Biological Assessment of City of Graceville Advanced Wastewater Treatment Facility Jackson County NPDES # FL0038555 Sampled February 15, 17, 19 and March 9, 2021

Division of Environmental Assessment and Restoration
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Summary of Results

Copper was detected in the effluent composite sample at three times the Class III Water Quality Criterion for Fresh Waters and effluent permit limit. Copper was detected in the equipment blank. Effluent silver slightly exceeded the Class III Water Quality Criterion for Fresh Waters. Iron in the Control Site sample exceeded the Class III Water Quality Criterion for Fresh Waters. There was no indication of nutrient enrichment in the receiving water due to the effluent despite the greater nutrient values and algal growth potential (AGP) measured in the effluent sample. Test and Control Site samples have similar habitat assessment scores and rapid periphyton survey results. The Stream Condition Index (SCI) score for Holmes Creek was 13 points lower for the Test Site compared to the Control Site. Differences in the SCI score between the Control and the Test Sites may be attributed to a combination of different variables. These might include distinct waterbodies influencing the Control Site (Holmes Creek) and Test Site (Holmes Creek and Little Creek), heavy rain prior to sampling event, and the contribution of effluent, which contained a higher level of copper, detectable organic constituents and pesticides. It is recommended for future events, that an additional site for water quality analysis be included upstream and downstream of the discharge in Little Creek to isolate the influence of Little Creek and aid the interpretation of results.

Facility Overview

The City of Graceville Advanced Wastewater Treatment Facility is a Municipal Wastewater Treatment Facility. A Facility Summary, including a description of the facility, summary of permit limits, and any relevant Administrative Order (AO), Consent Order (CO), and Discharge Monitoring Report (DMR) information is provided in Appendix A. The facility is operating under a Consent Order executed on September 19, 2018 to address sanitary sewer overflows. Permit violations for total nitrogen, total phosphorus and total suspended solids occurred in 2020. The effluent discharges intermittently, daily in batches into Little Creek, a Class III freshwater creek [waterbody identification (WBID) 80], which flows into the upper segment of Holmes Creek, a Class III freshwater creek, WBID 59C. The discharge pipe is approximately 1,500 feet in length and discharges through an open-end pipe above the water surface level during normal creek levels (Figure 1).

Holmes Creek falls within the Panhandle West Nutrient Watershed Region for Numeric Nutrient Criteria (NNC). For this region, the NNC, expressed as annual geometric means, are 0.06 mg/L total phosphorus and 0.67 mg/L total nitrogen (Paragraph 62-302.531(2)(c), F.A.C.). Holmes Creeks falls within the Panhandle West bioregion; the daily average dissolved oxygen (DO) saturation shall not be below 67 percent in more than 10 percent of the values (Paragraph 62-302.533(1)(a), F.A.C.). This FYI event only provides single sample results. It should be noted that waterbody impairment assessments are based on longer-term data, and individual exceedances of a criterion do not indicate use impairment.
http://ca.dep.state.fl.us/mapdirect/?focus=nutrientcriteria

Methods

Effluent grab and 24-hour flow proportioned composite samples were taken from monitoring site location EFF-01 for outfall D-001 on February 15, 2021. Effluent chronic toxicity renewal 21-hour flow proportioned composite samples were collected on February 17 and 19, 2021. Heavy rain and flood conditions in Little Creek and the surrounding wetland resulted in the postponing of stream sampling to March 9, 2021 and cancellation of the Hester-Dendy samples (Figure 5). Chemical and biological comparisons were made between a Control Site (located in Holmes Creek beginning 25 m upstream and ending 125 m upstream of the confluence of Little Creek and Holmes) and a Test Site (located in Holmes Creek beginning 50 m downstream and ending 150 m downstream of the confluence of Little Creek and Holmes Creek) (Figure 1, 2 and Appendix F). The effluent, along with the immediate receiving water Little Creek, influences the chemical and biological conditions of the downstream Test Site in Holmes Creek. However, the Control Site is only influenced by Holmes Creek. Carbonaceous Biochemical Oxygen Demand (CBOD) tests were scheduled to be conducted by an overflow laboratory, but the effluent sample was mistakenly delivered to DEP Laboratory resulting in cancellation of the CBOD test for this sample. The permit specifies 16-hour flow proportioned composite samples for CBOD, total suspended solids, total nitrogen, and total phosphorus. Effluent composite sample for water chemistry was preserved with acid after the 15 minutes preservation period resulting in qualified water chemistry data.

Samples were collected by Nathan Mulkey and Christopher Slade (DEP Northwest Regional Operation Center, Pensacola), and Kevin Grace, Steve Hafner, and Larry Couch (DEP Northwest District Office, Pensacola). Analyses were performed by DEP Laboratory in Tallahassee and Eurofins TestAmerica Laboratories in Tampa. The report was reviewed by District representatives and the Point Source Studies Review Committee (Mike Tanski, Nancy Ross, and Adrienne Pennington).

All field and laboratory methods followed DEP Standard Operating Procedures (see https://floridadep.gov/dear/quality-assurance/content/dep-sops and https://floridadep.gov/dear/florida-dep-laboratory/content/dep-laboratory-quality-assurance-manual-and-sops for details) and met DEP quality assurance/quality control standards (see https://floridadep.gov/dear/quality-assurance). Explanations of specific methods and measurements can be found in Appendix B.

Class III Water Quality Criteria for Fresh and Marine Waters are found in Rule 62-302, F.A.C. All references to Rule 62-302.530, F.A.C. are to the surface water quality criteria table with an effective date of 02/17/2016 and a notice identification number of 17115667.

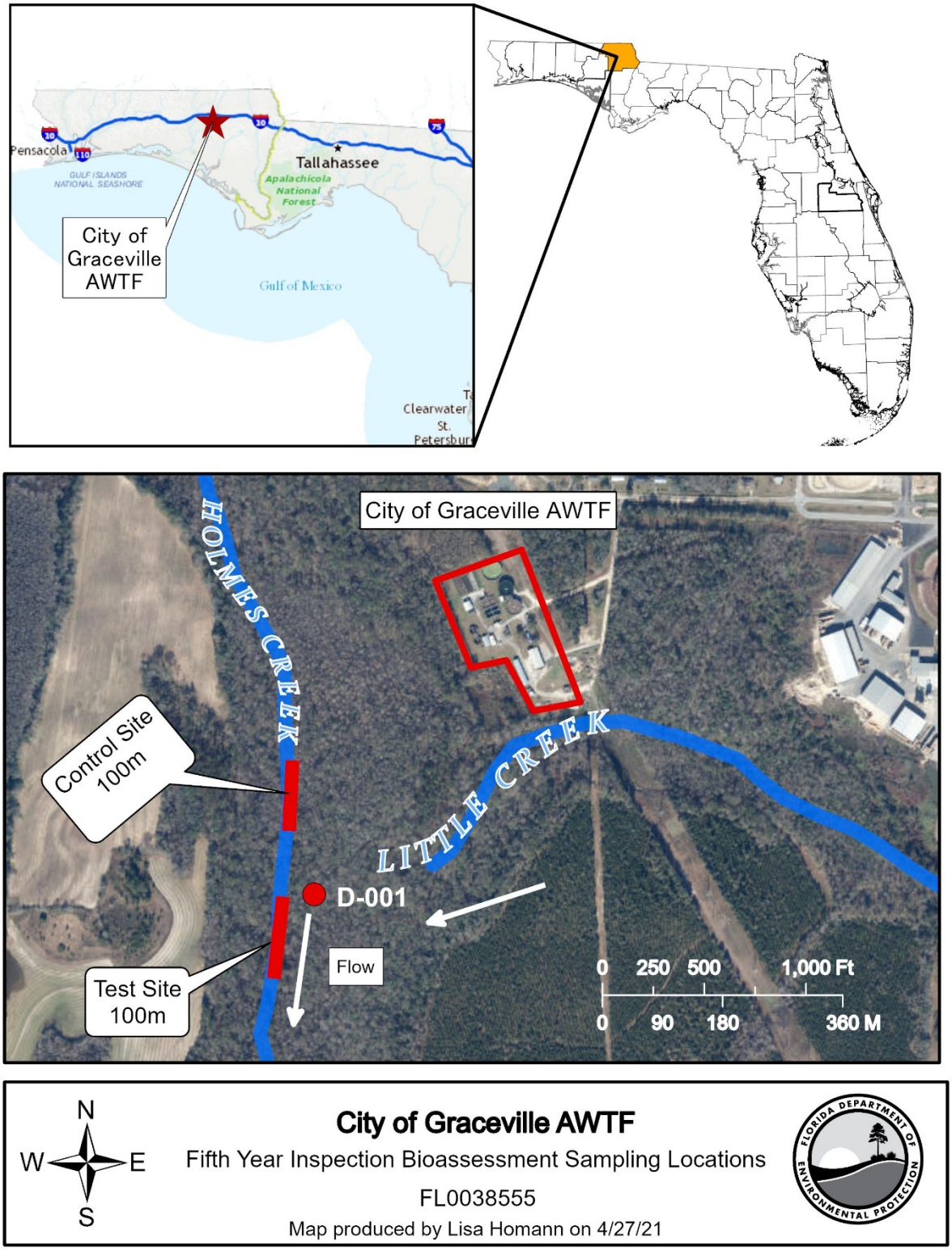


Figure 1. Map of Facility and Sampling Locations

Results

Physical and Chemical Parameters / Site Characterization (See Table 1 and Appendices C, D, and E)

- Habitat Assessment scores were similar at the Test Site (130) and Control Site (136), which places both sites in the optimal category. Both sites had measurements in the optimal range for water velocity, artificial channelization, riparian buffer zone width, and riparian zone vegetation quality. Substrate diversity and habitat smothering parameters at both sites scored in the suboptimal range. Both sites had marginal substrate availability with the Control Site showing a better percentage of coverage for snag and roots and lower percentage of vegetation and sand. The Test Site had the right bank stability in the optimal range and the left bank in the suboptimal range, while the Control Site had optimal bank stability in both banks. Both sites had water that was clear in color and slightly turbid.

- All measured effluent water quality parameters complied with Class III Water Quality Criteria for Fresh Waters and effluent permit limits.

- All water quality parameters measured at the Test and Control Sites complied with Class III Water Quality Criteria for Fresh Waters.

Analytical Water Chemistry (See Table 2 and Appendix E)

- All water chemistry analytes detected in the effluent grab and composite samples complied with Class III Water Quality Criteria for Fresh Waters and effluent permit limits.

- All water chemistry analytes detected in the Test and Control Site samples complied with Class III Water Quality Criteria for Fresh Waters.

- Effluent nutrient levels were higher than levels measured in the receiving waters. Nutrient levels in the Test and Control Site samples were similar to one another.

- For comparative purposes only, the effluent composite sample values for total phosphorus and total nitrogen were greater than the annual geometric mean NNC in the Panhandle West Nutrient Watershed Region. Test and Control Site sample values for total phosphorus and total nitrogen were less than the NNC values for the region.

- Nitrate and Nitrite was detected in the blank between the MDL and PQL.

Microbiology (See Table 2 and Appendix B)

- Effluent *Escherichia coli* (*E. coli*) complied with the Class III Water Quality Criterion for Fresh Waters and effluent permit limit.

- Fecal coliforms were detected in the effluent grab sample at levels which complied with the facility permit limit.

- *E. coli* levels measured in the Test and Control Site samples complied with the Class III Water Quality Criterion for Fresh Waters. Samples were qualified for hold time exceedance.

Toxicity Whole Effluent Test (See Table 2)

- Tests were performed February 16 through February 23, 2021.

- The sample was aerated for 15 minutes at a rate of approximately 100 bubbles per minute to decrease the dissolved oxygen (DO) from 9.3 mg/L to 8.8 mg/L.

- Chronic bioassay results are reported as the 25% Inhibition Concentration (IC25). A 25% inhibition concentration (IC25) is the effluent concentration causing a 25% reduction in a biological response such as biomass or reproduction when compared to a control population. An IC25 of less than 100% in a chronic test may constitute exceedances of 62-302.200(5), 62-302.530(20) and/or facility permit limits.

- For the chronic definitive bioassay, the effluent composite sample IC25 for the fish, *Pimephales promelas*, was calculated as being greater than 100% effluent, and therefore complied with effluent permit limits.

- The percent minimum significant difference (PMSD) for the chronic definitive *Ceriodaphnia dubia* bioassay exceed the method limit. The test was invalidated and reported as 'No Result'.

- For more information or to obtain copies of the toxicity bench sheets, please contact the Biology Laboratory at 850-245-8177.

Metals (See Table 3 and Appendix E)

- Effluent copper exceeded Class III Water Quality Criterion for Fresh Waters (Subsection 62-302.530(23), F.A.C.) and effluent permit limits.

- Effluent silver slightly exceeded Class III Water Quality Criterion for Fresh Waters (Subsection 62-302.530(60), F.A.C.).

- Iron in the Control Site sample exceeded Class III Water Quality Criterion for Fresh Waters (Subsection 62-302.530(38), F.A.C.).

- All other metals measured in the effluent, Test Site, and Control Site samples complied with Class III Water Quality Criteria for Fresh Waters.

- Copper and lead were detected in the equipment blank.

Algal Growth Potential (See Table 4 and Appendix B)

- The freshwater unicellular green alga *Pseudokirchneriella subcapitata* was used to determine the AGP values in the effluent grab, Test Site, and Control Site samples.

The values were highest in the effluent grab sample compared with the Test Site and Control Site samples. The Test and Control Site samples were qualified for hold time exceedance. Nitrogen to phosphate (N:P) ratios could not be calculated for the effluent because nutrient values were not measured in the effluent grab sample. The analytical chemistry suggests that the Test and Control Sites are nitrogen-phosphorus co-limited (Miller et al. 1978).

- The effluent grab sample AGP result of 100 mg dry wt/L is greater than the AGP range (6.10 to 20.0 mg dry wt/L) suggested to be representative of high productivity for freshwater (Miller et al. 1978). The AGP values measured in the Test and Control Site samples were within or below this range. The effluent AGP was greater than the Control Site sample, suggesting a potential for nutrient enrichment in the receiving waters when the facility is discharging.

Flora (See Appendices B and D)

- Two temporally independent Linear Vegetation Survey (LVS) sample events showing a Coefficient of Conservatism (C of C) score ≥ 2.5 and the frequency of occurrence of Florida Exotic Plant Pest Council (FLEPPC) exotic taxa ≤ 25% are needed to achieve NNC floral metrics. Sites with no observed macrophytes are considered to achieve the LVS component of the NNC. Two temporally independent Rapid Periphyton survey (RPS) samplings with ≤ 25% rank 4-6 (algae >6mm thick) coverage are needed to achieve NNC floral metrics. This FYI event only provides single sample results. It should be noted that waterbody impairment assessments are based on longer-term data, and individual exceedances of a criterion do not indicate use impairment.

- For the LVS, the Control Site contained less than 2 m^2 of aquatic macrophytes within the wetted area of the 100 m sampling reach. The Test Site had an average C of C score of 5.89 with 12 % of FLEPPC exotic taxa. While there was 0-5 % macrophyte coverage in each 10 m section of the 100 m assessment, there were six herbaceous taxa present, one of which was a Category 2 FLEPPC exotic species: *Alternanthera philoxeroides*. *Sacciolepis striata* was found throughout the 100 m assessment area, *Sagitaria kurziana* was found in the last 60 m section of the assessment area, and *Vallisneria americana*, *Micranthemum* sp. and *Samolus valerandi* were less prevalent throughout the assessment area.

- The RPS conducted at the Test Site showed no evidence of nutrient enrichment compared to the RPS of the Control Site. Filamentous mat-forming algae were not found at any of the sampled points at the Test Site or Control Site. The canopy cover was lightly shaded in both sites.

Macroinvertebrates (See Tables 5 and 6 and Appendices B and D)

- Qualitative macroinvertebrate data from dipnet samples indicated that the macroinvertebrate community at the Test Site was as diverse as the Control Site. The Test Site scored 55 on the Stream Condition Index (SCI) and the Control Site scored 68. Both sites had similar taxonomic composition, with Diptera composing nearly 63 percent of organisms collected at the Test Site and nearly 68 percent of the organisms collected at

the Control Site. The percent of very tolerant individuals, the numbers of Ephemeroptera, Trichoptera, sensitive, suspension feeders and clinger taxa were similar at each site. In addition, the Test Site had a higher percentage of Tanytarsini individuals, which tend to decline with human disturbance. However, the higher percent of dominant taxon and any long-lived taxa collected in the Test Site sample, may indicate a slight decline in the Test Site conditions when compared with the Control Site. Although the SCI score is 13 points higher in the Control Site, the differences could be attributed to the waters influencing the Control Site (Holmes Creek) and Test Site (Holmes Creek and Little Creek), heavy rain prior to sampling event, and the contribution of effluent, which contained a higher level of copper, detectable organic constituents and pesticides.

- For more information or to obtain a copy of the taxa lists, please contact the Biology Laboratory at 850-245-8177.

Organic Constituents (See Table 7 and Appendix E)

- Atrazine, fipronil, fipronil desulfinyl, fipronil sulfide, fipronil sulfone, hexazinone, metolachlor, norflurazon, sulfentrazone, tebuconazole were detected in the effluent grab sample. These organic constituents serve as herbicides, insecticides, and fungicides.

- There are no effluent permit limits for organic constituents.

Literature Cited

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Table 1. Measured field parameters

Effluent limits, Class III Water Quality Criteria for Fresh Waters, and field parameters

Parameter	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab	Test Site	Control Site
Habitat Assessment	-	-	-	-	130	136
Sample Depth	m	-	-	-	0.3	0.3
Temperature	C	-	-	18.8	12.6	13.6
pH	SU	6.0 - 8.5 s	6.0 - 8.5 s	7.0	6.3	6.9
Specific Conductance	µmhos/cm	≤ 1,275	-	173	85.3	72.3
Salinity	ppt	-	-	0.1 c	0.1 c	0 c
Dissolved Oxygen	% saturation	≥ 67	≥ 67	96.9	90.8	95.5
Dissolved Oxygen	mg/L	-	-	-	9.7	9.9
Total Residual Chlorine	mg/L	≤ 0.01	≤ 0.01	0.02 U [1]	-	-

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist

c - Value is calculated

s - Single sample

U - Material analyzed for but not detected; value reported is the method detection limit

1- Measurement taken by DEP staff with Hach colorimeter with an MDL of 0.02 mg/L.

