Seffner Canal

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 2020 Hillsborough County aerial, 2014 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

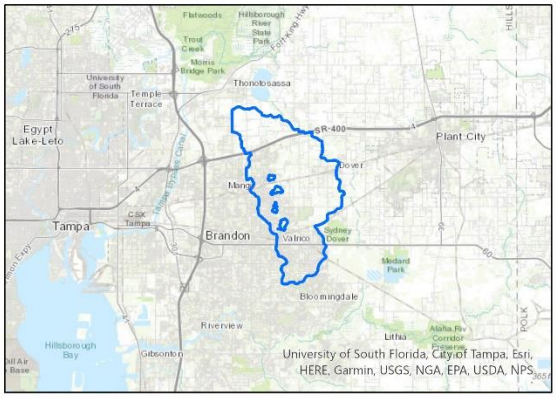
The Stream Condition Index (SCI) was sampled per DEP SOP FS7420 and calculated per DEP SOP LT7200. The SCI consists of collecting macroinvertebrates via 20 D-frame dipnet sweeps (0.5 m in length) in the most productive habitats in a 100 m reach of stream. The organisms are sub-sampled, and identified 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

Seffner Canal is located in eastern Hillsborough County. Its headwaters are located in south of E Dr King Blvd and Csx Rr Tracks and the outfall of Seffner Canal is in Baker Creek near Lake Thonotosassa. The assessment of Seffner Canal was conducted on February 17, 2020. At the time of the assessment, the water levels were normal for the end of the dry season. The Seffner Canal WBID covers 9.59 square miles and is dominated by residential (48.3%), natural (19.7%) and agricultural (10.3%) land uses. The resulting calculated landscape development intensity index score was 5.52.



Seffner Canal
WBID 1547

Mouth - Baker Creek
Area - 19,381 Acres (9.59 Sq Miles)
Landscape Development Intensity - 5.52
Stream Habitat Assessment - 43
Rapid Peiphyton Survey - % ranked 4-6 - 37.0%
Linear Vegetation Survey - > 2m^2 % FLPPC - 68.42%
Average CoC - 0.65
Stream Condition Index - 24

Figure 1 2020 Seffner Canal Study Area Map

Figure 2 Overview photograph of the Seffner Canal Sample Site

Habitat and Vegetation Assessment

The region of Seffner Canal where the assessment was conducted is in an area surrounded by active pasture and residential use. The region was sparsely shaded with a mean canopy cover measurement of 17.3%. Seffner Canal averaged 1.25 meters in depth, approximately 30 meters wide with a flow of 0.05 m/s.

The primary habitat components of the FDEP Habitat Assessment focus on in-water habitat. The primary habitat components score in the marginal category for Substrate Diversity (Presence of two major productive habitats (snags and macrophytes)). Water Velocity, Habitat Smothering (many of the productive habitats were affected by sand smothering) and Substrate Availability (1.25% of stream are productive habitats) were scored as poor. Minor habitats included sand and silt deposits. The total score for the primary habitat components was a 13 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 optimal category for Bank Stability for the left bank. Bank Stability for the left bank scored in the suboptimal category. Marginal scores were noted for Riparian Buffer Zone Width. Artificial Channelization and Riparian Zone Vegetation Quality scored in the poor category due to a modified straightened channel and dominance by several non-native invasive species. The riparian buffer zone surrounding the stream was greater than 6 meters and consisted of a mixture of native and invasive species indicative of disturbance. The vegetation in the stream itself was dominated by non-native species with 7 non-native invasive species out of 9 total species. The secondary habitat components received a score of 30 out of 80. The resulting FDEP Habitat Assessment score was a 43.

Periphyton was abundant during the 54 samples taken during the Rapid Periphyton Survey with 37% of samples being of rank 4-6 exceeding the 25% threshold set by FDEP. The tree canopy in the assessment area averaged 17.3% providing sufficient available sunlight for macrophytes and algae.

The FDEP Linear Vegetation Survey encountered 9 herbaceous species in Seffner Canal. *Limnophila sessiflora*, *Alternanthera philoxeroides, Pistia stratiodes, Eichhornia crasipes, Salvinia minima, Azolla caroliniana* and *Urochloa mutica* are non-native invasive species. *Limnophila sessiflora* was abundant and dominant in the assessment region.

