	7.92	7.92
Total Ephemeroptera	3.00	6.00	6.00
Total Trichoptera	2.00	2.86	2.86
% Filter Feeders	15.29	3.39	3.39
Total Clingers	4.00	5.71	5.71
Total Long-lived Taxa	1.00	3.33	3.33
% Dominance	32.48	6.30	6.30
% Tanytarsini	19.75	8.92	8.92
Total Sensitive Taxa	0.00	0.00	0.00
% Very Tolerant Individuals	18.47	4.33	4.33

SCI Sum	48.76
Final SCI score	54.18

SCI Metric	Raw Totals	SCI scores	Adjusted SCI scores
Total Taxa	36.00	8.75	8.75
Total Ephemeroptera	2.00	4.00	4.00
Total Trichoptera	0.00	0.00	0.00
% Filter Feeders	8.97	1.92	1.92
Total Clingers	3.00	4.29	4.29
Total Long-lived Taxa	1.00	3.33	3.33
% Dominance	30.77	6.65	6.65
% Tanytarsini	14.10	7.98	7.98
Total Sensitive Taxa	0.00	0.00	0.00
% Very Tolerant Individuals	31.41	3.05	3.05

SCI Sum	39.98
Final SCI score	44.42

Table 3 SCI full results for Sample A

Stream Condition Index Results for Archie 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
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	Tubificinae spp.	5		0	0	0	0	0	0	0		0	0	0
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Limnodrilus hoffmeisteri*	2	7	1	0	0	0	0	0	0		0	0	7
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Aulodrilus pigueti*	6	6	1	0	0	0	0	0	0		0	0	0
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Nais pardalis*	12	12	1	0	0	0	0	0	0		0	0	12
Mollusca		Gastropoda	Neritimorpha	Cycloneritida	Neritidae	*Vitta usnea*	2	2	1	0	0	0	0	0	0		0	0	0
Mollusca		Gastropoda	Caenogastropoda	Littorinimorpha	Amnicolidae	*Amnicola dalli*	1	1	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*	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		Gastropoda	Caenogastropoda		Thiaridae	*Melanoides tuberculata*	4	4	1	0	0	0	0	0	0		0	0	4
Mollusca		Bivalvia	Autobranchia	Venerida	C+18:48yrenidae	*Corbicula* spp.	5	5	1	0	0	0	5	0	1		0	0	0
Mollusca		Bivalvia	Autobranchia	Sphaeriida	Sphaeriidae	Sphaeriidae spp.	1		0	0	0	0	0	0	0		0	0	0
Mollusca		Bivalvia	Autobranchia	Sphaeriida	Sphaeriidae	*Musculium* spp.	1	2	1	0	0	0	2	0	0		0	0	0
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Amphipoda		Senticaudata spp.	1		0	0	0	0	0	0	0		0	0	0
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Amphipoda	Gammaridae	*Gammarus* spp.	50	51	1	0	0	0	0	0	0		0	0	0
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Amphipoda	Hyalellidae	*Hyalella* spp.	5	5	1	0	0	0	0	0	0		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	Baetidae spp.	1	1	1	1	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	*Callibaetis floridanus*	4	4	1	1	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Coenagrionidae	*Enallagma durum*	2	2	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydropsychidae	*Cheumatopsyche* spp.	1	1	1	0	1	0	0	1	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	Hydroptilidae	Hydroptilidae spp.	1	1	1	0	1	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Dubiraphia* spp.	1	1	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Stenelmis* spp.	2	2	1	0	0	0	0	1	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Microcylloepus* spp.	1	1	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera		Diptera spp.	1		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Chironomidae spp.	2		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Chironomini spp.	1		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Cladotanytarsus* spp.	3	3	1	0	0	1.5	0	0	0		3	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus* spp.	1		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus buckleyi*	2	2	1	0	0	1	0	0	0		2	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus* sp. U	9	12	1	0	0	6	0	0	0		12	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus* sp. T	8	9	1	0	0	4.5	0	0	0		9	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus* sp. L complex	4	4	1	0	0	2	0	0	0		4	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	6	7	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	*Rheotanytarsus* spp.	1	1	1	0	0	0	1	1	0		1	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	*Endochironomus* spp.	1	1	1	0	0	0	0	1	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

