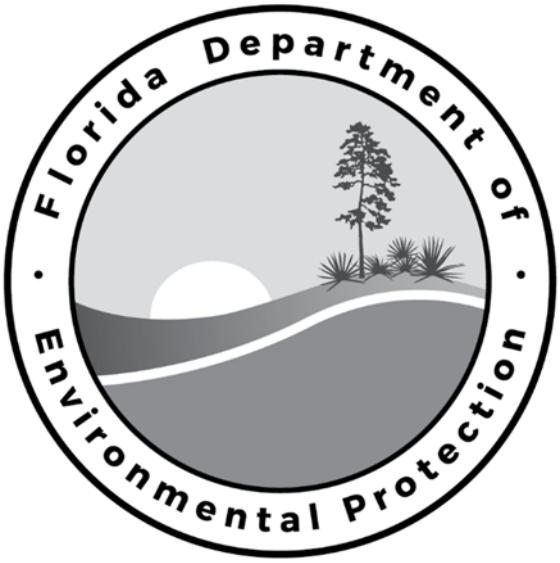


Biological Assessment of

Duke Energy Suwannee River Power Plant

Suwannee County

NPDES # FL0000183

Sampled March 07, 2016

November 2016

Biology Program

FDEP Laboratory

Division of Environmental Assessment and Restoration

FDEP Laboratory Quality Manual

NELAC Certification No. E31780

CONTENTS

Facility Overview

Methods

Results

Conclusion

Literature Cited

Tables

Table 1. Effluent limits, Class III Freshwater Criteria and field parameters

Table 2. Effluent limits, Class III Freshwater Criteria, and analytical water chemistry and toxicological data

Table 3. Effluent limits, Class III Freshwater Criteria and analytical metals data

Table 4. Measured and predicted freshwater algal growth potential (AGP)

Table 5. Periphyton composition - qualitative

Table 6. Macroinvertebrate dipnet samples – qualitative

Appendices

Appendix A. Map of facility

Appendix B. Facility Summary

Appendix C. Explanation of measurements

Appendix D. Chain of Custody

Appendix E. Physical/Chemical and Habitat Assessment field sheets

Appendix F. Chemical analyses of effluent and receiving water

EPA End Sheet

The purpose of this investigation was to determine the discharge's effects on the biota of the receiving waters. Biological assessments are prepared by FDEP 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.

Facility Overview

The Duke Energy Suwannee River Power Plant discharges effluent into the Suwannee River, a Class III Outstanding Florida Water (see map Appendix A). The permitted capacity of the wastewater system is 172.8 million gallons per day (MGD). The annual average daily flow for March 2015 to February 2016 for Outfall D-001 (monitoring location EFF-1) was 137.8 MGD. The plant discharges continuously, and the flow reported during this survey was 129.6 MGD.

The existing facility consists of three natural gas-fired steam generators (Units 1, 2, and 3), and three combustion turbine peaking units. The permittee is planning on retiring Units 1, 2, and 3 during the upcoming cycle by December 31, 2018.

See the Facility Summary (Appendix B) for a description of the facility, summary of permit limits, Administrative Order (AO), and Discharge Monitoring Report (DMR) information.

Methods

Effluent samples for biological and chemical analyses were collected as grab samples from NPDES monitoring location EFF-1. Habitat and biological assessments were made and chemical and biological samples were collected in the Suwannee River within a 100m length Control Site (beginning 10 meters (m) and ending 110 m upstream of the point of discharge) and a 100m length Test Site (beginning 110 m and ending 10 m downstream of the point of discharge). In accordance with the permit, a background sample was obtained approximately 30 m into the intake canal (influent) to isolate any iron contribution to the discharge from the facility. Temperature, pH, dissolved oxygen and specific conductance were also recorded at this location.

All field and laboratory methods followed FDEP Standard Operating Procedures (see http://www.dep.state.fl.us/labs/library/lab_sops.htm and http://www.dep.state.fl.us/water/sas/sop/sops.htm for details) and met DEP quality assurance/quality control standards (see http://www.dep.state.fl.us/water/sas/qa/index.htm). Explanations of specific methods and measurements can be found in Appendix C.

The following were involved in this investigation: Brian Davis, Jann Gruentzel, Amy Kalmbacher, Patrick O'Connor, and Jeremy Parrish, and FDEP Laboratory in Tallahassee. The report was reviewed by District representatives and the Point Source Studies Review Committee (Mike Tanski, Andrew Tintle, and Jennifer Walters).

Results

Physical and Chemical Parameters (See Table 1 and Appendices D, E, and F)

- Habitat Assessment scores were similar at the Test Site (103) and Control Site (105), which places both sites in the Suboptimal category. Both sites had low substrate diversity and low substrate availability and experienced habitat smothering. The Test Site lost points for lack of bank stability of both banks.
- The pH (Standard Units), specific conductance (µmhos/cm), and dissolved oxygen (mg/L and % saturation) of the effluent, Control Site, and Test Site complied with Class III Freshwater Quality Criteria (62-302.530, F.A.C.) and/or effluent permit limits.
- The temperature measured at the Test Site was approximately 3 degrees Celsius (C) higher than the Control Site. The temperature of the effluent was elevated 4.4 degrees C higher than the influent.

Organic Constituents (See Appendix F)

- Atrazine was detected between the method detection limit (MDL) and the practical quantitation limit (PQL) in the effluent.
- No organic constituents were detected in the field blank.

Nutrients (See Table 2 and Appendix F)

- Nutrient amounts were similar across the effluent grab, Test Site, and Control Site samples.
- Total phosphorous was detected in the field blank between the MDL and PQL. No other nutrients were detected in the field blank.

Analytical Water Chemistry (See Table 2 and Appendix F)

- Chlorophyll *a* (corrected) was undetected in the effluent sample and was detected between the MDL and PQL in both the Control and Test Site samples.