Table 1 Linear Vegetation Survey Results – Seffner Canal "D" denotes dominance in the region

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	
Alternanthera philoxeroides	0	1	1	1	1	1	1	1	1	1	1	10
Azolla caroliniana	1.81	1	1	1	1	1	1	1	1	1	1	10
Eichhornia crassipes	0	1	1	1	1	1	1	1	1	1	1	10
Lemna	1	1	1	1	1	1	1	1	1	1	1	10
Limnophila sessiliflora	0	D	1	D	D	1	D	1	1	D	1	10
Pistia stratiotes	0	1	1	1	1	1	1	1	1	1	1	10
Salvinia minima	0	1	1	1	1	1	1	1	1	1	1	10
Sacciolepis striata	5.35							1	1	1	1	4
Urochloa mutica	0								1		1	2

Figure 3 Limnophila sessiflora was dominant in the Linear Vegetation Survey of Seffner Canal.

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 Little Bullfrog Creek was 60 out of a possible 100 points, corresponding with a "Healthy" designation, with the expected community of a healthy stream.

High scores were achieved for the Total Taxa and % Dominance metrics in Sample A. No high scores were observed in any metric for Sample B. Neither subsamples contained sensitive taxa and sample A contained one Long Lived Taxa. The full results of the SCI sampling are shown in Table 3 (Sample A) and Table 4 (Sample B) for Seffner Canal.

Table 2 SCI metric summaries for Seffner Canal Sample A (top) and Sample B (bottom)

SCI Metric	Raw Totals	SCI scores	Adjusted SCI scores
Total Taxa	35.00	8.33	8.33
Total Ephemeroptera	1.00	2.00	2.00
Total Trichoptera	0.00	0.00	0.00
% Filter Feeders	9.09	1.95	1.95
Total Clingers	1.00	1.43	1.43
Total Long-lived Taxa	1.00	3.33	3.33
% Dominance	22.08	8.38	8.38
% Tanytarsini	1.95	3.18	3.18
Total Sensitive Taxa	0.00	0.00	0.00
% Very Tolerant Individuals	63.64	1.33	1.33

SCI Sum	29.94
Final SCI score	33.27

SCI Metric	Raw Totals	SCI scores	Adjusted SCI scores
Total Taxa	22.00	2.92	2.92
Total Ephemeroptera	1.00	2.00	2.00
Total Trichoptera	0.00	0.00	0.00
% Filter Feeders	7.69	1.63	1.63
Total Clingers	1.00	1.43	1.43
Total Long-lived Taxa	0.00	0.00	0.00
% Dominance	46.15	3.57	3.57
% Tanytarsini	0.00	0.00	0.00
Total Sensitive Taxa	0.00	0.00	0.00
% Very Tolerant Individuals	72.44	1.01	1.01