Table 2. Analytical water chemistry, microbiological, and toxicological data

Effluent limits, Class III Water Quality Criteria for Fresh Waters, and analytical water chemistry, microbiological, and toxicological data

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab	Effluent Composite	Test Site	Control Site
Ortho-phosphate	mg P/L	-	-	0.76	-	0.017	0.008 I
Total Phosphorus	mg P/L	≤ 0.06 g	≤ 2.0 s p	-	2.0 Y	0.041	0.031
Total Ammonia	mg N/L	≤ 5.10 s c (Effluent) ≤ 8.58 s c (Test) ≤ 7.33 s c (Control)	-	-	0.030 Y	0.017	0.015
Un-ionized Ammonia (calculated salinity)	mg N/L	-	-	-	-	< 0.02 c	< 0.02 c
Nitrate and Nitrite [2]	mg N/L	-	-	-	1.2 Y	0.18	0.13
Total Kjeldahl Nitrogen	mg N/L	-	-	-	4.5 Y	0.32	0.33
Organic Nitrogen	mg N/L	-	-	-	4.5 c	0.30 c	0.32 c
Total Nitrogen	mg N/L	≤ 0.67 g	≤ 6.0 s p	-	5.7 c	0.50 c	0.46 c
Total Organic Carbon	mg C/L	-	-	-	7.2 Y	4.7	4.9
Chlorophyll *a* - Corrected	µg/L	-	-	1.6 U	-	2.0 I	1.6 I
Phaeophytin	µg/L	-	-	2.9 I	-	1.0 I	0.90 U
CBOD, 5 day, N - inhibited	mg/L	-	≤ 10.0 s p	-	-	2.0 U	2.0 U
Total Suspended Solids	mg/L	-	≤ 10.0 s p	-	9 I	4 I	4 I
Turbidity	NTU	≤ 29 t	-	29 A	-	11	12
Color (true)	PCU	-	-	2.5 UA	-	53 A	58
Alkalinity	mg CaCO3/L	≥ 20	-	54	-	34	28
Chloride	mg Cl/L	-	-	11	-	4.6	4.4
Fluoride	mg F/L	≤ 10.0	-	0.041 I	-	0.035 U	0.035 U
Sulfate	mg SO4/L	-	-	10	-	1.2	0.90
Fecal Coliforms	cfu/100 mL	-	≤ 800 s	57 A	-	130 B Q	120 Q
Escherichia coli	MPN/100 mL	≤ 410	≤ 410	218.0 A	-	224.7 Q	193.5 Q

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab	Effluent Composite	Test Site	Control Site
Bioassay - Water flea *(Ceriodaphnia dubia)*	% effluent	-	≥ 100 s p	-	No result	-	-
Bioassay - Fish *(Pimephales promelas)*	% effluent	-	≥ 100 s p	-	> 100	-	-

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist
c - Value is calculated
g- Value expressed as annual geometric mean.
p - 16-hour flow proportioned composite (FPC) for all analytes except toxicity (24-hour FPC)
s - Single sample
t - Shall not exceed 29 NTUs above background
A - Value reported is the mean of two or more determinations
B - Results based on colony counts outside the acceptance range
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
Q - Sample held beyond normal holding time
U - Material analyzed for but not detected; value reported is the method detection limit
Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
2 - Analyte detected in the field blank at 0.005 I mg N/L

Table 3. Analytical metals data

Effluent limits, Class III Water Quality Criteria for Fresh Waters, and analytical metals data

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Composite	Test Site Class III Criteria	Test Site	Control Site Class III Criteria	Control Site
Hardness	mg CaCO3/L	-	Report	77.5 c	-	40.2 c	-	33.8 c
Aluminum	µg/L	-	-	619	-	363	-	383
Arsenic	µg/L	≤ 50	-	0.69	≤ 50	0.45	≤ 50	0.50
Cadmium	µg/L	≤ 0.224 b	-	0.069 I	≤ 0.138 b	0.020 U	≤ 0.121 b	0.026 I
Calcium	mg/L	-	-	22.7	-	13.9	-	11.6
Chromium, Total [3]	µg/L	≤ 69.9 b	-	0.64 I	≤ 40.9 b	0.78 I	≤ 35.4 b	0.84 I
Copper [4]	µg/L	≤ 7.5 b	≤ 7.5 b p	23.7 e	≤ 4.28 b	0.54 I	≤ 3.69 b	0.40 U
Iron	µg/L	≤ 1,000	-	380	≤ 1,000	970	≤ 1,000	1,040 e
Lead [4]	µg/L	≤ 2.3 b	-	0.47	≤ 0.998 b	0.44	≤ 0.799 b	0.45
Magnesium	mg/L	-	-	5.05	-	1.34	-	1.17
Nickel	µg/L	≤ 42 b	-	0.68 I	≤ 24.1 b	0.59 I	≤ 20.8 b	0.50 U
Potassium	mg/L	-	-	3.2	-	1.0 I	-	0.96 I
Selenium	µg/L	≤ 5.0	-	0.49 I	≤ 5.0	0.20 U	≤ 5.0	0.20 U
Silver	µg/L	≤ 0.07	-	0.076 e	≤ 0.07	0.010 U	≤ 0.07	0.015 I
Sodium	mg/L	-	-	7.8	-	2.1	-	1.9 I
Zinc	µg/L	≤ 96.5 b	-	35	≤ 55.4 b	5.0 U	≤ 47.8 b	5.0 U

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist

b - Value is calculated based on hardness

c - Value is calculated

e - Value exceeds the Class III Water Quality Criteria or permit limits

p - 16-hour flow proportioned composite (FPC) for all analytes except toxicity (24-hour FPC)

I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

U - Material analyzed for but not detected; value reported is the method detection limit

3 - Class III Water Quality Criterion for Fresh Waters (Paragraph 62-302.530(19)(a), F.A.C.) is for chromium-III

4- Analyte detected in the equipment blank at 2.50 µg/L for copper and 0.70 µg/L for lead

Table 4. Algal Growth Potential (AGP)

Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN), ortho-phosphate (OP), total nitrogen (TN) and total phosphorus (TP) limitation and ratios of nitrogen to phosphorus

Location	Test Species	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (OP) ± 20%	Predicted AGP (TN) ± 20%	Predicted AGP (TP) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent Grab	*Pseudokirchneriella subcapitata*	100 A	-	326.8 ± 65.4	-	-	-	-
Test Site	*Pseudokirchneriella subcapitata*	7.69 Q	7.5 ± 1.5	7.3 ± 1.5	19 ± 3.8	17.6 ± 3.5	11.6	12.2
Control Site	*Pseudokirchneriella subcapitata*	2.50 Q	5.5 ± 1.1	3.4 ± 0.7	17.5 ± 3.5	13.3 ± 2.7	18.1	14.8

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist

A - Value reported is the mean of two or more determinations

Q - Sample held beyond normal holding time

Table 5. Macroinvertebrate dipnet samples – qualitative

City of Graceville	Test Site		Control Site	
Stream Condition Index 2012	**55**		**68**	
Replicate	Rep 1	Rep 2	Rep 1	Rep 2
Stream Condition Index Metrics				
Number of Total Taxa	23	29	27	24
Number of Ephemeroptera Taxa	6	5	4	6
Number of Trichoptera Taxa	2	1	2	1
Number of Clinger Taxa	8	7	9	6
Number of Long-lived Taxa	0	0	3	3
Number of Sensitive Taxa	10	10	11	9
Percent of Dominant Taxon	34.9	38.6	17.1	19.4
Percent Suspension Feeders and Filterers	61.3	55.0	48.7	54.9
Percent of Tanytarsini Individuals	36.3	39.3	18.4	20.1
Percent of Very Tolerant Individuals	2.1	2.9	3.3	0.0
Total Number of Individuals	146	140	152	144
Community Composition: Percent of total				
Dominant Taxon Name	*Rheotanytarsus exiguus* grp.	*Rheotanytarsus exiguus* grp.	*Rheotanytarsus exiguus* grp.	*Cheumatopsyche* sp.
	(Diptera)	(Diptera)	(Diptera)	(Trichoptera)
Acariformes	0.0	2.1	0.0	0.0
Bivalvia	0.0	0.0	0.7	0.7
Coleoptera	0.7	1.4	1.3	0.0
Decapoda	0.0	0.0	0.7	0.7
Diptera	61.0	65.7	72.4	63.9
Ephemeroptera	14.4	8.6	5.3	11.8
Gastropoda	0.7	4.3	0.0	0.7
Isopoda	0.7	0.0	0.0	0.7
Odonata	0.7	0.7	0.0	0.7
Oligochaeta	0.0	0.0	0.7	0.0
Plecoptera	0.7	3.6	2.0	1.4
Trichoptera	21.2	13.6	16.5	19.4
Other	0.0	0.0	0.6	0.0
Functional Feeding Groups: Percent of total				
Browser-Grazers	0.3	0.0	0.0	0.0
Burrowing Deposit Feeders	0.0	0.0	0.7	0.0
Piercers	0.0	0.0	1.0	0.0
Predators	2.1	7.1	4.6	3.1
Scavengers	0.3	0.0	0.3	0.7
Scrapers	2.4	6.1	0.3	3.1
Shredders	9.6	10.7	11.2	8.7
Surface Deposit Feeders	24.0	21.1	33.2	29.5
Suspension Feeders	61.3	55.0	48.7	54.9

Table 6. Detected Organic Constituents

Effluent limits, Class III Water Quality Criteria for Fresh Waters, and analytical organic and pesticide data

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab
Atrazine	ng/L	-	-	0.70 I
Fipronil	ng/L	-	-	13
Fipronil Desulfinyl	ng/L	-	-	0.16 I
Fipronil Sulfide	ng/L	-	-	1.3
Fipronil Sulfone	ng/L	-	-	5.9
Hexazinone	ng/L	-	-	1.3 I
Metolachlor	ng/L	-	-	2.2
Norflurazon	ng/L	-	-	0.80 I
Sulfentrazone	ng/L	-	-	0.78 I
Tebuconazole	ng/L	-	-	0.95 I

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Appendix A. Facility Summary

PART I: Information gathered prior to sampling event

Prepared By: Larry Couch	**Contact Number: X10047**
Facility Name (as it appears on permit): City of Graceville - Advanced Wastewater Treatment Facility	**Former Names: N/A**
NPDES Permit Number: FL0038555	**Permit Expiration Date: September 20, 2023**
Physical Address: 865 6th St, Graceville, FL	
District: NWD	**County: Jackson**
Function of Facility: Municipal Wastewater Treatment plant	
Facility Type: DW	**Permitted Capacity (MGD): 1.1**
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): 0.957 MGD (01/2020-12/2020)	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): N/A	
Description of type of Discharge: ☐ **Continuous** ☒ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify:**	

Description of Sampling Location(s) - actual permit designation of permitted sampling point(s): Effluent samples shall be taken at the monitoring site locations listed in Permit Condition I.A.1. and as described below:

Monitoring Site Number	Description of Monitoring Site
FLW-01	Sonic flow meter at Parshall Flume before chlorine contact chamber
EFF-01	Manhole on Pipe After Dechlorination
EFA-01	Baffle at end of Chlorine Contact Chamber Prior to Dechlorination
EFD-01	Manhole on Pipe After Dechlorination

Description of Permitted Outfall(s): The effluent discharges intermittently, daily in batches into Little Creek, a Class III freshwater creek [waterbody identification (WBID) 80], which flows into the upper segment of Holmes Creek, a Class III freshwater creek, WBID 59C, for which the discharge pipe is approximately 1,500 feet in length and discharges through an open end pipe above the water surface level during normal creek levels The point of discharge is located approximately at latitude 30°57' 6" N, longitude 85°31' 41" W.

Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility): 1.1 MGD maximum monthly average daily flow activated sludge wastewater treatment system. Static bar screens are located upstream of the plant influent pump station. Influent

pump stations discharge to two fine screens at the grit chamber and headworks. Screened influent then is directed to either a 750,000 gallon influent Flow Equalization Tank or to the two Sequential Batch Reactors (SBRs) creating an even flow entering the plant. Full contact stabilization biological treatment is affected by dual SBRs operating in a fill-and-draw, non-steady state activated sludge process providing aeration and clarification. SBR's discharge to two post equalization tanks before two disk filters prior to disinfection. Effluent is disinfected in a chlorine contact chamber and subsequently dechlorinated prior to discharging into Holmes Creek. Biosolids are aerobically digested, dewatered either by a screw press or drying beds. Class B biosolids may be land applied at permitted land application sites. Facility is permitted to receive biosolids from other WWTPs for further treatment and disposal.

PART I: Continued

List <u>current</u> Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under
(Leave cell blank if not applicable)

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/ Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
Flow	MGD	Max Max Max	1.1 Report Report	Monthly Average 3-Mo Rolling Average Annual Average	Continuous	Recording Flow Meter with Totalizer	FLW-01	See I.A.4
BOD, Carbonaceous 5 day, 20C	mg/L	Max Max Max Max	5.0 6.25 7.5 10.0	Annual Average Monthly Average Weekly Average Single Sample	Weekly	16-hr FPC	EFF-01	
Solids, Total Suspended	mg/L	Max Max Max Max	5.0 6.25 7.5 10.0	Annual Average Monthly Average Weekly Average Single Sample	Weekly	16-hr FPC	EFF-01	
Nitrogen, Total	mg/L	Max Max Max Max	3.0 3.75 4.5 6.0	Annual Average Monthly Average Weekly Average Single Sample	Weekly	16-hr FPC	EFF-01	See I.A.11
Phosphorus, Total (as P)	mg/L	Max Max Max Max	1.0 1.25 1.5 2.0	Annual Average Monthly Average Weekly Average Single Sample	Weekly	16-hr FPC	EFF-01	See I.A.11
Coliform, Fecal	#/100mL	Max Max Max Max	200 200 400 800	Annual Average Monthly Geo Mean 90th Percentile Single Sample	Weekly	Grab	EFF-01	See I.A.5 and I.A.6
E.coli	#/100mL	Max Max	126 410	Monthly Geo Mean 90th Percentile	Weekly	Grab	EFF-01	See I.A.5 and I.A.6

PART I: Continued

List <u>current</u> Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under
(Leave cell blank if not applicable)

pH	s.u.	Min Max	6.0 8.5	Single Sample Single Sample	Continuous	Meter	EFF-01	See I.A.3
			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/ Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
Chlorine, Total Residual (For Disinfection)	mg/L	Min	0.5	Single Sample	Continuous	Meter	EFA-01	See I.A.3 and I.A.7
Chlorine, Total Residual (For Dechlorination)	mg/L	Max	0.01	Single Sample	Daily; 24 hours	Grab	EFD-01	
Oxygen, Dissolved Percent Saturation	percent samples in compliance (% smpcmpln)	Min	90	Monthly Total	Daily; 24 hours	Meter	EFF-01	See I.A.10
Hardness, Total (as CaCO3)	mg/L	Max	Report	Single Sample	Quarterly	16-hr FPC	EFF-01	See I.A.8
Copper, Total Recoverable	ug/L	Max	-	Single Sample	Quarterly	16-hr FPC	EFF-01	See I.A.8
Chronic Whole Effluent Toxicity, 7- Day IC25 (Ceriodaphnia dubia)	percent	Min	100	Single Sample	Annually	24-hr FPC	EFF-01	See I.A.9

PART I: Continued								
List <u>current</u> Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under (Leave cell blank if not applicable)								
Chronic Whole Effluent Toxicity, 7- Day IC25 (Pimephales promelas)	percent	Min	100	Single Sample	Annually	24-hr FPC	EFF-01	See I.A.9

PART I: Continued	
Receiving Waters: Holmes Creek	**Classification (indicate whether fresh or marine):** Class III Fresh

Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.):

Sampling Requirements from Permit Condition I.A.9.:
c. (1) For each routine test or additional follow-up test conducted, a total of three flow proportional 24-hr composite samples of final effluent shall be collected and used in accordance with the sampling protocol discussed in EPA-821-R-02-013, Section 8.
(2) The first sample shall be used to initiate the test. The remaining two samples shall be collected according to the protocol and used as renewal solutions on Day 3 (48 hours) and Day 5 (96 hours) of the test.
(3) Samples for routine and additional follow-up tests shall not be collected on the same day.
d. Test Requirements
(1) Routine Tests: All routine tests shall be conducted using a control (0% effluent) and a minimum of five test dilutions: 100%, 50%, 25%, 12.5%, and 6.25% final effluent.
(2) The permittee shall conduct a daphnid, Ceriodaphnia dubia, Survival and Reproduction Test and a fathead minnow, Pimephales promelas, Larval Survival and Growth Test, concurrently.
(3) All test species, procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 4th Edition, EPA-821-R-02-013. Any deviation of the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use. In the event the above method is revised, the permittee shall conduct chronic toxicity testing in accordance with the revised method.
(4) The control water and dilution water shall be moderately hard water as described in EPA-821-R-02-013, Section 7.2.3.
e. Quality Assurance Requirements
(1) A standard reference toxicant (SRT) quality assurance (QA) chronic toxicity test shall be conducted with each species used in the required toxicity tests either concurrently or initiated no more than 30 days before the date of each routine or additional follow-up test conducted. Additionally, the SRT test must be conducted concurrently if the test organisms are obtained from outside the test laboratory unless the test organism supplier provides control chart data from at least the last five monthly chronic toxicity tests using the same reference toxicant and test conditions. If the organism supplier provides the required SRT data, the organism supplier's SRT data and the test laboratory's monthly SRT-QA data shall be included in the reports for each companion routine or additional follow-up test required.
(2) If the mortality in the control (0% effluent) exceeds 20% for either species in any test or does not meet "test acceptability criteria", the test for that species (including the control) shall be invalidated and the test repeated. Test acceptability criteria for each species are defined in EPA-821-R-02-013, Section 13.12 (Ceriodaphnia dubia) and Section 11.11 (Pimephales promelas). The repeat test shall begin within 21 days after the last day of the invalid test.
(3) If 100% mortality occurs in all effluent concentrations for either test species prior to the end of any test and the control mortality is less than 20% at that time, the test (including the control) for that species shall be terminated with the conclusion that the test fails and constitutes non-compliance.
(4) Routine and additional follow-up tests shall be evaluated for acceptability based on the observed dose-response relationship as required by EPA-821-R-02-013, Section 10.2.6., and the evaluation shall be included with the bioassay laboratory reports.

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.): Consent Order OGC FILE NO. 18-1186 for Graceville AWTF was executed on September 19, 2018 to address Sanitary Sewer Overflows (SSO) and average flow exceedances caused by issues with the collection system. The facility is ordered to make corrective actions such as mapping the collection system, SSO response and management, evaluating the collection system, preventative measures, information on evaluations and timelines for correction. The facility is required to submit a semiannual progress report that describes what is being done to comply with the Order.

Facility Mixing Zone Details (if applicable): N/A

List Permit Violations (DMR data) and plant upsets that occurred at the plant within the last year:

Date	Parameter and Units	Limit	Result
10/31/2020	Solids, Total Suspended (mg/L)	7.5	8
9/30/2020	Solids, Total Suspended (mg/L)	7.5	7.8
2/29/2020	Phosphorus, Total (as P) (mg/L)	1.5	1.97
1/31/2020	Nitrogen, Total (mg/L) Monthly Average	3.75	4.01
1/31/2020	Nitrogen, Total (mg/L) Weekly Average	4.5	4.7

Describe previous FYI and WQBEL study:
Link to 2016 FYI:
https://depedms.dep.state.fl.us:443/Oculus/servlet/shell?command=getEntity&[guid=38.608829.1]&[profile=Discovery_Compliance]

2016 WQBEL Study Summary:
Date: May 25, 2018 From: David Morres To: DEP File No. FL0038555-012-DW1P Via: Bill Evans, P.E.
Subject: LEVEL I WQBEL, City of Graceville AWTF, Jackson County

The Level I WQBEL process applies to the renewal of existing permits when data are sufficient to determine that the receiving waters currently meet standards and are expected to continue to meet standards with the discharge [Rule 62-650.400(1)].