Toxicity Whole Effluent Test (See Table 2 and Appendix F)

- Tests were performed March 8 through March 15, 2016.
- During the chronic definitive bioassay, the effluent grab sample IC25 for the water flea, *Ceriodaphnia dubia*, and the IC25 for the fish, *Pimephales promelas*, were calculated as being greater than 100% effluent. The effluent permit limit is for a 24-hour time-proportioned composite sample, while the samples collected during this inspection were grab samples due to a broken composite sampler.
- 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 F)

- All metals detected in the effluent grab samples were present at levels that complied with effluent permit limits and Class III Freshwater Quality Criteria (62-302.530, F.A.C.).
- All metals detected in the Test and Control Site samples were detected at levels that complied with Class III Freshwater Quality Criteria (62-302.530, F.A.C.).
- Iron amounts in the effluent grab, Test Site, and Control Site samples were similar to the iron amount detected in the influent sample which also complied with Class III Freshwater Quality Criterion (62-302.530(38), F.A.C.)
- The amount of copper detected was approximately four and three times higher in the effluent grab sample and Test Site respectively, compared to the Control Site sample. The facility was issued an Administrative Order with the existing permit and contains interim copper limits (34.0 µg/L).
- No metals were detected in the field blank.

Algal Growth Potential (See Table 4 and Appendix F)

- The AGP values in the effluent, Test Site, and Control Site samples using the freshwater species, *Pseudokirchneriella subcapitata*, were similar. The analytical chemistry suggests that the effluent and the Test Site are nitrogen-limited, and the Control Site is nitrogen-phosphorus co-limited.

Bioassessment

Periphyton (See Table 5)

- Periphyton communities in both the Test and Control Site samples consisted mostly of diatoms. The diatom community in the Test Site sample was dominated by *Diadesmis contenta*, while the diatom community in the Control Site sample was dominated by *Pseudostaurosira brevistriata*.
- RPS was conducted at the Control Site but omitted from the Test Site sampling. Common periphyton abundance was recorded on the Test Site field sheets in lieu of performing the entire RPS method.

Macroinvertebrates (See Table 6)

- Macroinvertebrate samples were collected on the facility side of the river. The Test Site scored 69 A on the Stream Condition Index (SCI), and the Control Site scored 87 A. (see Appendix C for an SCI score explanation). The Test Site had lower numbers of Trichoptera and clinger taxa. Both sites had similar numbers of Ephemeroptera, sensitive taxa, and long-lived taxa. The Test Site had a lower percentage of suspension feeders and a lower percentage of Tanytarsini individuals (which tend to decline with human disturbance). The Test Site had a higher percentage of very tolerant individuals compared to the Control Site. (See Appendix C for an explanation of how these SCI metrics typically respond to human disturbance).
- For more information or to obtain a copy of the taxa lists, please contact the Biology Laboratory at 850-245-8177.

Conclusion

The facility is under an Administrative Order that addresses elevated copper in the discharge. During this survey, the effluent was increasing the temperature of the Test Site. Nutrient values and AGP values were similar across the effluent and instream site samples. These results were not indicative of nutrient enrichment in the receiving waters. Periphyton communities were similar at the Test Site as compared to the Control Site. Macroinvertebrate samples collected at the Control Site scored higher on the SCI than the samples collected at the Test Site. Macroinvertebrate communities at both sites passed the SCI and are indicative of a well-balanced faunal community.

Literature Cited

Fore, L.S., Frydenborg, R., Miller, D., Frick, T., Whiting, D., Espy, J., and Wolfe, L. 2007. Development and Testing of Biomonitoring Tools for Macroinvertebrates in Florida Streams (Stream Condition Index and Biorecon). Florida Department of Environmental Protection. 110pp.

Miller, W. E., T. E. Maloney, and J. C. Greene. 1978. The *Selenastrum capricornutum* Printz algal assay bottle test. EPA-600/9-78-018. U. S. EPA, Cincinnati, Ohio. 126 p.

Plafkin, J. L., M. T. Barbour, K. D. Porter, S. K. Gross and R. M. Hughes. 1989. Rapid bioassessment protocols for use in streams and rivers: Benthic macroinvertebrates and fish. U. S. EPA, Office of Water Regulations and Standards, Washington D.C., EPA 440-4-89-001

Stevenson, R. J. and L. L. Bahls. 1999. Periphyton protocols. Pp. 6.1-6.22 in: Rapid bioassessment protocols for use in wadeable streams and rivers. 2nd edition. By: M. T. Barbour, J. Gerritsen, B. D. Snyder and J. B. Stribling. EPA 841-B-99-002. U. S. Environmental Protection Agency, Office of Water, Washington, D. C.

Stevenson, R. J. and J. P. Smol. 2003. Use of algae in environmental assessments, pp. 775-803, in: Freshwater algae of North America, edited by J. D. Wehr and R. G. Sheath, Academic Press, San Diego. 918 pp.

USEPA. 2000. Nutrient Criteria Technical Guidance Manual – River and Streams. EPA-822-B-00-002.

Table 1. Effluent limits, Class III Freshwater Criteria and field parameters

Suwannee River Power Plant	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab	Test Site	Control Site	Influent
Habitat Assessment	-	-	-	-	103	105	-
Sample Depth	m	-	-	0.3	0.3	0.3	0.3
Temperature	C	-	Report	20.3	18.8	16.1	15.9
pH	SU	6.0 - 8.5	6.0 - 8.5 s	7.9	6.9	7.9	8.0
Specific Conductance	µmhos/cm	≤ 1,275	-	142	144	136	135
Salinity	ppth	-	-	0.07	0.07	0.06	-
Dissolved Oxygen	% saturation	> 34	-	59.1	75.7	70.9	-
Dissolved Oxygen	mg/L	-	-	5.8	7.0	7.0	5.9

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

s - Single sample

Table 2. Effluent limits, Class III Freshwater Criteria and analytical water chemistry and toxicological data