SCI Sum	12.55
Final SCI score	13.94

Table 3 SCI full results for Sample A

Stream Condition Index Results for Seffner Canal SCIA

Phylum	Subphylum	Class	Subclass	Order	Family	Taxa	Abundance	Collapsed	Taxa Presence	Ephemeroptera	Trichoptera Taxa	50% Filterer	100% Filterer	Clinger Taxa	Long-lived Taxa	Dominant Taxa	Tanytarsini	Sensitive Taxa	Very Tolerant	Specimen Notes
Platyhelminthes						Platyhelminthes spp.	1	1	1	0	0	0	0	0	0		0	0	0	
Nemertea		Enopla		Hoplonemertea	Tetrastemmatidae	*Prostoma* spp.	1	1	1	0	0	0	0	0	0		0	0	1	
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	Tubificinae spp.	4		0	0	0	0	0	0	0		0	0	0	Damaged and/or immature, not A. pigueti
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Limnodrilus hoffmeisteri*	3	7	1	0	0	0	0	0	0		0	0	7	
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 pardalis*	1	1	1	0	0	0	0	0	0		0	0	1	
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Dero* spp.	1	1	1	0	0	0	0	0	0		0	0	1	No posterior end
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Stylaria lacustris*	1	1	1	0	0	0	0	0	0		0	0	0	
Annelida		Clitellata	Hirudinida	Rhynchobdellida	Glossiphoniidae	*Helobdella stagnalis* sp. complex	1	1	1	0	0	0	0	0	0		0	0	1	
Annelida		Clitellata	Hirudinida	Rhynchobdellida	Glossiphoniidae	*Helobdella papillata*	3	3	1	0	0	0	0	0	0		0	0	3	
Annelida		Clitellata	Hirudinida	Rhynchobdellida	Glossiphoniidae	*Placobdella phalera*	1	1	1	0	0	0	0	0	0		0	0	1	
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Ancylidae	Ancylidae spp.	13		0	0	0	0	0	0	0		0	0	0	Damaged
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Ancylidae	*Hebetancylus excentricus*	10	23	1	0	0	0	0	0	0		0	0	23	
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Lymnaeidae	*Lymnaea* spp.	1	1	1	0	0	0	0	0	1		0	0	0	Damaged
Mollusca		Gastropoda	Caenogastropoda	Littorinimorpha	Hydrobiidae	*Pyrgophorus platyrachis*	34	34	1	0	0	0	0	0	0		0	0	34	
Mollusca		Gastropoda	Caenogastropoda	Littorinimorpha	Hydrobiidae	*Amnicola dalli*	15	15	1	0	0	0	0	0	0		0	0	0	
Mollusca		Bivalvia	Heterodonta	Veneroida	Sphaeriidae	Sphaeriidae spp.	7		0	0	0	0	0	0	0		0	0	0	Damaged and/or immature
Mollusca		Bivalvia	Heterodonta	Veneroida	Sphaeriidae	*Musculium* spp.	2	9	1	0	0	0	9	0	0		0	0	0	
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Amphipoda	Dogielinotidae	*Hyalella azteca* sp. complex	2	2	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Caenidae	*Caenis* spp.	1		0	0	0	0	0	0	0		0	0	0	Damaged
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Caenidae	*Caenis diminuta*	1	2	1	1	0	0	0	0	0		0	0	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	Coleoptera	Elmidae	*Microcylloepus* spp.	1	1	1	0	0	0	0	0	0		0	0	0	1 adult
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Hydrophilidae	*Tropisternus* spp.	2	2	1	0	0	0	0	0	0		0	0	0	2 larvae
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Haliplidae	*Peltodytes* spp.	5	5	1	0	0	0	0	0	0		0	0	5	5 larvae
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	Chironomidae spp.	4		0	0	0	0	0	0	0		0	0	0	4 pupae
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Tanytarsus* sp. F	2	3	1	0	0	3	0	0	0		3	0	3	Slide 2, CS2, P2
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum* spp.	1		0	0	0	0	0	0	0		0	0	0	Broken antennae
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 flavum*	1	1	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilum illinoense* group	10	13	1	0	0	0	0	0	0		0	0	13	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Dicrotendipes* spp.	1	1	1	0	0	1	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Paralauterborniella nigrohalteralis*	1	1	1	0	0	0	0	1	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Goeldichironomus* spp.	4	5	1	0	0	0	0	0	0		0	0	5	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Pseudochironomus* spp.	1	1	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Chironomidae	*Labrundinia* spp.	1	1	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Stratiomyidae	*Stratiomys* spp.	1	1	1	0	0	1	0	0	0		0	0	0	1 larva
Arthropoda	Hexapoda	Insecta	Pterygota	Heteroptera		Heteroptera spp.	3	3	1	0	0	0	0	0	0		0	0	0	Immature, either Hebridae or Mesoveliidae
Arthropoda	Chelicerata	Arachnida	Acari	Trombidiformes	Unionicolidae	*Neumania* spp.	2	2	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Chelicerata	Arachnida	Acari	Trombidiformes	Limnesiidae	*Limnesia* spp.	4	4	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Chelicerata	Arachnida	Acari	Sarcoptiformes		Oribatida 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 Seffner Canal SCIB