Although the receiving stream Holmes Creek (upper segment), WBID-59C did not appear on the FDEP's 303(d) list of impaired waters, the downstream Holmes Creek (lower segment), WBID-59D did
appear on the list of impaired waters for Nutrients (Algal Mats). See the following link to Florida's Statewide Comprehensive Verified List of Impaired Waters:
https://floridadep.gov/dear/watershed-assessment-section/documents/comprehensive-verified-list

The most recent 2016 Biological Assessment of City of Graceville AWTF for which effluent samples were taken on November 14, 2016, and the report finalized in July 2017. The final inspection report was
issued on August 14, 2017. Selected results are listed below.
ftp://ftp.dep.state.fl.us/pub/labs/lds/reports/15117.pdf

The dissolved oxygen of the effluent, Test Site, and Control Site complied with the Class III Freshwater Quality Criterion (62-302.530(58)(a), F.A.C.) and effluent permit limits. Holmes Creek has Site Specific Alternative Criteria (SSAC) for dissolved oxygen from June 1 through September 30. The minimum during that timeframe is 4.0 mg/L. Class III Freshwater Quality Criteria apply because this sampling event took place in November.
Receiving waters for this facility fall within the Panhandle West Nutrient Watershed Region for Numeric Nutrient Criteria (NNC). The nutrient threshold values for the annual geometric mean concentrations are 0.06 mg/L for total phosphorus and 0.67 mg/L for total nitrogen. This FYI event can only provide single sample results; therefore, compliance should be determined with additional sampling events.
Qualitative macroinvertebrate data from dipnet samples indicated that the macroinvertebrate communities at the Test and Control Sites were similar. The Test Site scored 67 A on the Stream Condition Index (SCI) and the Control Site scored 69 A, indicative of well-balanced faunal communities. Overall, there were no negative effects on macroinvertebrates at the Test Site that were attributable to the effluent.
There is no evidence of an impact on the macroinvertebrate or floral communities for this sampling event. This FYI event can only provide single sample results; therefore, Numeric Nutrient Criteria (NNC) compliance should be determined with additional sampling events. New NNC requirements were set forth in Administrative Order, (AO-110NW), which accompanied the new permit. For Numeric Nutrient Criteria details and changes applied to the current permit, see link above for complete report. Based on the information included in the LEVEL I WQBEL, and AO-110NW accompanying the
proposed permit renewal, which includes a plan of study to determine if NNC is in compliance in Holmes

Creek (upper segment), WBID-59C, it was concluded that no limits other than those already included in the existing permit, or added in this proposed permit renewal, were needed to maintain Florida water quality standards at that time.
Describe previous or current Enforcement Actions (including WLs): The facility was issued a Warning Letter on July 30, 2020 as the result of a Compliance Evaluation Inspection that found deficiencies including the disk filter portion of the treatment system was no longer being used, the outfall pipeline was past due for repairs as part of a permit condition and other items that related to the Consent Order OGC 18-1186 as mentioned above.
Describe any violations or problems noted in previous inspection: See description above.
Discuss whether DMR trends within previous five years are improving or declining: DMR trends have remained good except for as noted in the following: 2016 and the beginning of 2017 were characterized by exceedances in flow, which is being addressed by the current Consent Order. Exceedances for BOD were seen for several months in 2016, 2017 and 2018.
Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse):

PART II: Sampling Event Information	
Date(s) sample collected: 2/15/2021	**Sampler(s): Steve Hafner, Larry Couch, Kevin Grace**
Temperature (Deg C): 18.8	**pH (SU): 7.0**
Dissolved Oxygen (~~mg/L~~) (% sat): 96.9	**Conductivity (umhos/cm): 173**
Total Residual Chlorine (mg/L): 0.72	**Total Residual Chlorine - after Disinfection (mg/L): 0.02**
Method of Chlorination: chlorine (gas)	**Method of De-chlorination: sulfur dioxide**
Flow During Sample Collection for each outfall(MGD): 2.422	
Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day): 0.957 MGD	
Describe Discharge during Sampling Event: **☒ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent** **☐ Other, please specify:**	
Describe any conditions, difficulties or abnormal events that occurred during the sample collection and any other additional comments here: Heavy rain (about 5+ inches cumulative over previous 5 days recorded at the site) in the area caused in stream sampling to be postponed due to flood conditions in Holmes Creek. Turbidity of effluent looked elevated also due to the heavy flow.	

Appendix B. Explanations of Measurements

Biological assessments are prepared by DEP staff to provide information for review of NPDES permit renewal applications. Biological assessments, in conjunction with other information concerning the subject facility and its receiving-water body, are used to determine appropriate permit conditions. References to Rule 62-302.530, F.A.C., are to the currently applicable surface water quality criteria table with an effective date of 02/17/2016 and a notice identification number of 17115667.

- **Chemical Analyses of the Effluent**

  The effluent was analyzed for nutrients, metals, organic constituents (base, neutral, and acid extractables) and pesticides following DEP SOPs. The results from these analyses were compared with Water Quality Criteria (62-302, F.A.C.) and facility permit limits.

- **Toxicity Bioassays**

  Greater than 50% mortality in an acute toxicity test may constitute an exceedance of Paragraph 62-302.500(1)(a) and/or facility permit limits. A 25% inhibition concentration (IC25) is the effluent concentration causing a 25% reduction in a biological response such as biomass or reproduction when compared to a control population. An IC25 of less than 100% in a chronic test may constitute exceedances of Subsection 62-302.530(20), Subsection 62-302.530(62) and/or facility permit limits. A no observed effect concentration (NOEC) less than 100% effluent in a chronic test may constitute an exceedance of Subsection 62-302.530(62) and/or facility permit limits. Standard reference toxicant (SRT) tests are conducted monthly to ensure quality in toxicity testing.

- **Bacteriological Testing**

  High levels of fecal indicator bacteria may constitute an exceedance of Subsection 62-302.530(6) and/or facility permit limits. Fecal coliform results often are based on colony counts outside the acceptable range (B-qualifier). The dilutions performed on the sample did not yield results within the method acceptable range of 20- 60 colony forming units per plate. The B-qualifier does not affect data quality.

- **Habitat Assessment**

  Habitat assessment is used to evaluate the physical structure and extent of disturbance in a waterbody. Eight aspects are ranked, with 20 possible points for each aspect (QA Rule SOP FT 3100). The Habitat Assessment score includes types and amounts of benthic substrates, water velocity, amount of sand or silt accumulation, extent of artificial channelization, bank stability, and riparian zone width and vegetation type. All scores are summed to yield an overall Habitat Assessment score. Habitat Assessment score ranges from 11-160 and overall habitat quality is assigned to one of four categories: Optimal (120-160 points), Suboptimal (80-119 points), Marginal (40-79 points), and Poor (11-39 points).

- **Algal Growth Potential (AGP)**

  The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. AGP results within the range 6.10 to 20.0 mg dry wt/L

are suggested to be representative of high productivity for freshwaters (Miller et al. 1978). High AGP values may constitute exceedances of Subsection 62-302.530(47), F.A.C., Paragraph 62-302.530(48)(a), F.A.C. and/or Paragraph 62-302.530(48)(b), F.A.C.

The concentration of nutrients in a water sample may be used to calculate the expected yield of AGP under the assumption that other required nutrients (e.g. silicon, micronutrients) are present in excess (Miller *et al*. 1978). The expected amount of production is calculated as 38 times the total soluble inorganic nitrogen (nitrate and nitrite plus ammonia) under nitrogen limitation or 430 times the ortho-phosphate (OP) concentration under phosphorus limitation with an error of ± 20%. When the ratio of nitrogen to phosphorus (N: P) is less than 10:1, nitrogen limitation of algal production is likely. When the N: P ratio is 20:1 or greater, phosphorus limitation is likely (USEPA 2000). For ratios in-between, co-limitation may occur. Production of lower biomass than expected may be evidence of growth inhibition related to toxic compounds present in the water sample tested and may constitute an exceedance of Subsection 62-302.530(62), F.A.C.

- **Chlorophyll a content**

  Chlorophyll *a* content is an estimate of algal biomass. High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may be constitute exceedances of Subsection 62-302.530(47), F.A.C., Paragraph 62-302.530(48)(a) F.A.C. and/or Paragraph 62-302.530(48)(b) F.A.C..

- **Benthic Macroinvertebrate Assemblages**

  Benthic macroinvertebrates were collected using two methods. Quantitative samples were collected from Hester-Dendy multi-plate samplers incubated for 28 days. Qualitative collections are made using 20 dipnet sweeps (QA Rule SOP FS7420). Benthic macroinvertebrates were sorted and identified to the lowest practical taxonomic level, usually species.

  - Taxa richness: Taxa richness is the number of distinct macroinvertebrate taxa present in a sample. Stress, habitat destruction and pollution tend to reduce the number of different types of organisms present (Karr and Chu 1998). Decreases in taxa richness related to a facility's effluent may constitute exceedances of Subsection 62-302.530(47), F.A.C., Paragraph 62-302.530(48)(a), F.A.C., Paragraph 62-302.530(48)(b), F.A.C. and/or Subsection 62-302.530(62), F.A.C.
  - Percent Contribution of Dominant Taxon: Percent contribution of the dominant taxon is calculated by dividing the number of individuals in the most abundant taxa by the total number of individuals counted. Percent contribution of the dominant taxon tends to increase with increasing perturbation (Plafkin *et al*., 1989). Increases in the percent contribution of the dominant taxon related to a facility's effluent may constitute exceedances of Subsection 62-302.530(47), F.A.C., Paragraph 62-302.530(48)(a), F.A.C. and/or Paragraph 62-302.530(48)(b), F.A.C.
  - Community Composition: Shifts in proportions of major groups of organisms downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Fore et. al. 2007, Karr and Chu 1998). Shifts in community composition related to a facility's effluent may constitute exceedances

of Subsection 62-302.530(47) F.A.C., Paragraph 62-302.530(48)(a), F.A.C., Paragraph 62-302.530(48)(b), F.A.C. and/or Subsection 62-302.530(62), F.A.C.

- Functional Feeding Groups: Environmental degradation may differentially affect groups of invertebrates based on how the group feeds (e.g. predators, deposit feeders, etc.). In Florida, pollution may be responsible for reducing the numbers of filter feeders and shredders (Fore et. al. 2007). Changes in the proportions of functional feeding groups related to a facility's effluent may constitute exceedances of Subsection 62-302.530(47), F.A.C., Paragraph 62-302.530(48)(a), F.A.C., Paragraph 62-302.530(48)(b), F.A.C. and/or Subsection 62-302.530(62), F.A.C.
- The Stream Condition Index (SCI): The SCI is a biological assessment tool that measures the degree to which flowing fresh waters support a healthy, well-balanced biological community, as indicated by aquatic, benthic macroinvertebrates. Macroinvertebrate taxonomic and abundance data are used to calculate ten biological metric scores, each of which has been shown to respond predictably to human disturbance (Fore et al. 2007; DEP SOP SCI 1000; DEP-SAS-001/11, incorporated into the Quality Assurance Rule by reference Paragraph 62-160.210(2)(a), F.A.C.). The points for each of the metric scores (0 to 10) are summed to yield a final SCI score (range 0-100). The ten metrics are percent contribution of Tanytarsini, number of sensitive taxa, percent contribution of very tolerant taxa, number of total taxa, number of Ephemeroptera taxa, number of Trichoptera taxa, percent contribution of the dominant taxon, the percent contribution of suspension and filter feeders, number of long-lived taxa, and number of clinger taxa. As human disturbance increases, it is expected that the number of total taxa, the number of Ephemeroptera taxa, Trichoptera taxa, sensitive taxa, clinger taxa, long-lived taxa, and the percent contribution of Tanytarsini and suspension and filter feeders will decrease while percent contribution of dominant taxon and percent contribution of very tolerant taxa will increase.

  The SCI can be used to determine faunal health associated with Rule 62-302.531, F.A.C. An average SCI score of 40 or higher from at least two temporally independent SCIs, performed at representative locations and times indicates a balanced faunal community. Neither of the two most recent SCI scores should be less than 35. Failure of the SCI indicates that the stream does not meet the Clean Water Act goal of biological integrity, as measured by community structure and function. A failing SCI could be due to water quality problems or other physical disturbance factors such as habitat disruption or hydrologic alterations. While the stressor may not be known, a failed SCI does indicate that fauna is not well-balanced. A failing SCI score, if it is shown to be related to a facility's effluent, may constitute exceedances of Subsection 62-302.530(47), F.A.C., Paragraph 62-302.530(48)(a), F.A.C., Paragraph 62-302.530(48)(b), F.A.C., or of Subsection 62-302.530(62), F.A.C.

- **Rapid Periphyton Survey**

Rapid Periphyton Survey (RPS) is a rapid method to quantify the extent and abundance of attached algae (periphyton) in a stream or river. A total of 99 points are assessed within a 100m area of sampling reach, 9 equidistant points along 11 cross-section transects spaced 10 m apart, If greater than 20% of sampled points have algal lengths greater than 6mm, a sample

is collected and the autecological information associated with the dominant algae is evaluated (see DEP SOP FS 7230 Rapid Periphyton Survey). This method could be used to determine floral health associated with Rule 62-302.531, F.A.C.

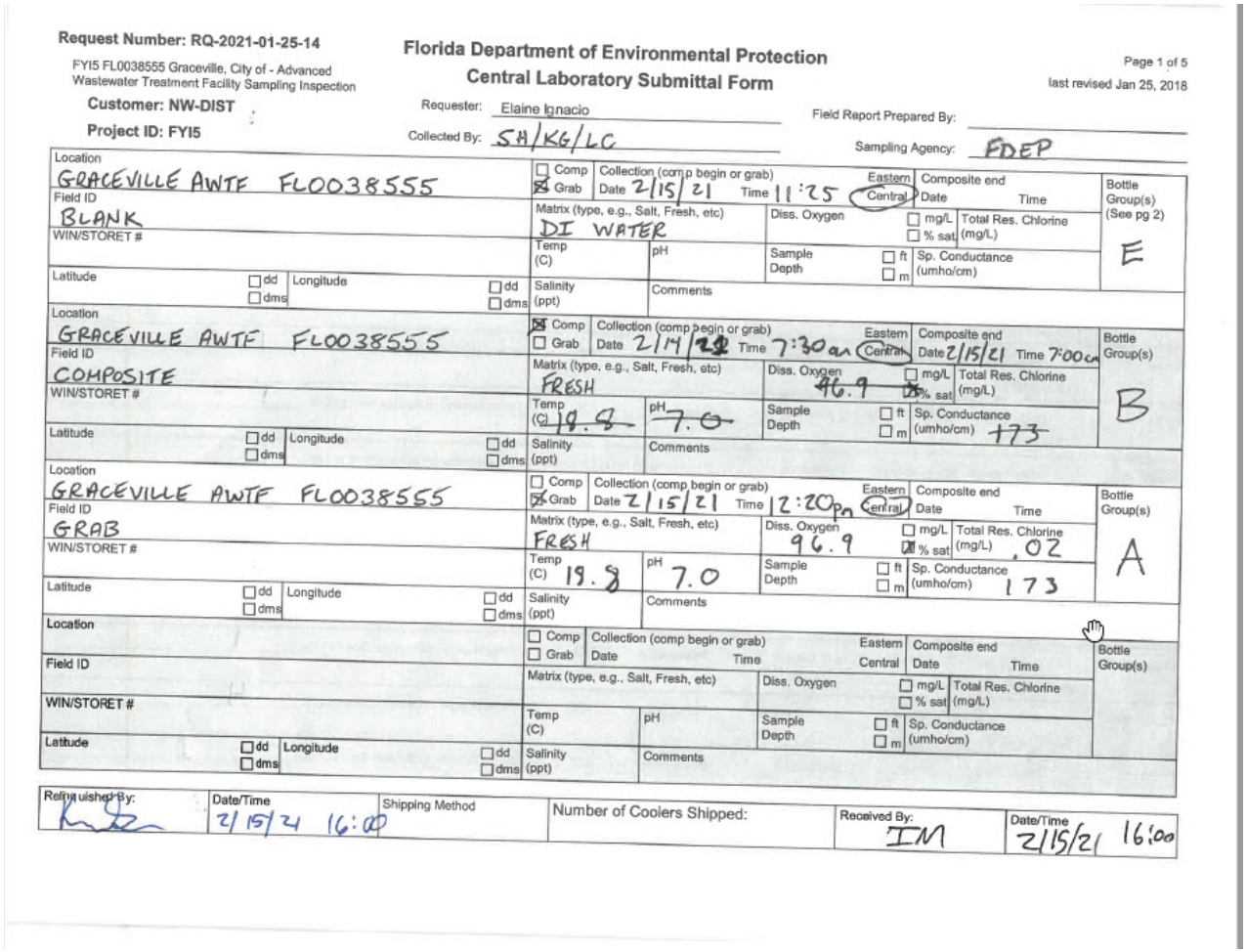
- **Linear Vegetation Survey**

  Linear Vegetation Survey (LVS) is a rapid screening tool for ecological condition, by determining how closely a site's flora resembles that of an undisturbed condition. When the total area of macrophytes equals or exceeds two square meters within the wetted area of the 100 m sampling reach, macrophyte taxonomic names are recorded (DEP SOP FS 7320 Stream and River Linear Vegetation Survey (LVS) Method). This method could be used to determine floral health associated with Rule 62-302.531, F.A.C.

- **Definition of Qualifiers** (Rule 62-160.700, F.A.C.)