Suwannee River Power Plant	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab	Test Site	Control Site	Field Blank
Analytical Water Chemistry							
Atrazine	µg/L	-	-	0.011 I	-	-	-
Ortho-phosphate	mg P/L	-	Report	0.065	0.062	0.061	0.004 U
Total Phosphorus	mg P/L	-	Report	0.12	0.11	0.10	0.002 I
Total Ammonia	mg N/L	-	Report	0.017	0.017	0.016	0.002 U
Un-ionized Ammonia (calculated salinity)		≤ 0.02 s	Report	< 0.02 c	< 0.02 c	< 0.02 c	-
Nitrate and Nitrite	mg N/L	-	Report	0.22	0.24	0.27	0.004 U
Total Kjeldahl Nitrogen	mg N/L	-	Report	0.86	0.75	0.74	0.080 U
Organic Nitrogen	mg N/L	-	-	0.84 c	0.73 c	0.72 c	0.04 c[1]
Total Nitrogen	mg N/L	-	Report	1.08 c	0.99 c	1.01 c	0.04 c[1]
Total Organic Carbon	mg C/L	-	-	20	20	19	0.50 U
Chlorophyll *a* - Corrected	µg/L	-	-	0.92 U	0.86 I	0.97 I	-
Phaeophytin	µg/L	-	-	0.67 U	0.57 U	0.40 U	-
Chlorophyll *a* - Uncorrected	µg/L	-	-	0.91 I	1.1 I	1.2 I	-
CBOD, 5 day, N - inhibited	mg/L	-	-	0.51 I	1.6 I	1.9 I	-
Total Suspended Solids	mg/L	-	-	7 I	9 I	6 I	-
Turbidity	NTU	< 29 t	-	7.1	7.2	6.9	0.10 U
Color (true)	PCU	-	-	220	220	210	2.5 U
Alkalinity	mg CaCO3/L	≥ 20	-	47	46	45	0.65 U
Chloride	mg Cl/L	-	-	8.1	8.2	8.3	0.20 U
Fluoride	mg F/L	≤ 10.0	-	0.11	0.10	0.10	0.035 U
Sulfate	mg SO4/L	-	-	8.8	8.4	8.0	0.20 U
Toxicity (IC25, 7-day Chronic Definitive)							
Bioassay - Water flea (*Ceriodaphnia dubia*) - reproduction	% effluent	-	≥ 100 p	> 100	-	-	-
Bioassay - Fish (*Pimephales promelas*) - biomass	% effluent	-	≥ 100 p	> 100	-	-	-

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

1 - Value is calculated using half the MDL value of the analyte(s) that were not detected
c - Value is calculated
p - 24-hour time-proportioned composite
s - Single sample
t - Shall not exceed 29 NTUs above background
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

Table 3. Effluent limits, Class III Freshwater Criteria and analytical metals data

Suwannee River Power Plant	Units	Effluent Permit Limits	Effluent Class III Criteria	Effluent Grab	Test Site Class III Criteria	Test Site	Control Site Class III Criteria	Control Site	Field Blank	Influent
Hardness	mg/L	Report	-	61.7 c	-	63 c	-	59.4 c	0.4 c	-
Aluminum	µg/L	-	-	528	-	521	-	481	2.0 U	-
Arsenic	µg/L	-	≤ 50	0.70	≤ 50	0.69	≤ 50	0.69	0.050 U	-
Cadmium	µg/L	-	≤ 0.189 b	0.031 I	≤ 0.19 b	0.034 I	≤ 0.184 b	0.032 I	0.020 U	-
Calcium	mg/L	-	-	19.1	-	19.3	-	18.3	0.075 U	-
Chromium, Total [g]	µg/L	-	≤ 58.1 b	0.88	≤ 59 b	0.88	≤ 56.3 b	0.86	0.050 U	-
Copper	µg/L	≤ 34.0[2]	≤ 6.18 b	2.43	≤ 6.3 b	1.84	≤ 5.98 b	0.59	0.10 U	-
Iron	µg/L	≤ 1,000 s	≤ 1,000	890	≤ 1,000	950	≤ 1,000	890	30 U	980
Lead	µg/L	-	≤ 1.72 b	0.61	≤ 1.8 b	0.62	≤ 1.64 b	0.64	0.050 U	-
Magnesium	mg/L	-	-	3.41	-	3.50	-	3.34	0.040 U	-
Nickel	µg/L	-	≤ 34.7 b	0.64	≤ 35 b	0.69	≤ 33.6 b	0.50	0.050 U	-
Potassium	mg/L	-	-	1.8	-	1.9	-	1.9	0.30 U	-
Selenium	µg/L	-	≤ 5.0	0.23 I	≤ 5.0	0.24 I	≤ 5.0	0.26 I	0.20 U	-
Silver	µg/L	-	≤ 0.07	0.0050 U	≤ 0.07	0.0050 U	≤ 0.07	0.0050 U	0.0050 U	-
Sodium	mg/L	-	-	4.4	-	4.9	-	5.1	0.50 U	-
Zinc	µg/L	-	≤ 79.6 b	5.0 U	≤ 81 b	5.0 U	≤ 77.1 b	5.0 U	5.0 U	-

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

2 – This limit is currently based on an Administrative Order

b - Value is calculated based on hardness, (62-302.530(3))

c - Value is calculated

g - Class III Freshwater Quality Criterion (62-302.530(19)(a), F.A.C.) is for chromium-III

s - Single sample

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

Table 4. Measured and predicted freshwater 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

Suwannee River Power Plant								
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	*Pseudokirchneriella subcapitata*	15.4 A	9.0 ± 1.8	28 ± 5.6	41 ± 8.2	51.6 ± 10.3	3.6	9.0
Test Site	*Pseudokirchneriella subcapitata*	14.9	9.8 ± 2	26.7 ± 5.3	37.6 ± 7.5	47.3 ± 9.5	4.1	9.0
Control Site	*Pseudokirchneriella subcapitata*	18.7	10.9 ± 2.2	26.2 ± 5.2	38.4 ± 7.7	43 ± 8.6	4.7	10.1