Phylum	Subphylum	Class	Subclass	Order	Family	Taxa	Abundance	Collapsed	Taxa Presence	Ephemeroptera	Trichoptera	50% Filterer	100% Filterer	Clinger Taxa	Long-lived Taxa	Dominant Taxa	Tanytarsini	Sensitive Taxa	Very Tolerant	Specimen Notes
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Limnodrilushoffmeisteri*	1	1	1	0	0	0	0	0	0		0	0	1	
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Pristina americana*	1	1	1	0	0	0	0	0	0		0	0	0	
Annelida		Clitellata	Oligochaeta	Tubificida	Naididae	*Dero* spp.	1	1	1	0	0	0	0	0	0		0	0	1	No posterior end
Annelida		Clitellata	Hirudinida	Rhynchobdellida	Glossiphoniidae	*Helobdella stagnalis* sp.	4	4	1	0	0	0	0	0	0		0	0	4	
Mollusca		Gastropoda				Gastropoda spp.	1		0	0	0	0	0	0	0		0	0	0	Damaged, no shell, not Ancylidae
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Ancylidae	Ancylidae spp.	2		0	0	0	0	0	0	0		0	0	0	Damaged
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Ancylidae	*Hebetancylusexcentricus*	8	10	1	0	0	0	0	0	0		0	0	10	
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Physidae	*Physa acuta*	2	2	1	0	0	0	0	0	0		0	0	2	
Mollusca		Gastropoda	Heterobranchia	Hygrophila	Lymnaeidae	*Lymnaea columella*	2	2	1	0	0	0	0	0	0		0	0	0	
Mollusca		Gastropoda	Caenogastropoda	Littorinimorpha	Hydrobiidae	*Pyrgophorusplatyrachis*	71	72	1	0	0	0	0	0	0		0	0	72	
Mollusca		Gastropoda	Caenogastropoda	Littorinimorpha	Hydrobiidae	*Amnicola dalli*	16	16	1	0	0	0	0	0	0		0	0	0	
Mollusca		Bivalvia	Heterodonta	Veneroida	Sphaeriidae	Sphaeriidae spp.	11	11	1	0	0	0	11	0	0		0	0	0	Damaged and/or immature
Arthropoda	Hexapod	Insecta	Pterygota	Ephemeroptera	Caenidae	*Caenisdiminuta*	2	2	1	1	0	0	0	0	0		0	0	0	
Arthropoda	Hexapod	Insecta	Pterygota	Orthoptera		Orthoptera spp.	1	1	1	0	0	0	0	0	0		0	0	0	Damaged and immature
Arthropoda	Hexapod	Insecta	Pterygota	Coleoptera	Elmidae	*Stenelmis* spp.	1	1	1	0	0	0	0	1	0		0	0	0	1larva
Arthropoda	Hexapod	Insecta	Pterygota	Coleoptera	Haliplidae	*Peltodytes* spp.	8	8	1	0	0	0	0	0	0		0	0	8	8larvae
Arthropoda	Hexapod	Insecta	Pterygota	Diptera	Chironomidae	*Polypedilumillinoense* group	13	13	1	0	0	0	0	0	0		0	0	13	
Arthropoda	Hexapod	Insecta	Pterygota	Diptera	Chironomidae	*Dicrotendipes* spp.	1	1	1	0	0	1	0	0	0		0	0	0	
Arthropoda	Hexapod	Insecta	Pterygota	Diptera	Chironomidae	*Goeldichironomus* spp.	2	2	1	0	0	0	0	0	0		0	0	2	
Arthropoda	Hexapod	Insecta	Pterygota	Diptera	Chironomidae	*Parachironomus* spp.	1	1	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapod	Insecta	Pterygota	Diptera	Chironomidae	*Labrundinia* spp.	1	1	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Hexapod	Insecta	Pterygota	Heteroptera		Heteroptera spp.	2	2	1	0	0	0	0	0	0		0	0	0	Immature, either Hebridae or
Arthropoda	Hexapod	Insecta	Pterygota	Heteroptera	Pleidae	*Paraplea* spp.	1	1	1	0	0	0	0	0	0		0	0	0	
Arthropoda	Chelicer	Arachnida	Acari	Trombidiformes	Limnesiidae	*Limnesia* spp.	3	3	1	0	0	0	0	0	0		0	0	0	