  A - Value reported is the mean of two or more determinations
  B - Results based on colony counts outside the acceptable range.
  I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
  J - Estimated value
  K - Actual value is known to be less than value given
  L - Actual value is known to be greater than value given
  N - Presumptive evidence of presence of material.
  O - Sampled, but analysis lost or not performed.
  Q - Sample held beyond normal holding time.
  T - Value reported is less than the criterion of detection.
  U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
  V - Analyte was detected in both sample and method blank.
  X - Too few individuals to calculate SCI value.
  Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
  Z - Colonies were too numerous to count (TNTC)

Appendix C. Chain of Custody



Request Number: RQ-2021-01-25-14

FYI5 FL0038555 Graceville, City of - Advanced Wastewater Treatment Facility Sampling Inspection

Customer: NW-DIST

Project ID: FYI5

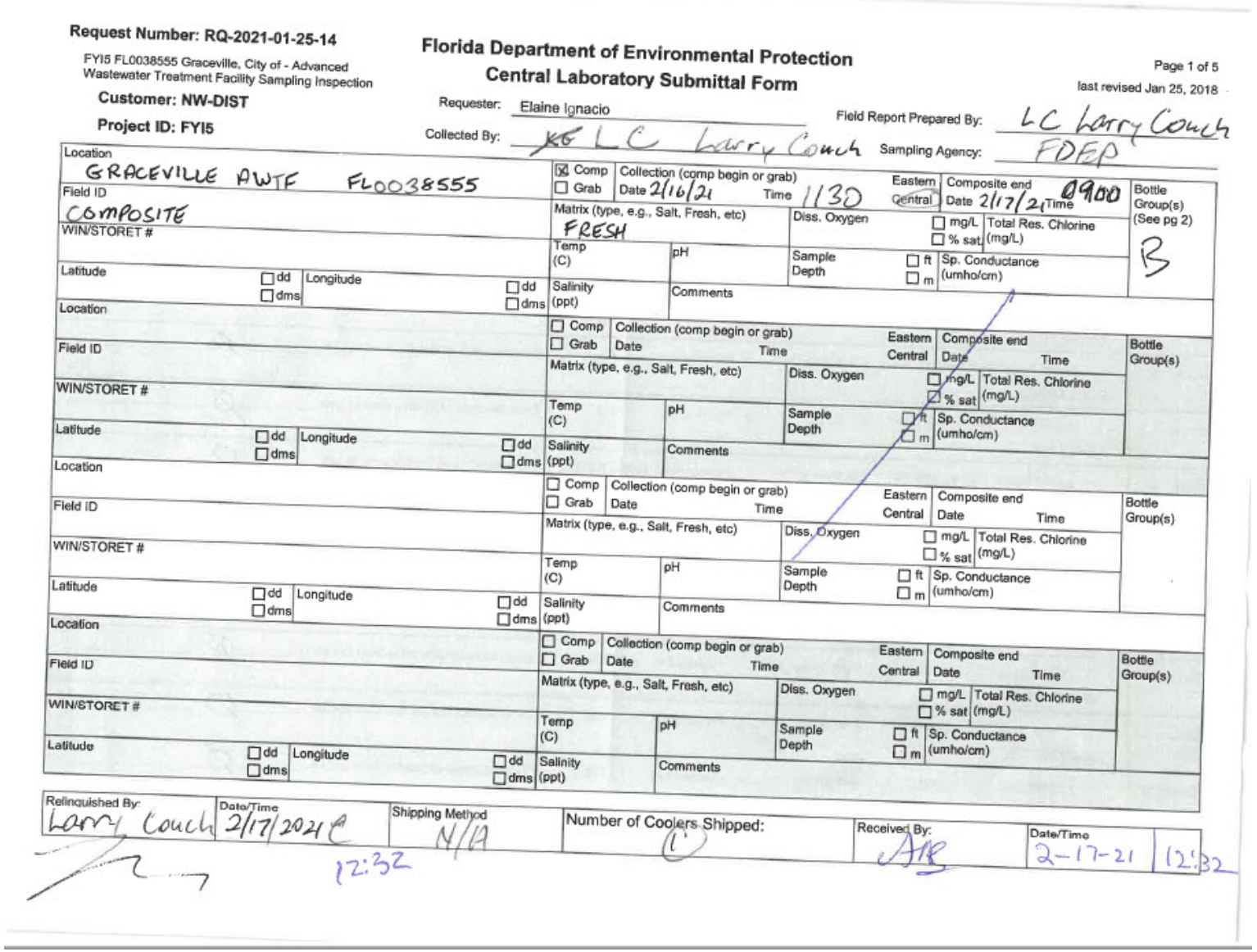
Florida Department of Environmental Protection
Central Laboratory Submittal Form

Page 1 of 5
last revised Jan 25, 2018

Requester: Elaine Ignacio
Collected By: SH/KG/LC
Field Report Prepared By:
Sampling Agency: FDEP

Location	Field ID	WIN/STORET #	Matrix	Collection (comp begin or grab)	Composite end	Temp (C)	pH	Diss. Oxygen	Total Res. Chlorine (mg/L)	Sample Depth	Sp. Conductance (umho/cm)	Salinity (ppt)	Comments	Bottle Group(s)
GRACEVILLE AWTF FL0038555	BLANK		DI WATER	☐ Comp ☒ Grab Date 2/15/21 Time 11:25 Eastern (Central)	Date Time			☐ mg/L ☐ % sat		☐ ft ☐ m				E
GRACEVILLE AWTF FL0038555	COMPOSITE		FRESH	☒ Comp ☐ Grab Date 2/14/21 Time 7:30 am Eastern (Central)	Date 2/15/21 Time 7:00 am	18.8	7.0	96.9 ☒ % sat		☐ ft ☐ m	173			B
GRACEVILLE AWTF FL0038555	GRAB		FRESH	☐ Comp ☒ Grab Date 2/15/21 Time 12:20 pm Eastern (Central)	Date Time	19.8	7.0	96.9 ☒ % sat	.02	☐ ft ☐ m	173			A
				☐ Comp ☐ Grab Date Time Eastern Central	Date Time			☐ mg/L ☐ % sat		☐ ft ☐ m				

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
	2/15/21 16:00			IM	2/15/21 16:00



Request Number: RQ-2021-01-25-14

FYI5 FL0038555 Graceville, City of - Advanced Wastewater Treatment Facility Sampling Inspection

Customer: NW-DIST

Project ID: FYI5

Florida Department of Environmental Protection
Central Laboratory Submittal Form

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last revised Jan 25, 2018

Requester: Elaine Ignacio
Collected By: ~~KG~~ LC Larry Couch
Field Report Prepared By: LC Larry Couch
Sampling Agency: FDEP

Location: GRACEVILLE AWTF FL0038555	☒ Comp ☐ Grab	Collection (comp begin or grab) Date 2/16/21 Time 1130	Eastern Central	Composite end Date 2/17/21 Time 0900	Bottle Group(s) (See pg 2): B						
Field ID: COMPOSITE	Matrix (type, e.g., Salt, Fresh, etc): FRESH			Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)					
WIN/STORET #	Temp (C)	pH		Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)					
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments								
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time	Bottle Group(s)						
Field ID	Matrix (type, e.g., Salt, Fresh, etc)			Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)					
WIN/STORET #	Temp (C)	pH		Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)					
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments								
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time	Bottle Group(s)						
Field ID	Matrix (type, e.g., Salt, Fresh, etc)			Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)					
WIN/STORET #	Temp (C)	pH		Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)					
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments								
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time	Bottle Group(s)						
Field ID	Matrix (type, e.g., Salt, Fresh, etc)			Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)					
WIN/STORET #	Temp (C)	pH		Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)					
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments								

Relinquished By	Date/Time	Shipping Method	Number of Coolers Shipped	Received By	Date/Time
Larry Couch	2/17/2021 12:32	N/A	1	AR	2-17-21 12:32

Request Number: RQ-2021-01-25-14

FYI5 FL0038555 Graceville, City of - Advanced Wastewater Treatment Facility Sampling Inspection

Customer: NW-DIST

Project ID: FYI5

Florida Department of Environmental Protection
Central Laboratory Submittal Form

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last revised Jan 25, 2018

Requester: Elaine Ignacio

Field Report Prepared By: Larry Couch

Collected By: ~~KG~~ Larry Couch

Sampling Agency: FDEP

Location: GRACEVILLE AWTF FL0038555	☒ Comp ☐ Grab	Collection (comp begin or grab) Date 2/18/21 Time 1130	Eastern Central	Composite end Date 2/19/21 Time 0900				Bottle Group(s) (See pg 2): B
Field ID: COMPOSITE	Matrix (type, e.g., Salt, Fresh, etc): FRESH		Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)			
WIN/STORET #	Temp (C)	pH	Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)			
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments					
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time				Bottle Group(s)
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)			
WIN/STORET #	Temp (C)	pH	Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)			
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments					
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time				Bottle Group(s)
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)			
WIN/STORET #	Temp (C)	pH	Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)			
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments					
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time				Bottle Group(s)
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)			
WIN/STORET #	Temp (C)	pH	Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)			
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments					

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
Kevin Grove	2/19/21	Hand	2		2/19/21 1348

Request Number: RQ-2021-01-25-14

FYI5 FL0038555 Graceville, City of - Advanced Wastewater Treatment Facility Sampling Inspection

Customer: NW-DIST

Project ID: FYI5

Florida Department of Environmental Protection
Central Laboratory Submittal Form

last revised Jan 25, 2018

Requester: Elaine Ignacio

Field Report Prepared By: N. Milka

Collected By: Nathan Milka / Stephen Slade / ~~Miranda Butler~~

Sampling Agency: NWROC

Location: Holmes Creek ~~below~~ downstream discharge
Field ID: Graceville Test
WIN/STORET #:
Latitude: 30.94899 ☑ dd ☐ dms **Longitude:** 85.53051 ☐ dd ☐ dms

☐ Comp ☑ Grab | Collection (comp begin or grab) Date 3/9/21 Time 1000 Eastern Central | Composite end Date Time | Bottle Group(s) (See pg 2): C/D

Matrix (type, e.g., Salt, Fresh, etc): | Diss. Oxygen 9.65 ☑ mg/L ☐ % sat | Total Res. Chlorine (mg/L):

Temp (C) 12.6 | pH 6.34 | Sample Depth 0.3 ☐ ft ☑ m | Sp. Conductance (umho/cm) 85.3

Salinity (ppt): | Comments: discharge visible during sampling

---

Location: Holmes Creek ~~upstream~~ of discharge
Field ID: Graceville Control
WIN/STORET #:
Latitude: 30.95047 ☑ dd ☐ dms **Longitude:** 85.53041 ☑ dd ☐ dms

☐ Comp ☑ Grab | Collection (comp begin or grab) Date 3/9/21 Time 1140 Eastern Central | Composite end Date Time | Bottle Group(s): C/D

Matrix (type, e.g., Salt, Fresh, etc): | Diss. Oxygen 9.93 ☑ mg/L ☐ % sat | Total Res. Chlorine (mg/L):

Temp (C) 13.6 | pH 6.92 | Sample Depth 0.3 ☐ ft ☑ m | Sp. Conductance (umho/cm) 72.3

Salinity (ppt) 0.03 | Comments:

Location:
Field ID:
WIN/STORET #:
Latitude: ☐ dd ☐ dms **Longitude:** ☐ dd ☐ dms

☐ Comp ☐ Grab | Collection (comp begin or grab) Date Time Eastern Central | Composite end Date Time | Bottle Group(s):

Matrix (type, e.g., Salt, Fresh, etc): | Diss. Oxygen ☐ mg/L ☐ % sat | Total Res. Chlorine (mg/L):

Temp (C) | pH | Sample Depth ☐ ft ☐ m | Sp. Conductance (umho/cm)

Salinity (ppt): | Comments:

Location:
Field ID:
WIN/STORET #:
Latitude: ☐ dd ☐ dms **Longitude:** ☐ dd ☐ dms

☐ Comp ☐ Grab | Collection (comp begin or grab) Date Time Eastern Central | Composite end Date Time | Bottle Group(s):

Matrix (type, e.g., Salt, Fresh, etc): | Diss. Oxygen ☐ mg/L ☐ % sat | Total Res. Chlorine (mg/L):

Temp (C) | pH | Sample Depth ☐ ft ☐ m | Sp. Conductance (umho/cm)

Salinity (ppt): | Comments:

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
[signature]	3/9/21 1710	Fed Ex	3		

94.0 % sat

660 - 108639

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
TASK ASSIGNMENT/NOTIFICATION FORM: LAB145

Contract Manager: Trenetta Wilson/Magan Bowden (850) 245-8084/ (850) 245-8095
2600 Blair Stone Rd., MS 6512
Tallahassee, FL 32399-2400

Contractor: Eurofins/TestAmerica Laboratories, Inc
5102 LaRoche Ave
Savannah, GA 31404
ATTN: Noel Savoie

DEP Approval By: Trenetta L. Brinkley-Wilson Contractor Approval By: Noel Savoie
Project Manager

Contractor Representatives Contacted: Noel Savoie

Date: 3/10/2021
Means of Contact: Email

Task Assignment Number: OV184 Maximum Cost: **$72.50** Turnaround Time: 5 BD

Sample Delivery Date: 3/10/2021

Project Name/Description:
RQ-2021-01-25-14;NW-DIST-2021-03-10-03_Graceville WWTP;TLH-2021-03-10-31

Deliverable Number/ Parameter Group/ Method	Sample Matrix	# of Samples	# of Containers	DEP ID #	Unit Cost	% Mark-up (if any)	Cost
Quote CBOD 5210B-2011	W	2	2 bottles	2230387-2230388	$33.75		$67.50
217 Sample Disposal Fee:		2			$2.50		$5.00
Total Number of Containers Shipped:		2				**Total:**	$72.50

QC Instructions:

Comments: Quote #66015426 - 0

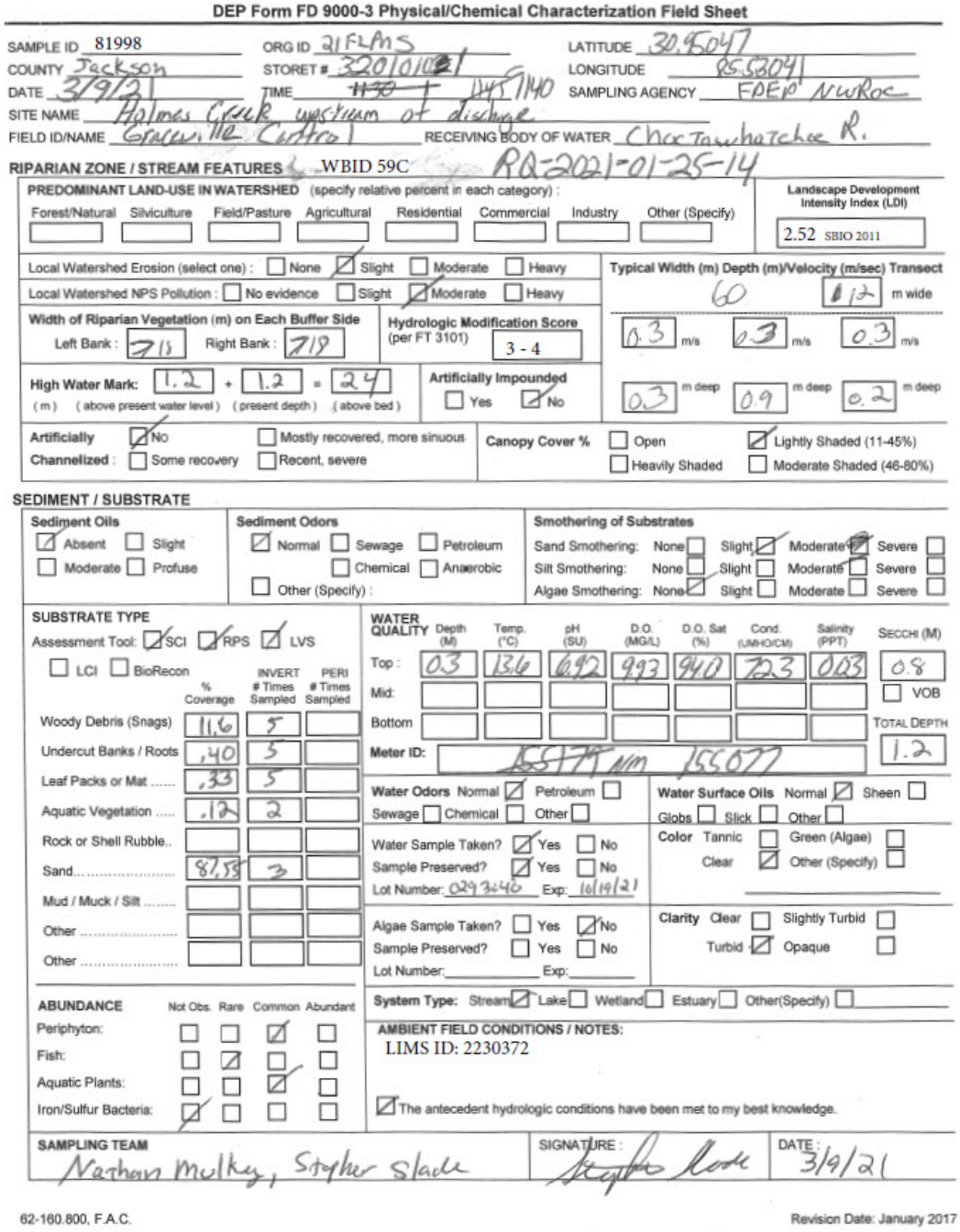
Samples released to Contract Lab by: _____ Date/Time: _____

Delivery Method: _____ Shipping

Samples Accepted by: [signature] Date/Time 3/10/21 9:10

* **Please sign and return by email to** Trenetta.L.Wilson@floridaDEP.gov and Magan.Bowden@dep.state.fl.us

Appendix D. Physical/ Chemical and Habitat Assessment Field Sheets



DEP Form FD 9000-3 Physical/Chemical Characterization Field Sheet

SAMPLE ID 81998 ORG ID 21FLANS LATITUDE 30.9547
COUNTY Jackson STORET # 320101 LONGITUDE 85.5304
DATE 3/9/21 TIME ~~1130~~ 1141 / 1140 SAMPLING AGENCY FDEP NWRoc
SITE NAME Holmes Creek upstream of discharge
FIELD ID/NAME Graceville Control RECEIVING BODY OF WATER Choctawhatchee R.
RIPARIAN ZONE / STREAM FEATURES WBID 59C RQ-2021-01-25-14

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):
Forest/Natural | Silviculture | Field/Pasture | Agricultural | Residential | Commercial | Industry | Other (Specify)

Landscape Development Intensity Index (LDI): 2.52 SBIO 2011

Local Watershed Erosion (select one): ☐ None ☑ Slight ☐ Moderate ☐ Heavy
Local Watershed NPS Pollution: ☐ No evidence ☐ Slight ☑ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side: Left Bank: 7.5 Right Bank: 7.9
Hydrologic Modification Score (per FT 3101): 3 - 4

High Water Mark: 1.2 (m) + 1.2 (above present water level) = 2.4 (above bed) (present depth)
Artificially Impounded: ☐ Yes ☑ No

Typical Width (m) Depth (m)/Velocity (m/sec) Transect: 60 m wide; 0.3 m/s 0.3 m/s 0.3 m/s; 0.3 m deep 0.9 m deep 0.2 m deep

Artificially Channelized: ☑ No ☐ Some recovery ☐ Mostly recovered, more sinuous ☐ Recent, severe

Canopy Cover %: ☐ Open ☐ Heavily Shaded ☑ Lightly Shaded (11-45%) ☐ Moderate Shaded (46-80%)

SEDIMENT / SUBSTRATE

Sediment Oils: ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse
Sediment Odors: ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ Other (Specify):
Smothering of Substrates: Sand Smothering: None ☐ Slight ☑ Moderate ☑ Severe ☐; Silt Smothering: None ☐ Slight ☐ Moderate ☐ Severe ☐; Algae Smothering: None ☑ Slight ☐ Moderate ☐ Severe ☐

SUBSTRATE TYPE
Assessment Tool: ☑ SCI ☑ RPS ☑ LVS ☐ LCI ☐ BioRecon

	% Coverage	INVERT # Times Sampled	PERI # Times Sampled
Woody Debris (Snags)	11.6	5	
Undercut Banks / Roots	.40	5	
Leaf Packs or Mat	.33	5	
Aquatic Vegetation	.12	2	
Rock or Shell Rubble			
Sand	87.59	3	
Mud / Muck / Silt			
Other			
Other			

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	D.O. Sat (%)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top:	0.3	13.6	6.92	9.93	94.0	72.3	0.03	0.8
Mid:								☐ VOB
Bottom								TOTAL DEPTH
Meter ID:								1.2

Water Odors: ☑ Normal ☐ Petroleum ☐ Sewage ☐ Chemical ☐ Other
Water Surface Oils: ☑ Normal ☐ Sheen ☐ Globs ☐ Slick ☐ Other
Water Sample Taken? ☑ Yes ☐ No
Sample Preserved? ☑ Yes ☐ No
Lot Number: 0293640 Exp: 10/19/21
Color: ☐ Tannic ☐ Green (Algae) ☐ Clear ☑ Other (Specify) ☐
Algae Sample Taken? ☐ Yes ☑ No
Sample Preserved? ☐ Yes ☐ No
Lot Number: Exp:
Clarity: ☐ Clear ☐ Slightly Turbid ☐ Turbid ☑ Opaque ☐

ABUNDANCE

	Not Obs.	Rare	Common	Abundant
Periphyton:	☐	☐	☑	☐
Fish:	☐	☑	☐	☐
Aquatic Plants:	☐	☐	☑	☐
Iron/Sulfur Bacteria:	☑	☐	☐	☐

System Type: ☑ Stream ☐ Lake ☐ Wetland ☐ Estuary ☐ Other(Specify) ☐

AMBIENT FIELD CONDITIONS / NOTES:
LIMS ID: 2230372

☑ The antecedent hydrologic conditions have been met to my best knowledge.