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

Table 5. Periphyton samples - qualitative

Suwannee River Power Plant	Test Site	Control Site
Wet Algae Analysis		
Number of Wet Taxa	13	14
Number of Wet Algal Units Identified	300	300
Percent Dominant Wet Taxon	15.0	19.6
Dominant Wet Taxon Name	*Cyanobium parvum* Cyanophyta	*Chlorella sp.* Chlorophyta
% Blue-green	16.7	11.3
% Green	3.3	4.0
% Diatoms	80.0	84.7
Diatom Analysis		
Number of Diatom Taxa	57	57
Number of Diatom Valves Identified	502	504
Percent Dominant Diatom Taxon	17.1	12.3
Dominant Diatom Taxon Name	*Diadesmis contenta*	*Pseudostaurosira brevistriata*

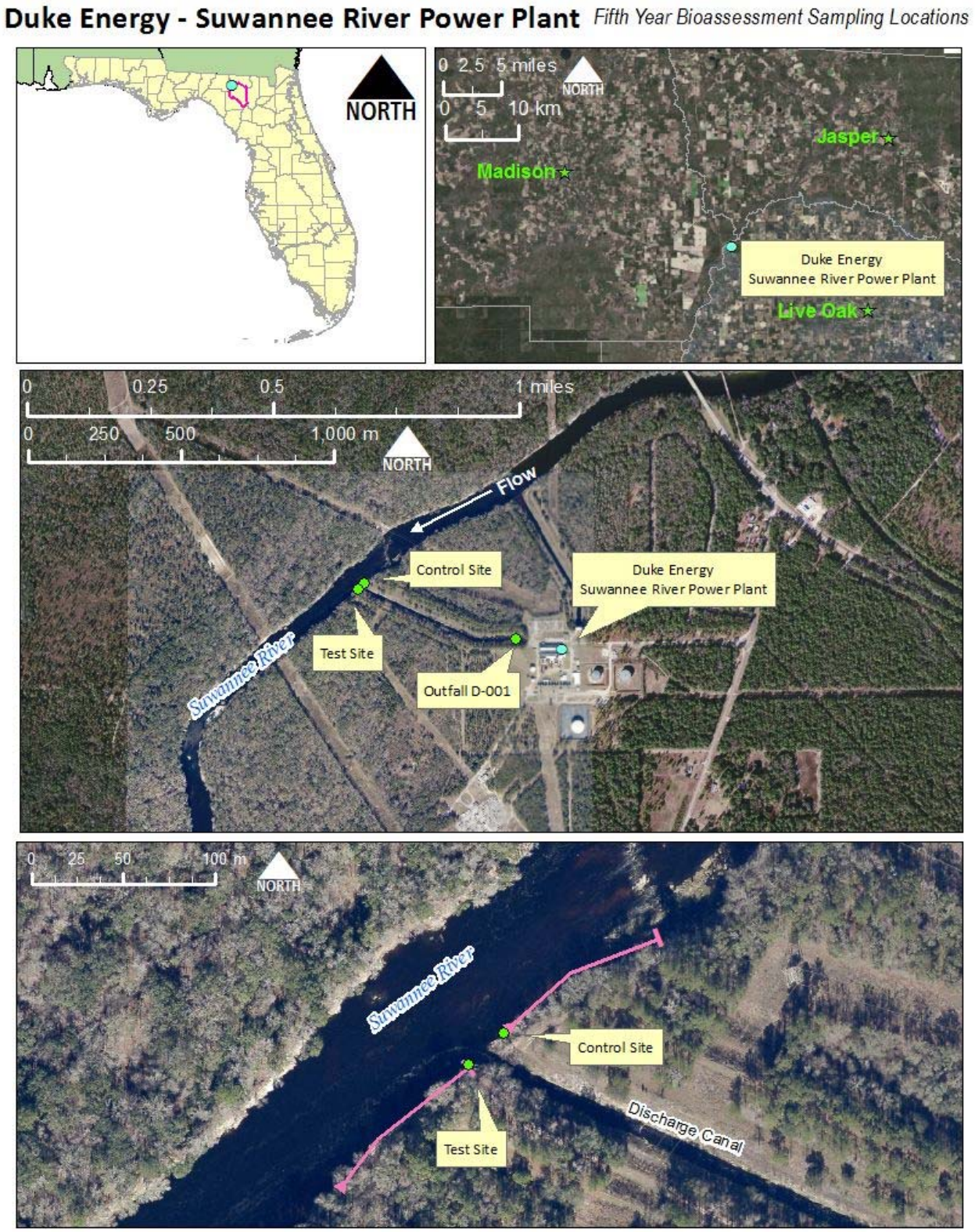
Table 6. Macroinvertebrate dipnet samples - qualitative

Duke Energy	Test Site		Control Site	
Stream Condition Index 2012 [3]	**69 A**		**87 A**	
Replicate	Rep 1	Rep 2	Rep 1	Rep 2
Stream Condition Index Metrics				
Number of Total Taxa	44	36	44	48
Number of Ephemeroptera Taxa	2	3	2	2
Number of Trichoptera Taxa	4	3	7	7
Number of Clinger Taxa	7	6	11	9
Number of Long-lived Taxa	0	2	1	2
Number of Sensitive Taxa	9	7	8	8
Percent of Dominant Taxon	24.2	26.2	17.6	12.8
Percent Suspension Feeders and Filterers	10.4	8.7	18.3	22.3
Percent of Tanytarsini Individuals	8.7	8.1	12.7	20.6
Percent of Very Tolerant Individuals	6.0	3.4	2.1	1.4
Total Number of Individuals	149	149	142	141
Community Composition: Percent of total				
Dominant Taxon Name	*Polypedilum scalaenum* grp. (Diptera)	*Polypedilum scalaenum* grp. (Diptera)	*Polypedilum scalaenum* grp. (Diptera)	*Polypedilum scalaenum* grp. (Diptera)
Acariformes	0.7	4.7	0.7	1.4
Amphipoda	0.7	0.0	0.0	0.0
Bivalvia	1.3	1.3	2.8	0.0
Coleoptera	16.1	18.8	7.0	8.5
Diptera	66.4	63.1	62.0	56.0
Ephemeroptera	3.4	6.0	6.3	12.1
Gastropoda	0.7	0.0	0.0	0.7
Isopoda	2.0	2.0	0.0	0.7
Odonata	0.7	0.7	0.0	2.1
Oligochaeta	2.0	0.7	9.9	5.7
Plecoptera	0.7	0.7	2.1	0.0
Trichoptera	4.0	2.0	9.2	12.1
Other	1.3	0.0	0.0	0.7
Functional Feeding Groups: Percent of total				
Burrowing Deposit Feeders	2.0	0.7	9.9	5.7
Piercers	2.0	0.7	1.1	3.6
Predators	9.7	11.4	13.7	8.5
Scavengers	1.0	1.0	0.0	0.4
Scrapers	10.4	12.1	6.0	8.9
Shredders	15.8	15.8	13.0	13.5
Surface Deposit Feeders	48.0	49.7	37.3	36.5
Suspension Feeders	10.4	8.7	18.3	22.3
Unknown	0.7	0.0	0.7	0.7