Water Quality Assessment

Long-term water quality data is available for Seffner Canal. The data that is available was collected by the Hillsborough County Environmental Protection Commission (2005- 2020) and the Florida Department of Environmental Protection (2017-2020). Values for the physical water parameters begin in 2005 and continue through 2019. Values for the laboratory water parameters begin in 2005 through 2019. The 2020 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 Seffner Canal Physical Water Quality (Field)

Seffner Canal								
Date	**Depth (m)**	**Temp (°C)**	**pH**	**DO (mg/L)**	**DO (% Sat)**	**Cond (UMHO/cm**	**Salinity (PPT)**	**Secchi Depth (m)**
2/13/20	0.5	21.9	7.93	5.36	60.6	213	0.1	0.3
Mean POR		23.7	6.92	1.92	22.1	244.7	0.11	0.5

The chemical water quality analysis for Seffner Canal is shown in Table 6 along with mean values for the period of record for available parameters. Period of record mean and the previous 3-year geometric mean values for Total Phosphorous values were above the nutrient region threshold developed by FDEP of 0.49 mg/L with a mean value of 0.556 mg/L (2005-2020). The three year geometric mean value for Total Phosphorous was 0.614 mg/L. Total Phosphorous values for the sample from this assessment were 0.500 mg/L. Total Nitrogen values were below the nutrient region threshold developed by FDEP of 1.65 mg/L with a mean value of 1.370 mg/L for the period of record (2005-2020). The three year geometric mean value for Total Nitrogen was 1.368 mg/L. The Total Nitrogen value from the assessment was below the threshold with a concentration of 0.953 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 (8.5 µg/l 2005-2020), and in the site specific evaluation range for the most recent 3-years of samples (9.0 µg/l) . For sites with Chlorophyll-a values in this range, the assessment is inconclusive of conditions reflecting a inbalance in flora.

Elevated biomass of the bacterial parameters was observed in the long term dataset with E. Coli having a geomean of 165 colonies/100 ml, 850/100 ml for Enterococci.

Table 6 Seffner Canal Water Quality (Laboratory)

Parameter	Seffner Canal	POR Mean	Units
Alkalinity	72.2	74.4	mg/LCaCO3
Color(345)F.45	100	51.9	Pt/Co
E. Coli	260	165.4	#/100 ml
Enterococci	50.4	850.1	#/100 ml
Chlorophyll a	4	10.6	ug/L
Chlorophyll b	< 1	1.7	ug/L
Chlorophyll c	< 1	0.8	ug/L
Chlorophyll t		19.6	ug/L
Chlorophylla Corr	2.6	8.5	ug/L
Chlorophyll-pheo	2.2	5.6	ug/L
Ammonia	0.033	0.070	mg/L
Kjeldahl Nitrogen	0.770	1.037	mg/L
Total Nitrogen	0.953	1.037	mg/L
Nitrates/Nitrites	0.183	0.095	mg/L
Total Phosphorus	0.500	0.556	mg/L

Conclusion

Seffner Canal is located in a mixture of residential, natural and pasture land uses. At the time of the habitat assessment, the water levels were low, corresponding to the middle of the dry season, however sufficient habitat for macroinvertebrates was observed. Due to these factors, the Habit Assessment resulted in a poor score of 43. Disruption to the vegetation community was observed in the results of the Linear Vegetation Survey with Seffner Canal not meeting either metric for Average Coefficient of Conservatism or the Percent FLEPPC. Seffner Canal did not meet standards for the rapid periphyton survey with 37% of samples being ranked between 4 and 6. The historical water quality record for Seffner Canal showed acceptable concentrations of Chlorophyll-a and Total Nitrogen, but exceeding Total Phosphorous in the previous 3-years. The results of the SCI sampling indicate that the stream is "impaired" 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		Seffner Canal	3-Year Mean	Threshold
Total Phosphorous (mg/l)		0.500	0.614	< 0.49
Total Nitrogen (mg/l)		0.953	1.368	< 1.65
RPS (% Rank 4-6)		37%		< 25%
LVS	**Avg C of C**	0.65		≥ 2.5
	FLEPPC %	68.4%		< 25%
Chlorophyll-a (µg/l)		2.6	9.0	< 20 µg/l
Habitat Assessment		43		> 39
SCI		24		> 34