SAMPLING TEAM: Nathan Mulky, Stepher Slade SIGNATURE: [signature] DATE: 3/9/21

62-160.800, F.A.C. Revision Date: January 2017

DEP Form FD 9000-5 Stream/River Habitat Assessment Field Sheet

SAMPLING AGENCY:	STORET STATION NUMBER:	DATE (MM/DD/YY):	RECEIVING BODY OF WATER:
FLDEP (NWRO)	32010101	03/9/21	Choctaw R.
REMARKS: EMS	COUNTY: Jackson	LOCATION: Holmes Creek abv Graceville Control discharge	FIELD ID/NAME: Graceville Control

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 15	Four or more major productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 17 16	Three major productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) (15) 14 13 12 11	Two major productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 7 6	One or less major productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 9	Greater than 30% major productive habitat present at site 20 19 18 17 16	16% to 30% major productive habitat, by aerial extent 15 14 13 12 11	6% to 15% major productive habitat 10 (9) 8 7 6	Less than 5% major productive habitat 5 4 3 2 1
Water Velocity 20	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec ≥0.33 0.31 0.29 0.27 >0.25 (20) 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 0.25 0.21 0.17 0.13 >0.1 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 0.1 0.09 0.07 0.06 0.05 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec <0.05 0.04 0.03 0.01 <0.01 5 4 3 2 1
Habitat Smothering 14 Primary Score 58	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand, silt, or algae. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand, silt, or algae. 15 (14) 13 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand, silt, or algae accumulation. 5 4 3 2 1
Secondary Habitat Components **Artificial Channelization** 20	Expected sinuosity given the stream width. No evidence of dredging or artificial straightening. No spoil banks. (20) 19 18 17 16	Good sinuosity within old channelized area. Evidence of dredging or straightening in the past (>25 yrs) but mostly recovered. 15 14 13 12 11	Straightened with trapezoidal cross section, but has a small degree of sinuosity developed within channelized area. 10 9 8 7 6	Straightened or engineered by dredging, has trapezoidal or box cut cross section, lacks required pools. May have spoil banks. 5 4 3 2 1
Bank Stability ○ Right Bank 9 9 △ Left Bank	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankful to top of bank. Bankfull is within or above the woody root zone with few raw, eroded areas. 10 (9)	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the woody root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank 10 Left Bank 10	Width of vegetation greater than 18 m (10) 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 10 10 Left Bank Secondary Score 78	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants; tree, shrub, and forbs represented, if appropriate). Minimal disturbance. (10) 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

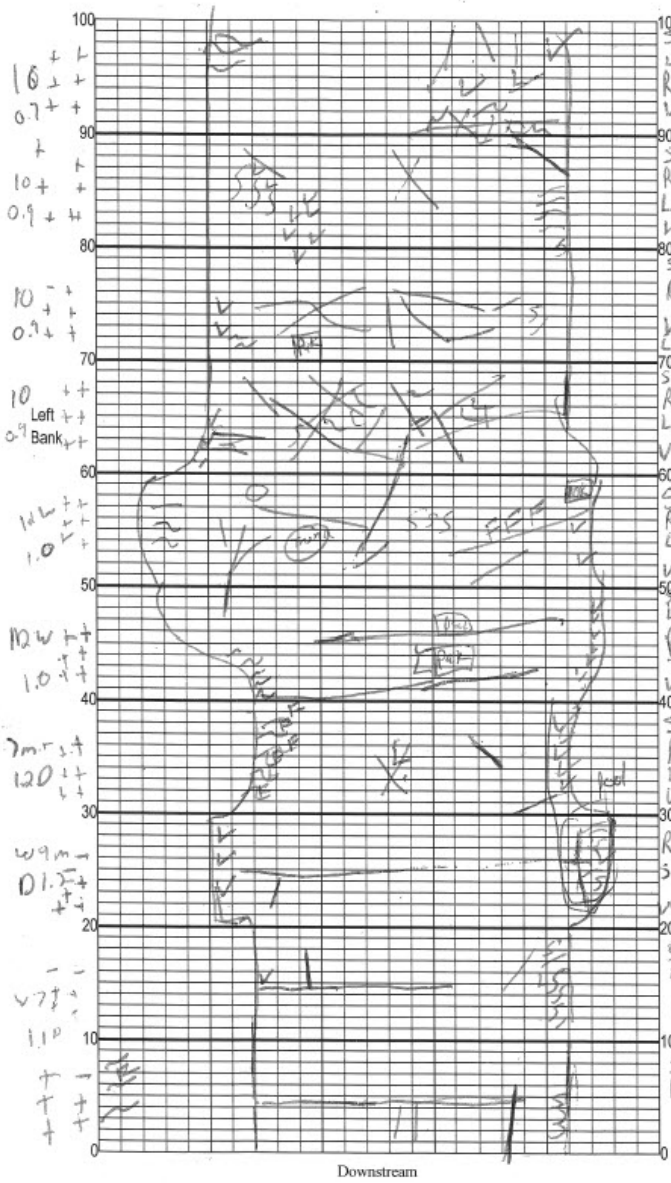
136 **TOTAL SCORE**

Date: 03/09/21	Analyst: STopher Slade	Signature: Stopher Slade

SBIO ID 81998 HA ID 16793

62-160.800, F.A.C. Revision Date: January 2017

DEP Form FD 9000-4 Stream/River Habitat Assessment Sketch Sheet



Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

WIN-ID 32010101
Location: Graceville Control
Date: 3/4/21
Sampler: Stephr. Slade

100 m: Latitude _____
Longitude _____
0 m: Latitude 30,95047
Longitude 85,53041

Substrates: Code key, draw proportionate habitat abundance. %

/	Snags 109 m2	11,6
~	Roots/undercut banks 3.7m2	40
L	Leaf Packs (or mats) 3.1	,33
V	Aquatic Macrophytes 1.1	,12
F	Fontanalis	____
	_____	____
	Pools total # observed = ____ # range expected = ____	

Average width 9.4 m
Average depth 1 m

Velocity measured at ____ meter mark.

WQ & chemistry taken at 10 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

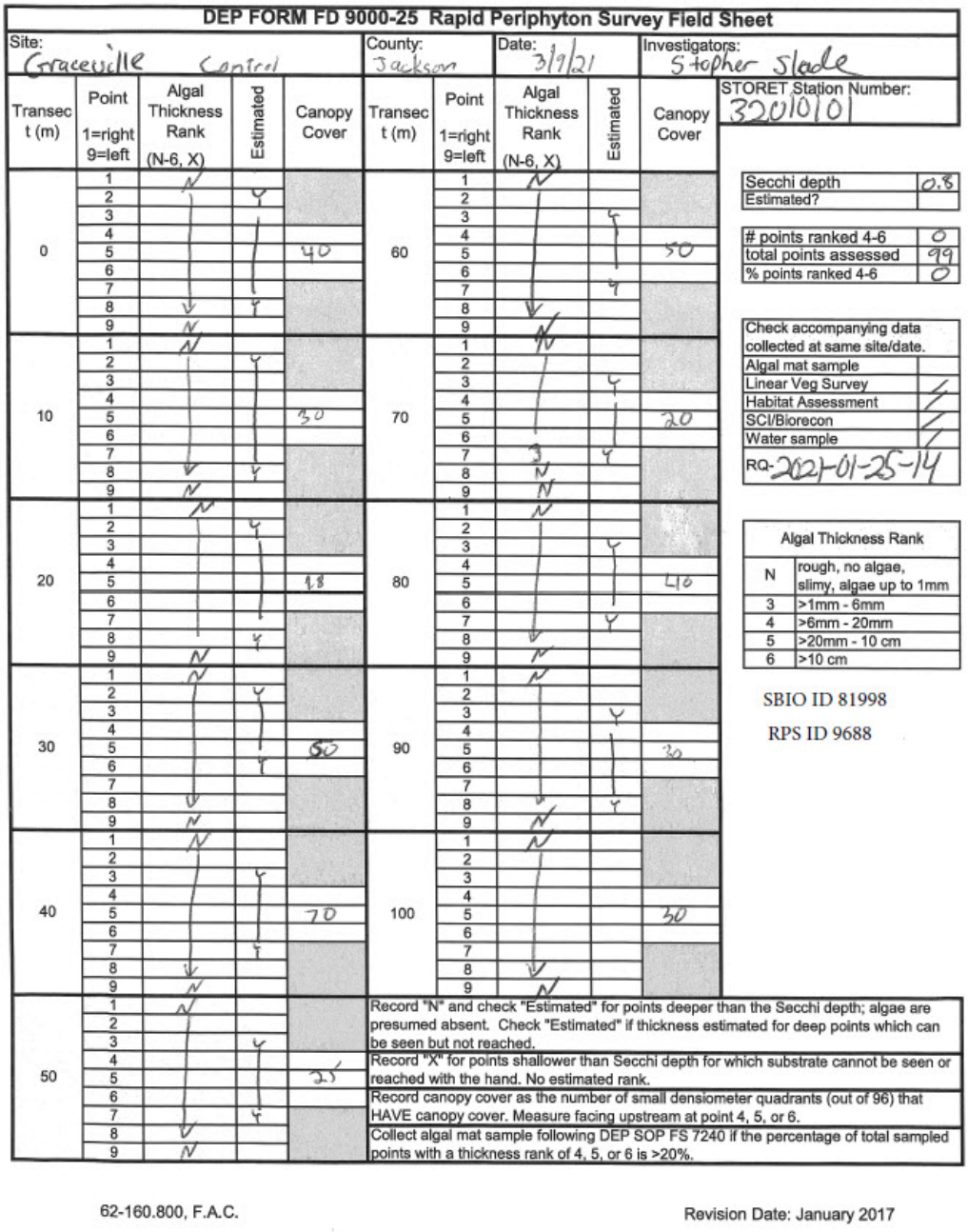
Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:
F= Fontanalis

avg. w 9.4
avg D. 1m

62-160.800, F.A.C SBIO ID 81998

Revision Date: January 2017



DEP FORM FD 9000-25 Rapid Periphyton Survey Field Sheet

Site: Graceville Control | County: Jackson | Date: 3/9/21 | Investigators: Stopher Slade | STORET Station Number: 32010101

Transect (m)	Point 1=right 9=left	Algal Thickness Rank (N-6, X)	Estimated	Canopy Cover
0	1	N		
	2		Y	
	3			
	4			
	5			40
	6			
	7			
	8		Y	
	9	N		
10	1	N		
	2		Y	
	3			
	4			
	5			30
	6			
	7			
	8		Y	
	9	N		
20	1	N		
	2		Y	
	3			
	4			
	5			15
	6			
	7			
	8		Y	
	9	N		
30	1	N		
	2		Y	
	3			
	4			
	5			50
	6		Y	
	7			
	8			
	9	N		
40	1	N		
	2			
	3		Y	
	4			
	5			70
	6			
	7		Y	
	8			
	9	N		
50	1	N		
	2			
	3		Y	
	4			
	5			25
	6			
	7		Y	
	8			
	9	N		
60	1	N		
	2			
	3			
	4		Y	
	5			50
	6			
	7		Y	
	8			
	9	N		
70	1	N		
	2			
	3		Y	
	4			
	5			20
	6			
	7	3	Y	
	8	N		
	9	N		
80	1	N		
	2			
	3		Y	
	4			
	5			40
	6			
	7		Y	
	8			
	9	N		
90	1	N		
	2			
	3		Y	
	4			
	5			30
	6			
	7			
	8		Y	
	9	N		
100	1	N		
	2			
	3			
	4			
	5			30
	6			
	7			
	8			
	9	N		

Secchi depth	0.8
Estimated?	

# points ranked 4-6	0
total points assessed	99
% points ranked 4-6	0

Check accompanying data collected at same site/date.	
Algal mat sample	
Linear Veg Survey	✓
Habitat Assessment	
SCI/Biorecon	✓
Water sample	
RQ- 2021-01-25-14	

Algal Thickness Rank	
N	rough, no algae, slimy, algae up to 1mm
3	>1mm - 6mm
4	>6mm - 20mm
5	>20mm - 10 cm
6	>10 cm

SBIO ID 81998

RPS ID 9688

Record "N" and check "Estimated" for points deeper than the Secchi depth; algae are presumed absent. Check "Estimated" if thickness estimated for deep points which can be seen but not reached.

Record "X" for points shallower than Secchi depth for which substrate cannot be seen or reached with the hand. No estimated rank.

Record canopy cover as the number of small densiometer quadrants (out of 96) that HAVE canopy cover. Measure facing upstream at point 4, 5, or 6.

Collect algal mat sample following DEP SOP FS 7240 if the percentage of total sampled points with a thickness rank of 4, 5, or 6 is >20%.

62-160.800, F.A.C.

Revision Date: January 2017

DEP FORM FD 9000-32: LINEAR VEGETATION SURVEY FIELD SHEET

Waterbody: Graceville Control | Date: 3/9/21 | County: Jackson | Storet Number: 32010101

Analyst: S. Slade | Signature: Stephanie Slade

Comments: <2m² of vegetation

Instructions: Note taxa growing in the water with a checkmark if present, "D" if dominant, and "C" if codominant (dominance only if 1m² of taxa present). Note in the boxes below if no dominant are selected, and note total macrophyte abundance rank for each section. Only the most common taxa are listed, so use blank spaces for additional taxa names.

HERBACEOUS SPECIES	Meter Mark 0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	Specimen collected (check)
Alternanthera philoxeroides											
Bacopa caroliniana											
Bacopa monnieri											
Bidens mitis											
Boehmeria cylindrica											
Centella asiatica											
Ceratophyllum demersum											
Chara											
Cicuta maculata											
Cladium jamaicense											
Colocasia esculenta											
Commelina diffusa											
Commelina virginica											
Crinum americanum											
Diodia virginiana											
Eichhornia crassipes											
Eleocharis (wispy viviparous)											
Hydrilla verticillata											
Hydrocotle											
Hygrophila polysperma											
Hymenocallis											
Lachnanthes caroliniana											
Landoltia punctata											
Lemna											
Limnophila sessiflora											
Ludwigia leptocarpa											
Ludwigia palustris											
Ludwigia peruviana											
Ludwigia repens											
Luziola fluitans											
If no Dominant or Co-Dominant were selected, indicate with "X"											
Indicate % cover macrophytes per section											
0-5% Macrophyte Coverage	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
>5 and ≤10% Macrophyte Coverage											
>10 and ≤25% Macrophyte Coverage											
>25 and ≤50% Macrophyte Coverage											
> 50% Macrophyte Coverage											

HERBACEOUS SPECIES	Meter Mark 0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	Specimen collected (check)
Micranthemum glomeratum											
Micranthemum umbrosum											
Myriophyllum aquaticum											
Najas guadelupensis											
Nuphar luteum											
Orontium aquaticum											
Panicum hemitomon											
Panicum repens											
Panicum rigidulum											
Pistia stratioides											
Polygonum glabra											
Polygonum hydropiperoides											
Polygonum punctatum											
Pontedaria cordata											
Potamogeton illinoensis											
Ruellia simplex											
Sacciolepis striata											
Sagittaria kurziana								✓	✓	✓	
Sagittaria lancifolia											
Sagittaria latifolia											
Salvinia minima											
Samolus parviflora											
Saururus cernuus											
Sparganium americanum											
Typha											
Vallisneria americana											
Zizania aquatica											
	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	X	X	X	X	X	X	X	X	X	X	

D
Cane
Oblong leaf

SBIO ID 81998

Macro ID: N/A

62-160.800, F.A.C.

page 1 of 2

Revision Date:January 2017

DEP Form FD 9000-3 Physical/Chemical Characterization Field Sheet

SAMPLE ID 82009 ORG ID 21FLPNS LATITUDE 30.948499
COUNTY Jackson STORET # 320101102 LONGITUDE -85.53051
DATE 3/9/2021 TIME 1000 SAMPLING AGENCY FDEP NWRO
SITE NAME Holmes Creek downstream of discharge
FIELD ID/NAME Graceville Test RECEIVING BODY OF WATER Choct River
RA-2021-01-25-14 LIMS ID 2230371

RIPARIAN ZONE / STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):
Forest/Natural | Silviculture | Field/Pasture | Agricultural | Residential | Commercial | Industry | Other (Specify)

Landscape Development Intensity Index (LDI): 2.47 SBIO 2011

Local Watershed Erosion (select one): ☐ None ☑ Slight ☐ Moderate ☐ Heavy
Local Watershed NPS Pollution: ☐ No evidence ☐ Slight ☑ Moderate ☐ Heavy

Width of Riparian Vegetation (m) on Each Buffer Side
Left Bank: >18m Right Bank: >18m

Hydrologic Modification Score (per FT 3101): 3 - 4

Typical Width (m) Depth (m)/Velocity (m/sec) Transect
70 m wide
0.3 m/s | 0.3 m/s | 0.3 m/s
0.4 m deep | 0.8 m deep | 0.5 m deep

High Water Mark: 1.0 (m) + 0.9 (above present water level) = 1.9 (present depth) (above bed)

Artificially Impounded ☐ Yes ☑ No

Artificially Channelized: ☑ No ☐ Some recovery ☐ Mostly recovered, more sinuous ☐ Recent, severe

Canopy Cover % ☐ Open ☑ Lightly Shaded (11-45%) ☐ Heavily Shaded ☐ Moderate Shaded (46-80%)

SEDIMENT / SUBSTRATE

Sediment Oils ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse

Sediment Odors ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ Other (Specify):

Smothering of Substrates
Sand Smothering: None ☐ Slight ☐ Moderate ☑ Severe ☐
Silt Smothering: None ☐ Slight ☐ Moderate ☑ Severe ☐
Algae Smothering: None ☐ Slight ☑ Moderate ☐ Severe ☐

SUBSTRATE TYPE
Assessment Tool: ☑ SCI ☑ RPS ☑ LVS ☐ LCI ☐ BioRecon

	% Coverage	INVERT # Times Sampled	PERI # Times Sampled
Woody Debris (Snags)	5.09	5	
Undercut Banks / Roots	0.21	5	
Leaf Packs or Mat	0.12	3	
Aquatic Vegetation	0.24	5	
Rock or Shell Rubble..			
Sand.....	94.24	2	
Mud / Muck / Silt			
Other			
Other			

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	D.O. Sat (%)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top:	0.3	12.6	6.84	9.65	89.3	85.3	0.04	0.3
Mid:								
Bottom								

☑ VOB N/M
TOTAL DEPTH 0.6

Meter ID: 55077

Water Odors Normal ☑ Petroleum ☐ Sewage ☐ Chemical ☐ Other ☐

Water Surface Oils Normal ☑ Sheen ☐ Globs ☐ Slick ☐ Other ☐

Water Sample Taken? ☑ Yes ☐ No
Sample Preserved? ☑ Yes ☐ No
Lot Number: 0293040 Exp: 10/19/21

Color Tannic ☐ Green (Algae) ☐ Clear ☑ Other (Specify) ☐

Algae Sample Taken? ☐ Yes ☑ No
Sample Preserved? ☐ Yes ☐ No
Lot Number: Exp:

Clarity Clear ☐ Slightly Turbid ☐ Turbid ☑ Opaque ☐

ABUNDANCE

	Not Obs.	Rare	Common	Abundant
Periphyton:	☐	☑	☑	☐
Fish:	☐	☐	☐	☐
Aquatic Plants:	☐	☐	☑	☐
Iron/Sulfur Bacteria:	☐	☐	☐	☐

System Type: Stream ☑ Lake ☐ Wetland ☐ Estuary ☐ Other(Specify) ☐

AMBIENT FIELD CONDITIONS / NOTES:

☑ The antecedent hydrologic conditions have been met to my best knowledge.