A - Value reported is the mean of two determinations

3 - SCI_2012 categories from Table LT 7200-2 of DEP-SOP-002/01 as referenced in Quality Assurance Rule (62-160 F.A.C.), 3/01/14

Appendix A
Facility Map



Appendix B

Facility Summary

State of Florida

Department of Environmental Protection

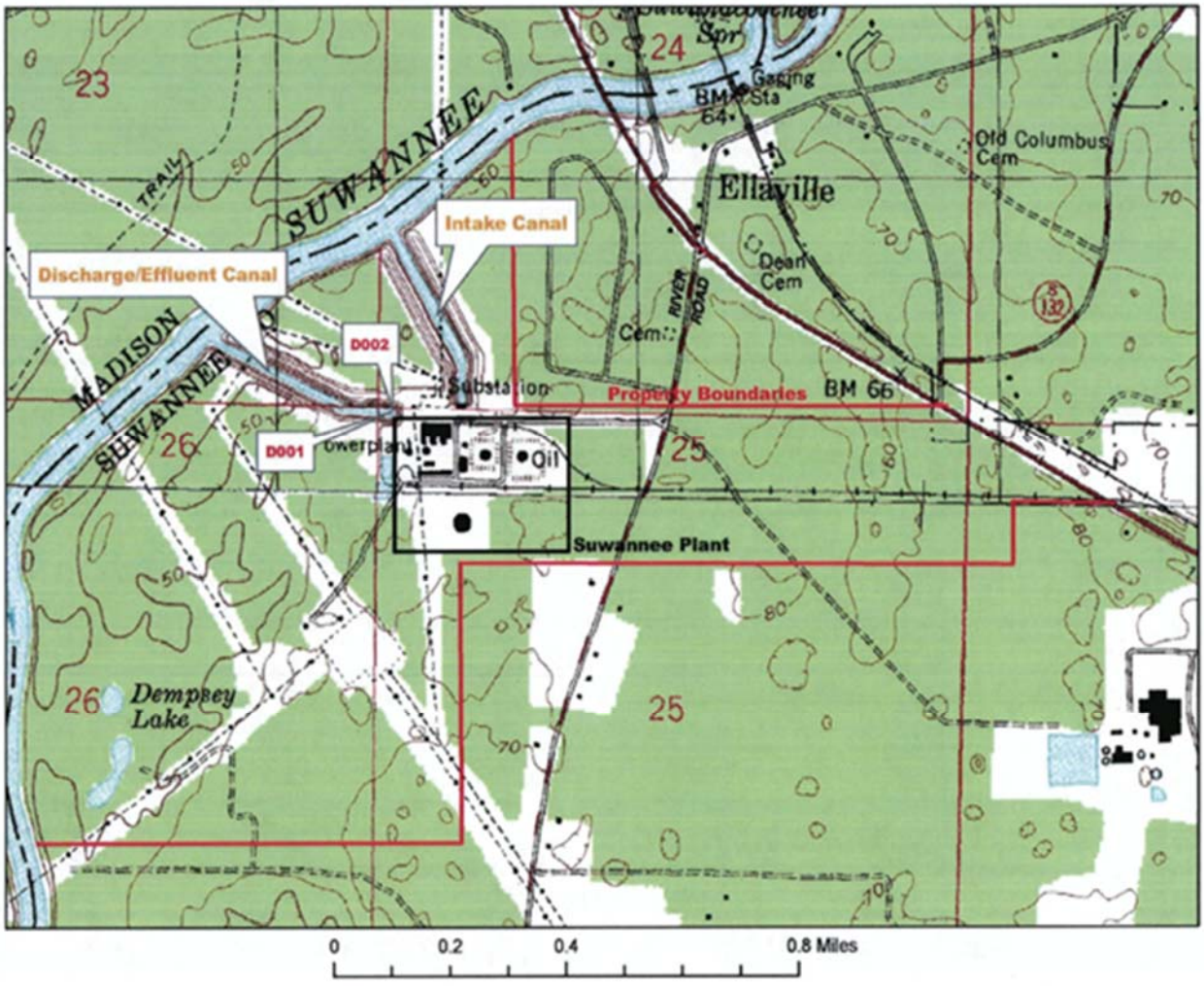
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Arturo Aranda	**Contact Number:** (904) 256-1641
Facility Name (as it appears on permit): Suwannee River Power Plant	**Former Names:** Progress Energy Florida
NPDES Permit Number: FL0000183	**Permit Expiration Date:** November 27, 2016
Physical Address: 4037 River Road, Live Oak Florida 32060	
District: Northeast District	**County:**
Function of Facility: The facility is an electric generating plant with a total nameplate rating of 331 megawatts (MW).	
Facility Type: Industrial Wastewater	**Permitted Capacity (MGD):** 172.8 MGD
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): 158 MGD January 2015 – December 2015 (Surface Water Discharge D-001) 1.0 MGD January 2015 – December 2015 (Land Application System G-001)	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months):	
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): **Outfall D-001** - FLW-1: Pump Timer. INT-1: Cooling Water Intake. EFF-1: Cooling water discharge prior to mixing with the receiving water **Screen Wash Water Discharge D-002** FLW-1: Pump Timer. INT-1: Cooling Water Intake. EFF-1: Cooling water discharge prior to mixing with the receiving water **Land Application System G-001** PER-5 Three onsite evaporation/percolation ponds.	
Description of Permitted Outfall(s): The discharge is to the Suwannee River, Class III Outstanding Florida Water (WBID 3422). The point of discharge is located approximately at latitude 30°22' 43.0"N, longitude 83º 11' 13.5"W) through Outfall D-001 & D-002 via the plant discharge canal to the Suwannee River.	
Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility): The facility is an electric generating plant with a total nameplate rating of 331 megawatts (MW). The existing	