Table 4 SCI full results for Sample B

Stream Condition Index Results for Archie 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.	6		0	0	0	0	0	0	0		0	0	0
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Limnodrilus hoffmeisteri*	1	7	1	0	0	0	0	0	0		0	0	7
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 pardalis*	25	25	1	0	0	0	0	0	0		0	0	25
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Stephensoniana trivandrana*	1	1	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
Annelida		Clitellata	Oligochaeta	Lumbriculida	Lumbriculidae	*Lumbriculus* cf. *variegatus*	1	1	1	0	0	0	0	0	0		0	0	1
Annelida		Clitellata	Hirudinea	Hirudinida	Glossiphoniidae	*Helobdella stagnalis* sp. complex	1	1	1	0	0	0	0	0	0		0	0	1
Mollusca		Gastropoda	Caenogastropoda	Littorinimorpha	Amnicolidae	*Amnicola dalli*	2	2	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		Gastropoda	Heterobranchia	Hygrophila	Planorbidae	*Hebetancylus excentricus*	1	1	1	0	0	0	0	0	0		0	0	1
Mollusca		Gastropoda	Caenogastropoda		Thiaridae	*Melanoides tuberculata*	3	3	1	0	0	0	0	0	0		0	0	3
Mollusca		Bivalvia	Autobranchia	Venerida	Cyrenidae	*Corbicula* spp.	1	1	1	0	0	0	1	0	1		0	0	0
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Amphipoda		Gammarida spp.	3		0	0	0	0	0	0	0		0	0	0
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Amphipoda		Senticaudata spp.	2		0	0	0	0	0	0	0		0	0	0
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Amphipoda	Gammaridae	*Gammarus* spp.	43	48	1	0	0	0	0	0	0		0	0	0
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Amphipoda	Hyalellidae	*Hyalella* spp.	3	3	1	0	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
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Baetidae	*Callibaetis floridanus*	2	2	1	1	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Coenagrionidae	*Argia sedula*	1	1	1	0	0	0	0	0	0		0	0	1
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Elmidae	*Dubiraphia* spp.	1	1	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.	1	1	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Chironomidae spp.	3		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	*Tanytarsus* spp.	2		0	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus buckleyi*	5	7	1	0	0	3.5	0	0	0		7	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus* sp. U	5	7	1	0	0	3.5	0	0	0		7	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus* sp. T	4	4	1	0	0	2	0	0	0		4	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus* sp. L complex	2	2	1	0	0	1	0	0	0		2	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 halterale* group	1	1	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum scalaenum* group	5	6	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum flavum*	1	1	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.	1	1	1	0	0	0	1	1	0		1	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Dicrotendipes* spp.	3	3	1	0	0	1.5	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Endochironomus* spp.	1	1	1	0	0	0	0	1	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	*Cricotopus* or *Orthocladius*	3	3	1	0	0	0	0	0	0		0	0	0
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Ceratopogonidae	Ceratopogoninae spp.	2	2	1	0	0	0	0	0	0		0	0	0

Water Quality Assessment

Recent and long-term water quality data is available for North Archie Creek. The data that is available was collected by the Hillsborough County Environmental Protection Commission between 8/29/2017 and 6/4/2025. 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 North Archie Creek Physical Water Quality (Field) from 3/3/2025

WATER QUALITY	Depth (m)	Temp (°C)	pH (SU)	D.O. (MG/L)	D.O. Sat (%)	Cond. (µmhos/cm)	Salinity (PPT)	SECCHI (m)
Top:	0.25	20.66	7.45	6.95	77.5	337	0.16	0.3
Mid:								
Bottom:								

x VOB

Total Depth 0.3

The chemical water quality analysis for North Archie 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. Unfortunately, only 3 samples were taken in 2023.

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 0.076 mg/L (2022), 0.14 mg/L (2023) and 0.109 mg/L (2024). The period of record geometric mean value for total phosphorus was 0.128 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 0.728 mg/L (2022), 0.612 mg/L (2023) and 0.931 mg/L (2024). The Total Nitrogen value from the period of record data was below the threshold with a concentration of 1.158 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 (2.46 µg/l in 2022, 2.83 µg/l in 2023, 4.31 µg/l in 2024). For sites with Chlorophyll-a values in this range, the assessment indicates conditions reflecting a balance in flora.

An elevated biomass of the bacterial parameters was observed in the 3-year dataset with Escherichia Coli having a geometric mean of 1,240 colonies/100 ml, 2,241/100 ml for Enterococci.

Table 7 North Archie Creek Water Quality (Laboratory)

Parameter	2022	2023	2024	2025	Period of Record	Units
E. Coli	600	843	683	876	757	#/100 ml
Enterococci	1,172	1,673	1,094	3,266	1,429	#/100 ml
Chlorophyll-a	2.89	2.91	5.26	2.59	4.89	µg/L
Chlorophyll-b	0.28	0.33	0.40	0.28	0.63	µg/L
Chlorophyll-c	0.6	0.6	0.64	0.6	0.66	µg/L
Chlorophyll-a Corrected	2.46	2.83	4.31	2.12	4.14	µg/L
Ammonia	0.044	0.072	0.065	0.050	0.050	mg/L
Kjeldahl Nitrogen	0.552	0.494	0.737	0.697	0.648	mg/L
Total Nitrogen	0.728	0.6112	0.931	0.824	0.781	mg/L
Nitrates/Nitrites	0.153	0.108	0.121	0.125	0.105	mg/L
Total Phosphorus	0.075	0.14	0.139	0.109	0.128	mg/L

Conclusion

North Archie Creek at S 78th Street is located in a mixture of natural, residential and industrial 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 alterations to the vegetation community. Snag was the most common productive habitat present. The Habit Assessment resulted in a poor score of 35. 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. North Archie Creek met the metrics for the rapid periphyton survey with 0% of samples being ranked between 4 and 6. The recent water quality record for North Archie 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 "healthy" based on the macroinvertebrate community but is showing alterations from an exceptional stream. 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		North Archie Creek	2022	2023	2024	Threshold
Total Phosphorous (mg/l)			0.075	0.14	0.139	< 0.49
Total Nitrogen (mg/l)			0.728	0.612	0.931	< 1.65
RPS (% Rank 4-6)		0%				< 25%
LVS	**Avg C of C**	<2 meters				≥ 2.5
	FLEPPC %	<2 meters				< 25%
Chlorophyll-a Corrected (µg/l)			2.46	2.83	4.31	< 20 µg/l
Habitat Assessment		35				> 34
SCI		49				> 34