SAMPLING TEAM Nathan Mulkey, S Topher Slade SIGNATURE: DATE: 3/9/21

62-160.800, F.A.C. Revision Date: January 2017

DEP Form FD 9000-5 Stream/River Habitat Assessment Field Sheet

SAMPLING AGENCY:	STORET STATION NUMBER:	DATE (MM/DD/YY):	RECEIVING BODY OF WATER:
FL DEP (NWRoc)	32010102	03/09/21	Chec Taw R
REMARKS: FY15 ID: 16807	COUNTY: Jackson	LOCATION: Holmes Creek downstream Graceville Test of discharge	FIELD ID/NAME: Graceville Test

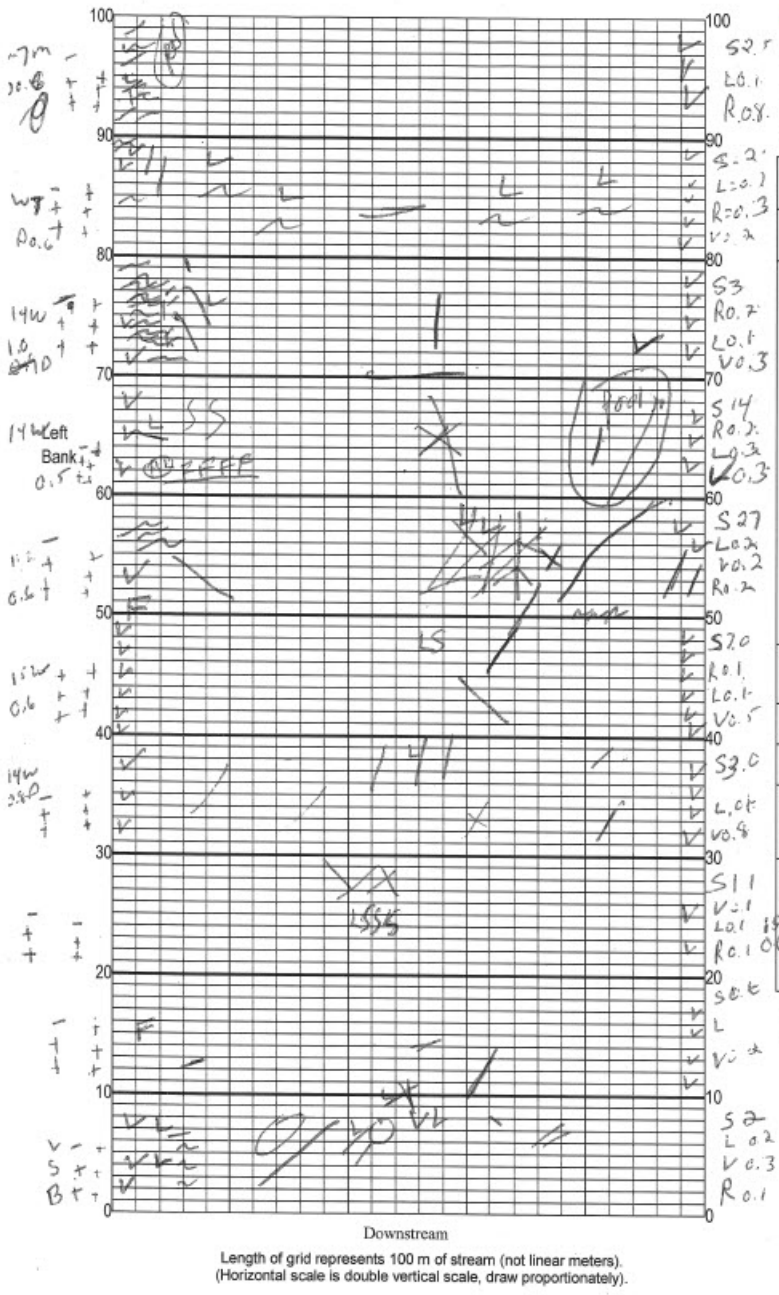
Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 14	Four or more major productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 17 16	Three major productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 (14) 13 12 11	Two major productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 7 6	One or less major productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability 6	Greater than 30% major productive habitat present at site 20 19 18 17 16	16% to 30% major productive habitat, by aerial extent 15 14 13 12 11	6% to 15% major productive habitat 10 9 8 7 (6)	Less than 5% major productive habitat 5 4 3 2 1
Water Velocity 20	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec ≥0.33 0.31 0.29 0.27 >0.25 (20) 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 0.25 0.21 0.17 0.13 >0.1 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 0.1 0.09 0.07 0.06 0.05 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec <0.05 0.04 0.03 0.01 <0.01 5 4 3 2 1
Habitat Smothering 13 Primary Score 53	Adequate number of stable pools (1-2 per 12 times width) and <25% of habitats affected by sand, silt, or algae. 20 19 18 17 16	Adequate number of stable pools (1-2 per 12 times width) and >25% of habitats affected by sand, silt, or algae. 15 14 (13) 12 11	Does not have required number of stable pools (1-2 per 12 x width) and/or has shallow pools (<2 x prevailing depth). 10 9 8 7 6	Stable pools are absent. Most habitats affected by sand, silt, or algae accumulation. 5 4 3 2 1
Secondary Habitat Components **Artificial Channelization** 26	Expected sinuosity given the stream width. No evidence of dredging or artificial straightening. No spoil banks. (20) 19 18 17 16	Good sinuosity within old channelized area, Evidence of dredging or straightening in the past (>25 yrs) but mostly recovered. 15 14 13 12 11	Straightened with trapezoidal cross section, but has a small degree of sinuosity developed within channelized area. 10 9 8 7 6	Straightened or engineered by dredging, has trapezoidal or box cut cross section, lacks required pools. May have spoil banks. 5 4 3 2 1
Bank Stability ○ Right Bank 10 △ Left Bank 7	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankful to top of bank. Bankfull is within or above the woody root zone with few raw, eroded areas. (10) 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 (7) 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60°. Bankfull is below the woody root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank 10 Left Bank 10	Width of vegetation greater than 18 m (10) 9	Width of vegetation >12 to 18m 8 7 6	Width of vegetation 6 to 12 m. human activities close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank 10 Left Bank 10 Secondary Score 77	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants; tree, shrub, and forbs represented, if appropriate). Minimal disturbance. (10) 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

130 **TOTAL SCORE**

Date: 3/9/21	Analyst: Stopher Slade	Signature: Stopher Slade

62-160.800, F.A.C. SBIO ID 82009 HA ID 16807 Revision Date: January 2017

DEP Form FD 9000-4 Stream/River Habitat Assessment Sketch Sheet



Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

NM

Storet 32010102 Test

Location: Graceville ~~control~~

Date: 3/9/21

Sampler: Stopher Slade

100 m: Latitude	30.94980
Longitude	85.53054
0 m: Latitude	30.94899
Longitude	85.53051

Substrates: Code key, draw proportionate habitat abundance.		%
Snags	62.2 m2	5.09
Roots/undercut banks	2.5	0.21 0.12 ~~0.24~~
Leaf Packs (or mats)	1.4	
Aquatic Macrophytes	2.9	0.24
F Fontanalis		0.1
Pools	total # observed = 2	
	# range expected =	

Average width _____ m

Average depth _____ m

Velocity measured at _____ meter mark.

WQ & chemistry taken at 0 meter mark.

Habitat Smothering:
Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:
Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

11W 0.05

F = Fontanalis

11 W 0.5P

avg w = 12.2 x 100m

1220 m2

62-160.800, F.A.C

Revision Date: January 2017

DEP FORM FD 9000-25 Rapid Periphyton Survey Field Sheet

Site: Graceville Test | County: Jackson | Date: 3/9/2021 | Investigators: S. Slade

STORET Station Number: 32010102

Transect (m)	Point 1=right 9=left	Algal Thickness Rank (N-6, X)	Estimated	Canopy Cover
0	1	N	Y	
	2			
	3		Y	
	4			
	5			40 46
	6			
	7			
	8	X		
	9	N		
10	1	N	Y	
	2			
	3			
	4		Y	
	5			30 36
	6			
	7			
	8	X		
	9	N		
20	1	N		
	2			
	3			
	4			
	5			50 46
	6			
	7			
	8	X		
	9	N		
30	1	N		
	2			
	3			
	4			
	5			60 36
	6			
	7			
	8	X		
	9	N		
40	1	N		
	2			
	3			
	4			
	5			40
	6			
	7			
	8	X		
	9	N		
50	1	N		
	2	3		
	3			
	4			
	5			6
	6			
	7	X		
	8	3		
	9	N		

Transect (m)	Point 1=right 9=left	Algal Thickness Rank (N-6, X)	Estimated	Canopy Cover
60	1	N		
	2			
	3			
	4			
	5			25
	6			
	7			
	8	X		
	9	N		
70	1	N	Y	
	2		Y	
	3		Y	
	4		Y	
	5			35
	6			
	7			
	8	X		
	9	N		
80	1	N		
	2			
	3			
	4			
	5			46
	6			
	7			
	8	X		
	9	N		
90	1	N		
	2			
	3			
	4			
	5			46
	6			
	7			
	8	X		
	9	N		
100	1	N		
	2			
	3			
	4			
	5			36
	6			
	7			
	8	X		
	9	N		

Secchi depth	0.6
Estimated?	
# points ranked 4-6	0
total points assessed	99
% points ranked 4-6	0

Check accompanying data collected at same site/date.	
Algal mat sample	
Linear Veg Survey	/
Habitat Assessment	/
SCI/Biorecon	/
Water sample	/

RQ-2021-01-25-14

Algal Thickness Rank	
N	rough, no algae, slimy, algae up to 1mm
3	>1mm - 6mm
4	>6mm - 20mm
5	>20mm - 10 cm
6	>10 cm

RPS ID 9694

SBIO ID 82009

RPS Score 0.0

Record "N" and check "Estimated" for points deeper than the Secchi depth; algae are presumed absent. Check "Estimated" if thickness estimated for deep points which can be seen but not reached.

Record "X" for points shallower than Secchi depth for which substrate cannot be seen or reached with the hand. No estimated rank.

Record canopy cover as the number of small densiometer quadrants (out of 96) that HAVE canopy cover. Measure facing upstream at point 4, 5, or 6.

Collect algal mat sample following DEP SOP FS 7240 if the percentage of total sampled points with a thickness rank of 4, 5, or 6 is >20%.

62-160.800, F.A.C.

Revision Date: January 2017

DEP FORM FD 9000-32: LINEAR VEGETATION SURVEY FIELD SHEET

Waterbody: Graceville Test | Date: 3/9/21 | County: Jackson | Stpret Number: 3201010 2

Analyst: Stopher Slade | Signature: Stopher Slade

Comments: Lims 2230371 Visit ID 82009

Instructions: Note taxa growing in the water with a checkmark if present, "D" if dominant, and "C" if codominant (dominance only if 1m² or taxa present). Note in the boxes below if no dominant are selected, and note total macrophyte abundance rank for each section. Only the most common taxa are listed, so use blank spaces for additional taxa names.

SBIO Visit ID 82009 HERBACEOUS SPECIES	Meter Mark 0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	Specimen collected (check)
Alternanthera philoxeroides	✓	✓				✓					
Bacopa caroliniana											
Bacopa monnieri											
Bidens mitis											
Boehmeria cylindrica											
Centella asiatica											
Ceratophyllum demersum											
Chara											
Cicuta maculata											
Cladium jamaicense											
Colocasia esculenta											
Commelina diffusa											
Commelina virginica											
Crinum americanum											
Diodia virginiana											
Eichhornia crassipes											
Eleocharis (wispy viviparous)											
Hydrilla verticillata											
Hydrocotle											
Hygrophila polysperma											
Hymenocallis											
Lachnanthes caroliniana											
Landoltia punctata											
Lemna											
Limnophila sessiflora											
Ludwigia leptocarpa											
Ludwigia palustris											
Ludwigia peruviana											
Ludwigia repens											
Luziola fluitans											
If no Dominant or Co-Dominant were selected, Indicate with "X"											
Indicate % cover macrophytes per section											
0-5% Macrophyte Coverage	X	X	X	X	X	X	X	X	X	X	
>5 and ≤10% Macrophyte Coverage											
>10 and ≤25% Macrophyte Coverage											
>25 and ≤50% Macrophyte Coverage											
> 50% Macrophyte Coverage											

Macro-ID 11797 HERBACEOUS SPECIES	Meter Mark 0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	Specimen collected (check)
Micranthemum glomeratum					✓						
Micranthemum umbrosum											
Myriophyllum aquaticum											
Najas guadelupensis											
Nuphar luteum											
Orontium aquaticum											
Panicum hemitomon											
Panicum repens											
Panicum rigidulum											
Pistia stratioides											
Polygonum glabra											
Polygonum hydropiperoides											
Polygonum punctatum											
Pontederia cordata											
Potamogeton illinoensis											
Ruellia simplex											
Sacciolepis striata	D	D	D	D	D	D	D	D	D	D	
Sagittaria kurziana					✓	✓	✓	✓	✓	✓	
Sagittaria lancifolia											
Sagittaria latifolia											
Salvinia minima											
Samolus parviflora	✓				✓	✓		✓			
Saururus cernuus											
Sparganium americanum											
Typha											
Vallisneria americana					✓						
Zizania aquatica											
Cane	D	D	D	D	D	D	D	D	D	D	
Ruby Rags	✓				✓	✓		✓			
Water Leaf											
						X	X	X	X		

SBIO LVS Scoring. FLEPPC 12%; Average C of C 5.89

Station: Holmes Creek downstream of discharge
GPS: 30.94899 X -85.53051
Storet: 32010102 Field ID 32010102
SBIO Sample ID : 82009
Macro ID: 11797

Sampled : 03/09/2021
Sampled By. N. Mulkey, S. Slade
Location. Graceville, Jackson
Receiving Waters: Choctawhatchee River
LIMS ID: 2230371

	Taxa	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	C of C	Coll.	Verified
1	*Sacciolepis striata*	D	D	D	D	D	1	1	1	1	1	5.35		
2	*Sagitaria kurziana*					1	D	1	1	1	1			
3	*Vallisneria americana*					1						6.99		
4	*Alternanthera philoxeroides*	1	1				1					0.00		
5	*Micranthemum* sp.					1								
6	*Samolus valerandi*	1			1	1		1						
	Total	3	2	1	2	5	3	3	2	2	2			
	Taxa per section	3	2	1	2	5	3	4	3	3	4	Herb. Taxa		6
	Exotic Present	0	0	0							0	Woody Taxa		0
	Avg. taxa per section	3										Ferns		0
	sections with exotics	3										Macro Algae		0
	Exotic Taxa	1	Exotics per Section: 0.33									Total Taxa		6