facility consists of three oil-fired steam generators (Units 1, 2, and 3), and three combustion turbine peaking units. Unit 1, 2 and 3 are fired with natural gas, No. 2 fuel oil, No. 6 or on specification used oil generated by progress Energy. Units 1, 2, and 3 have a total nameplate rating of 147 MW.

This is a 172.8 MGD annual average wastewater treatment facility that consists of Low volume wastes (LVW), including air heater wash water, boiler wash water, laboratory wastes, demineralizer backwash water, boiler blowdown, evaporator blowdown, house service, pump cooling water and other waste streams from the operation of Units 1, 2 and 3 is treated by neutralization prior to land application discharge to ground water in the three onsite evaporation/percolation ponds. Once-through cooling water (OTCW) and intake screen backwash water withdrawn from the Suwannee River are discharged back to the Suwannee River without treatment. Below is a detail map of the discharge points.

Suwannee River Power Plant
NPDES Permit No. FL0000183



PART I: Continued

List current 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	Annual Average	Monthly Average	Weekly Average	Daily Max	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow	MGD	Max	-	Report	-	Report	-	Continuous	Logs	FLW-1	-
Intake Temperature	Deg F	Max	-	Report	-	Report	-	Continuous	Recorder	INT-1	-
Discharge Temperature	Deg F	Max	-	Report	-	Report	-	Continuous	Recorder	EFF-1	-
Temp. Diff between Intake and Discharge	Deg F	Max	-	Report	-	Report	-	Continuous	Calculation	EFF-1	-
Copper, Total Recoverable	µg/L	Max	-	See I.A.4[1]	-	See I.A.4[1]	-	Monthly	Grab	EFF-1	See I.A.4
Copper, Total Recoverable	µg/L	Max	-	Report	-	Report	-	Monthly	Grab	INT-1	-
Hardness, Total (as CaCO3)	mg/L	Max	-	Report	-	Report	-	Monthly	Grab	EFF-1, INT-1	-
Iron, Total Recoverable	mg/L	Max	-	1.0	-	1.0	-	Monthly	Grab	EFF-1	See I.A.5
Iron, Total Recoverable	mg/L	Max	-	Report	-	Report	-	Monthly	Grab	INT-1	-
Nitrogen, Ammonia, Total (as N)	mg/L	Max	-	-	-	-	Report	Quarterly	Grab	EFF-1, INT-1	-
Ammonia, Total Unionized (as NH_3)	mg/L	Max	-	-	-	-	Report	Quarterly	Calculated	EFF-1, INT-1	See I.A.6
Nitrogen, Kjeldahl, Total (as N)	mg/L	Max	-	-	-	-	Report	Quarterly	Grab	EFF-1, INT-1	-
Nitrite plus Nitrate, Total (as N)	mg/L	Max	-	-	-	-	Report	Quarterly	Grab	EFF-1, INT-1	-
Nitrogen, Total	mg/L	Max	-	-	-	-	Report	Quarterly	Calculated	EFF-1, INT-1	-
Phosphorus Total (as P)	mg/L	Max	-	-	-	-	Report	Quarterly	Grab	EFF-1, INT-1	-
Phosphate, Ortho (as PO4)	mg/L	Max	-	-	-	-	Report	Quarterly	Grab	EFF-1, INT-1	-
pH	s.u.	Min	-	-	-	-	6.5	Quarterly	Grab	EFF-1	See I.A.6
pH	s.u.	Max	-	-	-	-	8.5	Quarterly	Grab	EFF-1	See I.A.6
Temperature, Water	Deg C	Max	-	-	-	-	Report	Quarterly	Grab	EFF-1	See I.A.6
Chronic Whole Effluent Toxicity, 7-Day IC25 (Ceriodaphnia dubia)	percent	Min	-	-	-	-	100	Quarterly	24-hr TPC	EFF-1	See I.A.9
Chronic Whole Effluent Toxicity, 7-Day IC25 (Pimephales promelas)	percent	Min	-	-	-	-	100	Quarterly	24-hr TPC	EFF-1	See I.A.9

PART I: Continued

Receiving Waters:	**Classification (indicate whether fresh or marine):**
Suwannee River	Fresh water

Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.):
In any routine or additional follow-up test for chronic whole effluent toxicity, the 25 percent inhibition concentration (IC25) shall not be less than 100% effluent. For acute whole effluent toxicity, the 96-hour LC50 shall not be less than 100% effluent in any test. Toxicity tests shall be conducted quarterly. For each routine test or additional follow-up test conducted, a total of three 24-hr flow proportion composite samples of final effluent shall be collected and used in accordance with the sampling protocol.

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.
Samples for routine and additional follow-up tests shall not be collected on the same day.

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. The permittee shall conduct a daphnid, **Ceriodaphnia dubia**, Survival and Reproduction Test and a fathead minnow, **Pimephales promelas**, Larval Survival and Growth Test, concurrently. 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.

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.):
Administrative Order (AO) 026-TL issued 12/14/2011 for total recoverable copper. On November 30, 2015, facility requested an AO extension of time for the copper study until November 2016.