Graceville WWTP Test Site

LVS Score: FLEPPC 12, Avg C of C 5.89

Appendix E. Chemical Analysis of Effluent and Receiving Water

Date_Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
2/15/2021 13:20	Effluent Grab	AGP/LN	Algal Growth Potential	100 A	mg DryWt/L	0.300	0.900
2/15/2021 13:20	Effluent Grab	Chlorophyll/Grain Size/BOD	Phaeophytin-a	2.9 I	µg/L	1.8	5.4
2/15/2021 13:20	Effluent Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	2.0 I	µg/L	1.2	3.6
2/15/2021 13:20	Effluent Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	1.6 U	µg/L	1.6	5.0
2/15/2021 13:20	Effluent Grab	Microbiology	Fecal Coliforms-Membrane Filter	57 A	cfu/100 mL	2	2
2/15/2021 13:20	Effluent Grab	Microbiology	Escherichia Coli-Quanti-Tray	218.0 A	MPN/100 mL	10	10
2/15/2021 13:20	Effluent Grab	Nutrients	Turbidity	29 A	NTU	0.10	0.13
2/15/2021 13:20	Effluent Grab	Nutrients	O-Phosphate-P	0.76	mg P/L	0.020	0.050
2/15/2021 13:20	Effluent Grab	Nutrients	Fluoride	0.041 I	mg F/L	0.035	0.10
2/15/2021 13:20	Effluent Grab	Nutrients	Chloride	11	mg Cl/L	0.20	0.50
2/15/2021 13:20	Effluent Grab	Nutrients	Color (true)	2.5 UA	PCU	2.5	6.0
2/15/2021 13:20	Effluent Grab	Nutrients	Total Alkalinity	54	mg CaCO3/L	0.65	2.5
2/15/2021 13:20	Effluent Grab	Nutrients	Sulfate	10	mg SO4/L	0.20	0.50
2/15/2021 13:20	Effluent Grab	Pesticides	Atrazine Desethyl	1.6 U	ng/L	1.6	6.3
2/15/2021 13:20	Effluent Grab	Pesticides	Carbophenothion	0.53 U	ng/L	0.53	2.1
2/15/2021 13:20	Effluent Grab	Pesticides	Ethion	0.16 U	ng/L	0.16	0.63
2/15/2021 13:20	Effluent Grab	Pesticides	Fipronil Sulfone	5.9	ng/L	0.16	0.63
2/15/2021 13:20	Effluent Grab	Pesticides	Iprodione	0.63 U	ng/L	0.63	2.5
2/15/2021 13:20	Effluent Grab	Pesticides	Oxadiazon	0.32 U	ng/L	0.32	1.3
2/15/2021 13:20	Effluent Grab	Pesticides	Propiconazole	0.53 U	ng/L	0.53	2.1
2/15/2021 13:20	Effluent Grab	Pesticides	Sulfentrazone	0.78 I	ng/L	0.53	2.1
2/15/2021 13:20	Effluent Grab	Pesticides	Ibuprofen	0.020 U	µg/L	0.020	0.080
2/15/2021 13:20	Effluent Grab	Pesticides	Azoxystrobin	0.53 U	ng/L	0.53	2.1
2/15/2021 13:20	Effluent Grab	Pesticides	Chlorpyrifos Ethyl	0.26 UJ	ng/L	0.26	1.1
2/15/2021 13:20	Effluent Grab	Pesticides	Diazinon	0.13 U	ng/L	0.13	0.53
2/15/2021 13:20	Effluent Grab	Pesticides	Difenoconazole	0.63 U	ng/L	0.63	2.5
2/15/2021 13:20	Effluent Grab	Pesticides	Dithiopyr	0.18 UJ	ng/L	0.18	0.74
2/15/2021 13:20	Effluent Grab	Pesticides	Fluazifop-P-butyl	0.11 U	ng/L	0.11	0.42
2/15/2021 13:20	Effluent Grab	Pesticides	Phorate	0.55 U	ng/L	0.55	2.2
2/15/2021 13:20	Effluent Grab	Pesticides	Naproxen	0.014 I	µg/L	0.0080	0.032
2/15/2021 13:20	Effluent Grab	Pesticides	Acetochlor	0.26 U	ng/L	0.26	1.1
2/15/2021 13:20	Effluent Grab	Pesticides	Butylate	0.42 U	ng/L	0.42	1.7

Date_Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
2/15/2021 13:20	Effluent Grab	Pesticides	Carfentrazone Ethyl	0.11 U	ng/L	0.11	0.42
2/15/2021 13:20	Effluent Grab	Pesticides	Dimethenamid	0.11 U	ng/L	0.11	0.42
2/15/2021 13:20	Effluent Grab	Pesticides	Disulfoton	0.53 U	ng/L	0.53	2.1
2/15/2021 13:20	Effluent Grab	Pesticides	Fenbuconazole	0.13 U	ng/L	0.13	0.53
2/15/2021 13:20	Effluent Grab	Pesticides	Fonofos	0.21 U	ng/L	0.21	0.84
2/15/2021 13:20	Effluent Grab	Pesticides	Parathion Ethyl	0.26 U	ng/L	0.26	1.1
2/15/2021 13:20	Effluent Grab	Pesticides	Alachlor	0.26 U	ng/L	0.26	1.1
2/15/2021 13:20	Effluent Grab	Pesticides	Caffeine	5.3 UJ	ng/L	5.3	21
2/15/2021 13:20	Effluent Grab	Pesticides	Hexazinone	1.3 I	ng/L	0.53	2.1
2/15/2021 13:20	Effluent Grab	Pesticides	Imazalil	0.79 U	ng/L	0.79	3.2
2/15/2021 13:20	Effluent Grab	Pesticides	Ametryn	0.63 U	ng/L	0.63	2.5
2/15/2021 13:20	Effluent Grab	Pesticides	Demeton	1.6 U	ng/L	1.6	6.3
2/15/2021 13:20	Effluent Grab	Pesticides	EPTC	1.3 U	ng/L	1.3	5.3
2/15/2021 13:20	Effluent Grab	Pesticides	Flumioxazin	1.8 U	ng/L	1.8	7.4
2/15/2021 13:20	Effluent Grab	Pesticides	Flutolanil	0.11 U	ng/L	0.11	0.42
2/15/2021 13:20	Effluent Grab	Pesticides	Metolachlor	2.2	ng/L	0.37	1.5
2/15/2021 13:20	Effluent Grab	Pesticides	Molinate	0.32 U	ng/L	0.32	1.3
2/15/2021 13:20	Effluent Grab	Pesticides	Myclobutanil	0.26 U	ng/L	0.26	1.1
2/15/2021 13:20	Effluent Grab	Pesticides	Norflurazon	0.80 I	ng/L	0.53	2.1
2/15/2021 13:20	Effluent Grab	Pesticides	Oxyfluorfen	0.16 U	ng/L	0.16	0.63
2/15/2021 13:20	Effluent Grab	Pesticides	Simazine	0.53 U	ng/L	0.53	2.1
2/15/2021 13:20	Effluent Grab	Pesticides	Terbuthylazine	0.45 U	ng/L	0.45	1.8
2/15/2021 13:20	Effluent Grab	Pesticides	Sucralose	5.1	µg/L	0.010	0.040
2/15/2021 13:20	Effluent Grab	Pesticides	Azinphos Methyl	2.1 U	ng/L	2.1	8.4
2/15/2021 13:20	Effluent Grab	Pesticides	Chlorpyrifos Methyl	0.053 U	ng/L	0.053	0.21
2/15/2021 13:20	Effluent Grab	Pesticides	Fenamiphos	0.53 U	ng/L	0.53	2.1
2/15/2021 13:20	Effluent Grab	Pesticides	Fluxapyroxad	0.11 U	ng/L	0.11	0.42
2/15/2021 13:20	Effluent Grab	Pesticides	Mevinphos	1.1 U	ng/L	1.1	4.4
2/15/2021 13:20	Effluent Grab	Pesticides	Atrazine	0.70 I	ng/L	0.26	1.1
2/15/2021 13:20	Effluent Grab	Pesticides	Bromacil	0.53 U	ng/L	0.53	2.1
2/15/2021 13:20	Effluent Grab	Pesticides	Ethoprop	0.11 U	ng/L	0.11	0.42
2/15/2021 13:20	Effluent Grab	Pesticides	Fipronil	13	ng/L	0.26	1.1
2/15/2021 13:20	Effluent Grab	Pesticides	Fipronil Desulfinyl	0.16 I	ng/L	0.13	0.53
2/15/2021 13:20	Effluent Grab	Pesticides	Malathion	0.37 U	ng/L	0.37	1.5
2/15/2021 13:20	Effluent Grab	Pesticides	Metalaxyl	0.79 U	ng/L	0.79	3.2
2/15/2021 13:20	Effluent Grab	Pesticides	Metribuzin	3.4 U	ng/L	3.4	14

Date_Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
2/15/2021 13:20	Effluent Grab	Pesticides	Naled	1.6 U	ng/L	1.6	6.3
2/15/2021 13:20	Effluent Grab	Pesticides	Prodiamine	0.18 U	ng/L	0.18	0.74
2/15/2021 13:20	Effluent Grab	Pesticides	Prometryn	0.21 U	ng/L	0.21	0.84
2/15/2021 13:20	Effluent Grab	Pesticides	Pronamide	0.16 U	ng/L	0.16	0.63
2/15/2021 13:20	Effluent Grab	Pesticides	Pyriproxyfen	0.13 U	ng/L	0.13	0.53
2/15/2021 13:20	Effluent Grab	Pesticides	Tebuconazole	0.95 I	ng/L	0.53	2.1
2/15/2021 13:20	Effluent Grab	Pesticides	Cyanazine	3.4 U	ng/L	3.4	14
2/15/2021 13:20	Effluent Grab	Pesticides	Fipronil Sulfide	1.3	ng/L	0.16	0.63
2/15/2021 13:20	Effluent Grab	Pesticides	Fludioxonil	0.13 U	ng/L	0.13	0.53
2/15/2021 13:20	Effluent Grab	Pesticides	Parathion Methyl	0.58 U	ng/L	0.58	2.3
2/15/2021 13:20	Effluent Grab	Pesticides	Pendimethalin	1.1 U	ng/L	1.1	4.2
2/15/2021 13:20	Effluent Grab	Pesticides	Prometon	0.95 U	ng/L	0.95	3.7
2/15/2021 13:20	Effluent Grab	Pesticides	Terbufos	0.11 U	ng/L	0.11	0.42
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	1,4-Dioxane	0.020 U	µg/L	0.020	0.080
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Benzo(a)pyrene	0.026 U	µg/L	0.026	0.10
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	2-Nitrophenol	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Pyrene	0.10 U	µg/L	0.10	0.42
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Pentachlorophenol	0.52 U	µg/L	0.52	2.1
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1 U	µg/L	2.1	8.3
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.026 U	µg/L	0.026	0.10
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Hexachlorobenzene	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Diethyl phthalate	2.1 U	µg/L	2.1	8.3
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Dimethyl phthalate	0.21 U	µg/L	0.21	0.83
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Hexachlorobutadiene	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	2,6-Dinitrotoluene	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Benzo(b)fluoranthene	0.026 U	µg/L	0.026	0.10
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.026 U	µg/L	0.026	0.10
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Di-n-octyl phthalate	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Nitrobenzene	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Phenanthrene	0.10 U	µg/L	0.10	0.42
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	2,4-Dinitrotoluene	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Acenaphthylene	0.026 U	µg/L	0.026	0.10

Date_Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	5.2 UJ	µg/L	5.2	21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.052 UJ	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Phenol	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Fluoranthene	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Isophorone	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	4-Nitrophenol	10 U	µg/L	10	42
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Acenaphthene	0.026 U	µg/L	0.026	0.10
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Benzo(k)fluoranthene	0.026 U	µg/L	0.026	0.10
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Di-n-butyl phthalate	2.1 U	µg/L	2.1	8.3
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Fluorene	0.026 U	µg/L	0.026	0.10
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	2-Chlorophenol	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	2,4-Dimethylphenol	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Anthracene	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Benzidine	10 U	µg/L	10	42
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Butyl benzyl phthalate	1.0 U	µg/L	1.0	4.2
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Naphthalene	0.10 U	µg/L	0.10	0.42
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	2,4-Dinitrophenol	10 UJ	µg/L	10	42
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Hexachloroethane	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	2-Chloronaphthalene	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1 U	µg/L	3.1	12
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	2,4-Dichlorophenol	0.052 U	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	3,3'-Dichlorobenzidine	10 U	µg/L	10	42
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Benzo(a)anthracene	0.026 U	µg/L	0.026	0.10
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.052 UJ	µg/L	0.052	0.21
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Chrysene	0.026 U	µg/L	0.026	0.10
2/15/2021 13:20	Effluent Grab	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.026 U	µg/L	0.026	0.10
2/15/2021 13:20	Effluent Grab	Nutrients	Dissolved Oxygen %Sat	96.9	%Sat		
2/15/2021 13:20	Effluent Grab	Nutrients	Specific Conductance	173	umhos/cm		
2/15/2021 13:20	Effluent Grab	Nutrients	Temperature	18.8	C		
2/15/2021 13:20	Effluent Grab	Nutrients	pH	7.0	SU		
2/15/2021 13:20	Effluent Grab	Nutrients	Total Residual Chlorine	.02	mg/L		
2/15/2021 8:00	Effluent Composite	Toxicology	Bioassay-Chron-Def-FW-C.dubia, IC25	No result O	IC25		

Date_Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
2/15/2021 8:00	Effluent Composite	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	100	NOEC		
2/15/2021 8:00	Effluent Composite	Toxicology	Bioassay-Chron-Def-FW-Fish, IC25	100 L	IC25		
2/15/2021 8:00	Effluent Composite	Toxicology	Bioassay-Chron-Def-FW-C.dubia, NOEC	No result O	NOEC		
2/15/2021 8:00	Effluent Composite	Metals	Aluminum	619	µg/L	5.0	20
2/15/2021 8:00	Effluent Composite	Metals	Iron	380	µg/L	30	120
2/15/2021 8:00	Effluent Composite	Metals	Lead	0.47	µg/L	0.20	0.40
2/15/2021 8:00	Effluent Composite	Metals	Chromium	0.64 I	µg/L	0.40	1.6
2/15/2021 8:00	Effluent Composite	Metals	Zinc	35	µg/L	5.0	20
2/15/2021 8:00	Effluent Composite	Metals	Hardness	77.5	mg/L	0.35	1.4
2/15/2021 8:00	Effluent Composite	Metals	Nickel	0.68 I	µg/L	0.50	2.0
2/15/2021 8:00	Effluent Composite	Metals	Cadmium	0.069 I	µg/L	0.020	0.080
2/15/2021 8:00	Effluent Composite	Metals	Arsenic	0.69	µg/L	0.050	0.20
2/15/2021 8:00	Effluent Composite	Metals	Magnesium	5.05	mg/L	0.040	0.16
2/15/2021 8:00	Effluent Composite	Metals	Selenium	0.49 I	µg/L	0.20	0.80
2/15/2021 8:00	Effluent Composite	Metals	Calcium	22.7	mg/L	0.075	0.30
2/15/2021 8:00	Effluent Composite	Metals	Silver	0.076	µg/L	0.010	0.040
2/15/2021 8:00	Effluent Composite	Metals	Copper	23.7	µg/L	0.40	0.80
2/15/2021 8:00	Effluent Composite	Metals	Sodium	7.8	mg/L	0.50	2.0
2/15/2021 8:00	Effluent Composite	Metals	Potassium	3.2	mg/L	0.30	1.2
2/15/2021 8:00	Effluent Composite	Nutrients	Kjeldahl Nitrogen	4.5 Y	mg N/L	0.080	0.20
2/15/2021 8:00	Effluent Composite	Nutrients	Total-P	2.0 Y	mg P/L	0.025	0.25
2/15/2021 8:00	Effluent Composite	Nutrients	Organic Carbon	7.2 Y	mg C/L	0.50	1.0
2/15/2021 8:00	Effluent Composite	Nutrients	TSS	9 I	mg/L	2.0	10
2/15/2021 8:00	Effluent Composite	Nutrients	Ammonia-N	0.030 Y	mg N/L	0.0020	0.0050
2/15/2021 8:00	Effluent Composite	Nutrients	NO2NO3-N	1.2 Y	mg N/L	0.0080	0.020
3/9/2021 11:00	Test Site	AGP/LN	Algal Growth Potential	7.69 Q	mg DryWt/L	0.300	0.900
3/9/2021 11:00	Test Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	1.0 I	µg/L	0.90	2.7
3/9/2021 11:00	Test Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	2.7	µg/L	0.60	1.8
3/9/2021 11:00	Test Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	2.0 I	µg/L	0.82	2.5
3/9/2021 11:00	Test Site	Microbiology	Fecal Coliforms-Membrane Filter	130 BQ	cfu/100 mL	2	2
3/9/2021 11:00	Test Site	Microbiology	Escherichia Coli-Quanti-Tray	224.7 Q	MPN/100 mL	1.0	1.0
3/9/2021 11:00	Test Site	Overflow	Carbonaceous Biochemical Oxygen Demand	2.0 U	mg/L	2.0	2.0
3/9/2021 11:00	Test Site	Metals	Magnesium	1.34	mg/L	0.040	0.16
3/9/2021 11:00	Test Site	Metals	Chromium	0.78 I	µg/L	0.40	1.6
3/9/2021 11:00	Test Site	Metals	Silver	0.010 U	µg/L	0.010	0.040
3/9/2021 11:00	Test Site	Metals	Sodium	2.1	mg/L	0.50	2.0

Date_Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/9/2021 11:00	Test Site	Metals	Arsenic	0.45	µg/L	0.050	0.20
3/9/2021 11:00	Test Site	Metals	Selenium	0.20 U	µg/L	0.20	0.80
3/9/2021 11:00	Test Site	Metals	Aluminum	363	µg/L	5.0	20
3/9/2021 11:00	Test Site	Metals	Zinc	5.0 U	µg/L	5.0	20
3/9/2021 11:00	Test Site	Metals	Potassium	1.0 I	mg/L	0.30	1.2
3/9/2021 11:00	Test Site	Metals	Lead	0.44	µg/L	0.20	0.40
3/9/2021 11:00	Test Site	Metals	Copper	0.54 I	µg/L	0.40	0.80
3/9/2021 11:00	Test Site	Metals	Iron	970	µg/L	30	120
3/9/2021 11:00	Test Site	Metals	Nickel	0.59 I	µg/L	0.50	2.0
3/9/2021 11:00	Test Site	Metals	Cadmium	0.020 U	µg/L	0.020	0.080
3/9/2021 11:00	Test Site	Metals	Calcium	13.9	mg/L	0.075	0.30
3/9/2021 11:00	Test Site	Nutrients	TSS	4 I	mg/L	2.0	10
3/9/2021 11:00	Test Site	Nutrients	Total Alkalinity	34	mg CaCO3/L	0.65	2.5
3/9/2021 11:00	Test Site	Nutrients	Kjeldahl Nitrogen	0.32	mg N/L	0.080	0.20
3/9/2021 11:00	Test Site	Nutrients	Color (true)	53 A	PCU	2.5	6.0
3/9/2021 11:00	Test Site	Nutrients	Chloride	4.6	mg Cl/L	0.20	0.50
3/9/2021 11:00	Test Site	Nutrients	O-Phosphate-P	0.017	mg P/L	0.0040	0.010
3/9/2021 11:00	Test Site	Nutrients	Ammonia-N	0.017	mg N/L	0.0020	0.0050
3/9/2021 11:00	Test Site	Nutrients	Turbidity	11	NTU	0.10	0.13
3/9/2021 11:00	Test Site	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.10
3/9/2021 11:00	Test Site	Nutrients	Sulfate	1.2	mg SO4/L	0.20	0.50
3/9/2021 11:00	Test Site	Nutrients	NO2NO3-N	0.18	mg N/L	0.0040	0.010
3/9/2021 11:00	Test Site	Nutrients	Organic Carbon	4.7	mg C/L	0.50	1.0
3/9/2021 11:00	Test Site	Nutrients	Total-P	0.041	mg P/L	0.0020	0.0050
3/9/2021 11:00	Test Site	Pesticides	Sucralose	0.23	µg/L	0.010	0.040
3/9/2021 11:00	Test Site	Priority Organic Pollutants	1,4-Dioxane	0.020 U	µg/L	0.020	0.080
3/9/2021 11:00	Test Site	Nutrients	Temperature	12.6	C		
3/9/2021 11:00	Test Site	Nutrients	Specific Conductance	85.3	umhos/cm		
3/9/2021 11:00	Test Site	Nutrients	Dissolved Oxygen mg/L	9.65	mg/L		
3/9/2021 11:00	Test Site	Nutrients	Sample Depth	0.3	m		
3/9/2021 11:00	Test Site	Nutrients	pH	6.34	SU		
3/9/2021 12:40	Control Site	AGP/LN	Algal Growth Potential	2.50 Q	mg DryWt/L	0.300	0.900
3/9/2021 12:40	Control Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	1.6 I	µg/L	0.82	2.5
3/9/2021 12:40	Control Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.90 U	µg/L	0.90	2.7
3/9/2021 12:40	Control Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	2.1	µg/L	0.60	1.8
3/9/2021 12:40	Control Site	Microbiology	Fecal Coliforms-Membrane Filter	120 Q	cfu/100 mL	2	2