Facility Mixing Zone Details (if applicable):
None

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

Date	Parameter and Units	Limit	Result
3/31/2015	Minimum pH (su)	6.5 su	6.25 su

Describe previous FYI and WQBEL study:
N/A

Describe previous or current Enforcement Actions (including WLs):
None

Describe any violations or problems noted in previous inspection:
None noted-in compliance

Discuss whether DMR trends within previous five years are improving or declining:
Facility was having issues with meeting the permitted pH, Iron and IC25 Statre 7day Chr Ceriodaphnia limit. In the years of 2012 – 2014, Iron levels were decreasing. IC25 Statre 7day Chr Ceriodaphnia2015 was increasing and pH levels were increasing. On 2015, Iron levels increase, IC25 Statre 7day Chr Ceriodaphnia, increase and pH decrease. The facility has been meeting the limit on the other parameters. Based on the reviewed DMRs, the trends appear to be somewhat improving for pH.

Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse):
N/A

PART II: Sampling Event Information	
Date(s) sample collected: 3/7/2016	**Sampler(s):** Pat O'Connor
Temperature (Deg C): 20.28	**pH (SU):** 7.92
Dissolved Oxygen (mg/L): 5.8	**Conductivity (umhos/cm):** 142
Total Residual Chlorine (mg/L): N/A	**Total Residual Chlorine - after Disinfection (mg/L):** N/A
Method of Chlorination: N/A	**Method of De-chlorination:** N/A
Flow During Sample Collection for each outfall(MGD): - Surface Discharge D001: 129.6 MGD	
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): - The mean flow (Surface Discharge D-001) = 137.8 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: **N/A**	

Appendix C

Explanation of Measurements

(1) Quality Assurance and Quality Control

FDEP's quality assurance requirements for analytical laboratories and field activities are codified in Chapter 62-160, F.A.C., Quality Assurance (QA Rule) and in internal Standard Operating Procedures (FDEP SOPs). Methods for all analyses are on file at the FDEP Central Laboratory in Tallahassee and may be viewed on the web at http://www.dep.state.fl.us/labs/library/lab_sops.htm and/or http://www.dep.state.fl.us/water/sas/qa/index.htm.

(2) Chemical Analyses of the Effluent

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

(3) Toxicity Bioassays

Greater than 50% mortality in an acute toxicity test may constitute an exceedance of 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 62-302.530(20), 62-302.530(61) and/or facility permit limits. A no observed effect concentration (NOEC) less than 100% effluent in a chronic test may constitute an exceedance of 62-302.530(61) and/or facility permit limits. Standard reference toxicant (SRT) tests are conducted monthly to ensure quality in toxicity testing.

(4) 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).

(5) 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. High AGP values may constitute exceedances of 62-302.530(46), F.A.C., 62-302.530(47)(a), F.A.C. and/or 62-302.530(47)(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 $\pm$ 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 62-302.530(61), F.A.C.

(6) Algal Phytoplankton and Periphyton Assemblages

Qualitative periphyton are sampled by taking subsamples of algae from natural substrates throughout the sample reach. Phytoplankton were sampled from the water column using a 1 L grab sample. Periphyton were subsampled and identified to the lowest practical level, usually species. Wet taxa and diatoms are identified separately. In the wet taxa analysis, soft algae are identified to the lowest practical level, and diatoms are identified only to order level (diatom). In the diatom analysis, diatoms are identified to the lowest practical level.

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 62-302.530(46), F.A.C., 62-302.530(47)(a) F.A.C. and/or 62-302.530(47)(b) F.A.C..

Algal Density: Algal density is estimated as number of natural units/ml for phytoplankton samples. Although algal density of a single site is highly variable and depends on a number of factors, comparison of algal density at a control site to algal density at a related test site gives a partial comparison of algal biomass at the two sites (Stevenson and Smol 2003).

Taxa richness: Taxa richness is the number of distinct algal taxa present in a sample. Extreme nutrient enrichment tends to reduce the number of different types of algae present in a sample because a few tolerant taxa tend to reproduce rapidly and constitute the majority of the cells present. However, moderate nutrient enrichment of nutrient poor waters may sometimes be correlated with increased algal taxa richness (Stevenson and Bahls 1999) as the algal community begins to respond to the increased input of nutrients.

Community Composition: Shifts in relative proportions of major groups of algae downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Stevenson and Bahls 1999) and may constitute exceedances of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C.

(7) 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 62-302.530(46), F.A.C., 62-302.530(47)(a), F.A.C., 62-302.530(47)(b), F.A.C. and/or 62-302.530(61), 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 62-302.530(46), F.A.C., 62-302.530(47)(a), F.A.C. and/or 62-302.530(47)(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 62-302.530(46) F.A.C., 62-302.530(47)(a), F.A.C., 62-302.530(47)(b), F.A.C. and/or 62-302.530(61), 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 62-302.530(46), F.A.C., 62-302.530(47)(a), F.A.C., 62-302.530(47)(b), F.A.C. and/or 62-302.530(61), F.A.C..

Shannon-Weaver Diversity Index: This index is specified in the Florida Administrative Code 62-302 as a measure of biological integrity. Low diversity scores are undesirable. Where diversity is low, only a few taxa are abundant as compared to an area where many taxa are present in equitable abundance among taxa (Magurran 1988). A difference of 25% in Shannon-Weaver diversity between results from Hester-Dendy multiplate samplers incubated for 28 days at test and control sites constitute exceedances of 62-302.530(10), 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 benthic macroinvertebrates. Data generated on the taxonomy and abundance of aquatic, benthic macroinvertebrates is 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 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, 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 Chapter 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 62-302.530(46), F.A.C., 62-302.530(47)(a), F.A.C., 62-302.530(47)(b), F.A.C., or of 62-302.530(61).

Collecting two temporally independent SCIs is prohibitive within the framework of the Fifth Year Bioassessment sampling and reporting. Results in this report will typically be evaluated on a single SCI score.