Date_Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/9/2021 12:40	Control Site	Microbiology	Escherichia Coli-Quanti-Tray	193.5 Q	MPN/100 mL	1.0	1.0
3/9/2021 12:40	Control Site	Overflow	Carbonaceous Biochemical Oxygen Demand	2.0 U	mg/L	2.0	2.0
3/9/2021 12:40	Control Site	Metals	Iron	1.04E+03	µg/L	30	120
3/9/2021 12:40	Control Site	Metals	Arsenic	0.50	µg/L	0.050	0.20
3/9/2021 12:40	Control Site	Metals	Nickel	0.50 U	µg/L	0.50	2.0
3/9/2021 12:40	Control Site	Metals	Lead	0.45	µg/L	0.20	0.40
3/9/2021 12:40	Control Site	Metals	Copper	0.40 U	µg/L	0.40	0.80
3/9/2021 12:40	Control Site	Metals	Chromium	0.84 I	µg/L	0.40	1.6
3/9/2021 12:40	Control Site	Metals	Sodium	1.9 I	mg/L	0.50	2.0
3/9/2021 12:40	Control Site	Metals	Cadmium	0.026 I	µg/L	0.020	0.080
3/9/2021 12:40	Control Site	Metals	Calcium	11.6	mg/L	0.075	0.30
3/9/2021 12:40	Control Site	Metals	Magnesium	1.17	mg/L	0.040	0.16
3/9/2021 12:40	Control Site	Metals	Silver	0.015 I	µg/L	0.010	0.040
3/9/2021 12:40	Control Site	Metals	Potassium	0.96 I	mg/L	0.30	1.2
3/9/2021 12:40	Control Site	Metals	Zinc	5.0 U	µg/L	5.0	20
3/9/2021 12:40	Control Site	Metals	Aluminum	383	µg/L	5.0	20
3/9/2021 12:40	Control Site	Metals	Selenium	0.20 U	µg/L	0.20	0.80
3/9/2021 12:40	Control Site	Nutrients	Kjeldahl Nitrogen	0.33	mg N/L	0.080	0.20
3/9/2021 12:40	Control Site	Nutrients	Ammonia-N	0.015	mg N/L	0.0020	0.0050
3/9/2021 12:40	Control Site	Nutrients	TSS	4 I	mg/L	2.0	10
3/9/2021 12:40	Control Site	Nutrients	Sulfate	0.90	mg SO4/L	0.20	0.50
3/9/2021 12:40	Control Site	Nutrients	Turbidity	12	NTU	0.10	0.13
3/9/2021 12:40	Control Site	Nutrients	Organic Carbon	4.9	mg C/L	0.50	1.0
3/9/2021 12:40	Control Site	Nutrients	Total-P	0.031	mg P/L	0.0020	0.0050
3/9/2021 12:40	Control Site	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.10
3/9/2021 12:40	Control Site	Nutrients	Color (true)	58	PCU	2.5	6.0
3/9/2021 12:40	Control Site	Nutrients	NO2NO3-N	0.13	mg N/L	0.0040	0.010
3/9/2021 12:40	Control Site	Nutrients	Chloride	4.4	mg Cl/L	0.20	0.50
3/9/2021 12:40	Control Site	Nutrients	O-Phosphate-P	0.008 I	mg P/L	0.0040	0.010
3/9/2021 12:40	Control Site	Nutrients	Total Alkalinity	28	mg CaCO3/L	0.65	2.5
3/9/2021 12:40	Control Site	Pesticides	Sucralose	0.010 U	µg/L	0.010	0.040
3/9/2021 12:40	Control Site	Priority Organic Pollutants	1,4-Dioxane	0.020 U	µg/L	0.020	0.080
3/9/2021 12:40	Control Site	Nutrients	Sample Depth	0.3	m		
3/9/2021 12:40	Control Site	Nutrients	pH	6.92	SU		
3/9/2021 12:40	Control Site	Nutrients	Dissolved Oxygen mg/L	9.93	mg/L		
3/9/2021 12:40	Control Site	Nutrients	Specific Conductance	72.3	umhos/cm		

Date_Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/9/2021 12:40	Control Site	Nutrients	Temperature	13.6	C		
2/15/2021 12:25	Blank	Metals	Iron	30 U	µg/L	30	120
2/15/2021 12:25	Blank	Metals	Zinc	5.0 U	µg/L	5.0	20
2/15/2021 12:25	Blank	Metals	Aluminum	5.0 U	µg/L	5.0	20
2/15/2021 12:25	Blank	Metals	Chromium	0.40 U	µg/L	0.40	1.6
2/15/2021 12:25	Blank	Metals	Copper	2.50	µg/L	0.40	0.80
2/15/2021 12:25	Blank	Metals	Arsenic	0.050 U	µg/L	0.050	0.20
2/15/2021 12:25	Blank	Metals	Cadmium	0.020 U	µg/L	0.020	0.080
2/15/2021 12:25	Blank	Metals	Lead	0.70	µg/L	0.20	0.40
2/15/2021 12:25	Blank	Metals	Nickel	0.50 U	µg/L	0.50	2.0
2/15/2021 12:25	Blank	Metals	Potassium	0.30 U	mg/L	0.30	1.2
2/15/2021 12:25	Blank	Metals	Calcium	0.075 U	mg/L	0.075	0.30
2/15/2021 12:25	Blank	Metals	Selenium	0.20 U	µg/L	0.20	0.80
2/15/2021 12:25	Blank	Metals	Silver	0.010 U	µg/L	0.010	0.040
2/15/2021 12:25	Blank	Metals	Sodium	0.50 U	mg/L	0.50	2.0
2/15/2021 12:25	Blank	Metals	Magnesium	0.040 U	mg/L	0.040	0.16
2/15/2021 12:25	Blank	Nutrients	Chloride	0.20 U	mg Cl/L	0.20	0.50
2/15/2021 12:25	Blank	Nutrients	Ammonia-N	0.002 U	mg N/L	0.0020	0.0050
2/15/2021 12:25	Blank	Nutrients	NO2NO3-N	0.005 I	mg N/L	0.0040	0.010
2/15/2021 12:25	Blank	Nutrients	Turbidity	0.10 U	NTU	0.10	0.13
2/15/2021 12:25	Blank	Nutrients	Sulfate	0.20 U	mg SO4/L	0.20	0.50
2/15/2021 12:25	Blank	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.0040	0.010
2/15/2021 12:25	Blank	Nutrients	Total-P	0.002 U	mg P/L	0.0020	0.0050
2/15/2021 12:25	Blank	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.10
2/15/2021 12:25	Blank	Nutrients	Organic Carbon	0.50 U	mg C/L	0.50	1.0
2/15/2021 12:25	Blank	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.080	0.20
2/15/2021 12:25	Blank	Nutrients	Color (true)	2.5 U	PCU	2.5	6.0
2/15/2021 12:25	Blank	Nutrients	Total Alkalinity	0.65 U	mg CaCO3/L	0.65	2.5
2/15/2021 12:25	Blank	Pesticides	Phorate	0.55 U	ng/L	0.55	2.2
2/15/2021 12:25	Blank	Pesticides	Acetochlor	0.26 U	ng/L	0.26	1.0
2/15/2021 12:25	Blank	Pesticides	Ametryn	0.63 U	ng/L	0.63	2.5
2/15/2021 12:25	Blank	Pesticides	Carfentrazone Ethyl	0.10 U	ng/L	0.10	0.42
2/15/2021 12:25	Blank	Pesticides	Chlorpyrifos Ethyl	0.26 U	ng/L	0.26	1.0
2/15/2021 12:25	Blank	Pesticides	Difenoconazole	0.63 U	ng/L	0.63	2.5
2/15/2021 12:25	Blank	Pesticides	Dithiopyr	0.18 U	ng/L	0.18	0.73
2/15/2021 12:25	Blank	Pesticides	Ethoprop	0.10 U	ng/L	0.10	0.42

Date_Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
2/15/2021 12:25	Blank	Pesticides	Norflurazon	0.52 U	ng/L	0.52	2.1
2/15/2021 12:25	Blank	Pesticides	Prometon	0.94 U	ng/L	0.94	3.7
2/15/2021 12:25	Blank	Pesticides	Sucralose	0.010 U	µg/L	0.010	0.040
2/15/2021 12:25	Blank	Pesticides	Disulfoton	0.52 U	ng/L	0.52	2.1
2/15/2021 12:25	Blank	Pesticides	Fipronil Sulfone	0.16 U	ng/L	0.16	0.63
2/15/2021 12:25	Blank	Pesticides	Fludioxonil	0.13 U	ng/L	0.13	0.52
2/15/2021 12:25	Blank	Pesticides	Hexazinone	0.52 U	ng/L	0.52	2.1
2/15/2021 12:25	Blank	Pesticides	Imazalil	0.78 U	ng/L	0.78	3.1
2/15/2021 12:25	Blank	Pesticides	Malathion	0.37 U	ng/L	0.37	1.5
2/15/2021 12:25	Blank	Pesticides	Metribuzin	3.4 U	ng/L	3.4	14
2/15/2021 12:25	Blank	Pesticides	Myclobutanil	0.26 U	ng/L	0.26	1.0
2/15/2021 12:25	Blank	Pesticides	Oxyfluorfen	0.16 U	ng/L	0.16	0.63
2/15/2021 12:25	Blank	Pesticides	Pyriproxyfen	0.13 U	ng/L	0.13	0.52
2/15/2021 12:25	Blank	Pesticides	Terbufos	0.10 U	ng/L	0.10	0.42
2/15/2021 12:25	Blank	Pesticides	Naproxen	0.0080 U	µg/L	0.0080	0.032
2/15/2021 12:25	Blank	Pesticides	Atrazine Desethyl	1.6 U	ng/L	1.6	6.3
2/15/2021 12:25	Blank	Pesticides	Demeton	1.6 U	ng/L	1.6	6.3
2/15/2021 12:25	Blank	Pesticides	Parathion Ethyl	0.26 U	ng/L	0.26	1.0
2/15/2021 12:25	Blank	Pesticides	Atrazine	0.26 U	ng/L	0.26	1.0
2/15/2021 12:25	Blank	Pesticides	Azoxystrobin	0.52 U	ng/L	0.52	2.1
2/15/2021 12:25	Blank	Pesticides	Butylate	0.42 U	ng/L	0.42	1.7
2/15/2021 12:25	Blank	Pesticides	Carbophenothion	0.52 U	ng/L	0.52	2.1
2/15/2021 12:25	Blank	Pesticides	Fipronil Desulfinyl	0.13 U	ng/L	0.13	0.52
2/15/2021 12:25	Blank	Pesticides	Metolachlor	0.37 U	ng/L	0.37	1.5
2/15/2021 12:25	Blank	Pesticides	Naled	1.6 U	ng/L	1.6	6.3
2/15/2021 12:25	Blank	Pesticides	Prometryn	0.21 U	ng/L	0.21	0.84
2/15/2021 12:25	Blank	Pesticides	Simazine	0.52 U	ng/L	0.52	2.1
2/15/2021 12:25	Blank	Pesticides	Caffeine	66	ng/L	5.2	21
2/15/2021 12:25	Blank	Pesticides	Diazinon	0.13 U	ng/L	0.13	0.52
2/15/2021 12:25	Blank	Pesticides	EPTC	1.3 U	ng/L	1.3	5.2
2/15/2021 12:25	Blank	Pesticides	Ethion	0.16 U	ng/L	0.16	0.63
2/15/2021 12:25	Blank	Pesticides	Fonofos	0.21 U	ng/L	0.21	0.84
2/15/2021 12:25	Blank	Pesticides	Metalaxyl	0.78 U	ng/L	0.78	3.1
2/15/2021 12:25	Blank	Pesticides	Oxadiazon	0.31 U	ng/L	0.31	1.3
2/15/2021 12:25	Blank	Pesticides	Parathion Methyl	0.57 U	ng/L	0.57	2.3
2/15/2021 12:25	Blank	Pesticides	Pendimethalin	1.0 U	ng/L	1.0	4.2

Date_Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
2/15/2021 12:25	Blank	Pesticides	Pronamide	0.16 U	ng/L	0.16	0.63
2/15/2021 12:25	Blank	Pesticides	Propiconazole	0.52 U	ng/L	0.52	2.1
2/15/2021 12:25	Blank	Pesticides	Sulfentrazone	0.52 U	ng/L	0.52	2.1
2/15/2021 12:25	Blank	Pesticides	Tebuconazole	0.52 U	ng/L	0.52	2.1
2/15/2021 12:25	Blank	Pesticides	Ibuprofen	0.020 U	µg/L	0.020	0.080
2/15/2021 12:25	Blank	Pesticides	Azinphos Methyl	2.1 U	ng/L	2.1	8.4
2/15/2021 12:25	Blank	Pesticides	Fipronil	0.26 U	ng/L	0.26	1.0
2/15/2021 12:25	Blank	Pesticides	Fipronil Sulfide	0.16 U	ng/L	0.16	0.63
2/15/2021 12:25	Blank	Pesticides	Flutolanil	0.10 U	ng/L	0.10	0.42
2/15/2021 12:25	Blank	Pesticides	Molinate	0.31 U	ng/L	0.31	1.3
2/15/2021 12:25	Blank	Pesticides	Alachlor	0.26 U	ng/L	0.26	1.0
2/15/2021 12:25	Blank	Pesticides	Fenamiphos	0.52 U	ng/L	0.52	2.1
2/15/2021 12:25	Blank	Pesticides	Prodiamine	0.18 U	ng/L	0.18	0.73
2/15/2021 12:25	Blank	Pesticides	Terbuthylazine	0.44 U	ng/L	0.44	1.8
2/15/2021 12:25	Blank	Pesticides	Bromacil	0.52 U	ng/L	0.52	2.1
2/15/2021 12:25	Blank	Pesticides	Chlorpyrifos Methyl	0.052 U	ng/L	0.052	0.21
2/15/2021 12:25	Blank	Pesticides	Cyanazine	3.4 U	ng/L	3.4	14
2/15/2021 12:25	Blank	Pesticides	Dimethenamid	0.10 U	ng/L	0.10	0.42
2/15/2021 12:25	Blank	Pesticides	Fenbuconazole	0.13 U	ng/L	0.13	0.52
2/15/2021 12:25	Blank	Pesticides	Fluazifop-P-butyl	0.10 U	ng/L	0.10	0.42
2/15/2021 12:25	Blank	Pesticides	Flumioxazin	1.8 U	ng/L	1.8	7.3
2/15/2021 12:25	Blank	Pesticides	Fluxapyroxad	0.10 U	ng/L	0.10	0.42
2/15/2021 12:25	Blank	Pesticides	Iprodione	0.63 U	ng/L	0.63	2.5
2/15/2021 12:25	Blank	Pesticides	Mevinphos	1.1 U	ng/L	1.1	4.4
2/15/2021 12:25	Blank	Priority Organic Pollutants	4-Nitrophenol	9.8 U	µg/L	9.8	39
2/15/2021 12:25	Blank	Priority Organic Pollutants	1,4-Dioxane	0.020 U	µg/L	0.020	0.080
2/15/2021 12:25	Blank	Priority Organic Pollutants	Dimethyl phthalate	0.20 U	µg/L	0.20	0.78
2/15/2021 12:25	Blank	Priority Organic Pollutants	Hexachlorobenzene	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	Phenanthrene	0.098 U	µg/L	0.098	0.39
2/15/2021 12:25	Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	µg/L	2.9	12
2/15/2021 12:25	Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	Chrysene	0.025 U	µg/L	0.025	0.098
2/15/2021 12:25	Blank	Priority Organic Pollutants	Diethyl phthalate	2.0 U	µg/L	2.0	7.8
2/15/2021 12:25	Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.049 U	µg/L	0.049	0.20

Date_Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
2/15/2021 12:25	Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	2,4-Dinitrophenol	9.8 U	µg/L	9.8	39
2/15/2021 12:25	Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	9.8 U	µg/L	9.8	39
2/15/2021 12:25	Blank	Priority Organic Pollutants	Butyl benzyl phthalate	0.98 U	µg/L	0.98	3.9
2/15/2021 12:25	Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.025 U	µg/L	0.025	0.098
2/15/2021 12:25	Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	4.9 U	µg/L	4.9	20
2/15/2021 12:25	Blank	Priority Organic Pollutants	Hexachloroethane	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	Nitrobenzene	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	Acenaphthene	0.025 U	µg/L	0.025	0.098
2/15/2021 12:25	Blank	Priority Organic Pollutants	Anthracene	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.025 U	µg/L	0.025	0.098
2/15/2021 12:25	Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	Fluorene	0.025 U	µg/L	0.025	0.098
2/15/2021 12:25	Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.025 U	µg/L	0.025	0.098
2/15/2021 12:25	Blank	Priority Organic Pollutants	Isophorone	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	Naphthalene	0.098 U	µg/L	0.098	0.39
2/15/2021 12:25	Blank	Priority Organic Pollutants	Pentachlorophenol	0.49 U	µg/L	0.49	2.0
2/15/2021 12:25	Blank	Priority Organic Pollutants	2-Chlorophenol	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	2-Nitrophenol	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.025 U	µg/L	0.025	0.098
2/15/2021 12:25	Blank	Priority Organic Pollutants	Di-n-butyl phthalate	2.0 U	µg/L	2.0	7.8
2/15/2021 12:25	Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2.0 U	µg/L	2.0	7.8
2/15/2021 12:25	Blank	Priority Organic Pollutants	Pyrene	0.098 U	µg/L	0.098	0.39
2/15/2021 12:25	Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	Acenaphthylene	0.025 U	µg/L	0.025	0.098
2/15/2021 12:25	Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.025 U	µg/L	0.025	0.098
2/15/2021 12:25	Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.025 U	µg/L	0.025	0.098
2/15/2021 12:25	Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.025 U	µg/L	0.025	0.098
2/15/2021 12:25	Blank	Priority Organic Pollutants	Fluoranthene	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	Phenol	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.049 U	µg/L	0.049	0.20

Date_Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
2/15/2021 12:25	Blank	Priority Organic Pollutants	Benzidine	9.8 U	µg/L	9.8	39
2/15/2021 12:25	Blank	Priority Organic Pollutants	Hexachlorobutadiene	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	2,4-Dimethylphenol	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.049 U	µg/L	0.049	0.20
2/15/2021 12:25	Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.049 U	µg/L	0.049	0.20

Appendix F. Photos from Instream Sampling Event



Figure 2. Photo taken 01/19/2021 facing upstream showing the end of pipe discharging into Little Creek.



Figure 3. Photo taken on 01/19/2021 facing upstream showing Holmes Creek Control Site. Field sampler is standing upstream of the confluence of Little Creek and Holmes Creek.



Figure 4. Photo taken 02/15/2021 facing Little Creek showing flooded wetland condition. Field sampler is standing on the end of pipe.



Figure 5. Photo taken 03/09/2021 facing upstream showing end of pipe discharging into Little Creek.