(8) Rapid Periphyton Survey

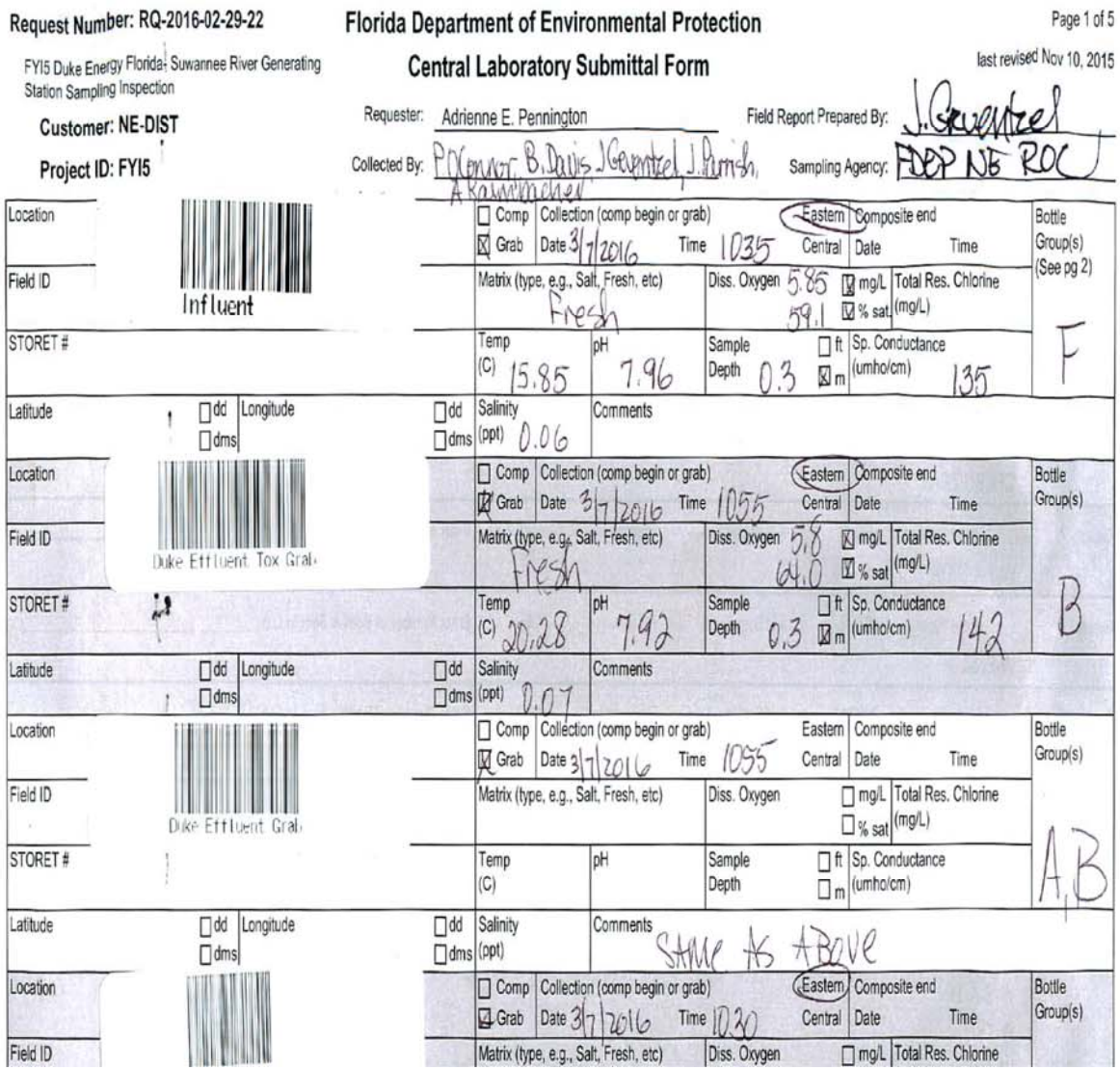
Rapid Periphyton Survey (RPS) is a rapid method to quantify the extent and abundance of attached algae (periphyton) in a stream or river. A total of 99 points are assessed within a 100m area of sampling reach, 9 equidistant points along 11 cross-section transects spaced 10 m apart, If greater than 20% 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 FDEP SOP FS 7230 Rapid Periphyton Survey). This method could be used to determine floral health associated with Chapter 62-302.531, F.A.C..

(9) Definition of Qualifiers

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 D

Chain of Custody



Request Number: RQ-2016-02-29-22

FY15 Duke Energy Florida- Suwannee River Generating Station Sampling Inspection

Customer: NE-DIST

Project ID: FY15

Florida Department of Environmental Protection

Central Laboratory Submittal Form

Page 1 of 5

last revised Nov 10, 2015

Requester: Adrienne E. Pennington

Field Report Prepared By: J. Gruentzel

Collected By: P. Conner, B. Davis, J. Gruentzel, J. Parrish, A. Rawlinches

Sampling Agency: FDEP NE ROC

Location: Influent	☐ Comp ☒ Grab	Collection (comp begin or grab) Date 3/7/2016	Time 1035	Eastern / Central	Composite end Date	Time					Bottle Group(s) (See pg 2): F
Field ID	Matrix (type, e.g., Salt, Fresh, etc): Fresh			Diss. Oxygen 5.85 ☒ mg/L 59.1 ☒ % sat			Total Res. Chlorine (mg/L)				
STORET #	Temp (C) 15.85	pH 7.96		Sample Depth 0.3 ☐ ft ☒ m			Sp. Conductance (umho/cm) 135				
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt) 0.06	Comments								
Location: Duke Effluent Tox Grab	☐ Comp ☒ Grab	Collection (comp begin or grab) Date 3/7/2016	Time 1055	Eastern / Central	Composite end Date	Time					Bottle Group(s): B
Field ID	Matrix (type, e.g., Salt, Fresh, etc): Fresh			Diss. Oxygen 5.8 ☒ mg/L 64.0 ☒ % sat			Total Res. Chlorine (mg/L)				
STORET #	Temp (C) 20.28	pH 7.92		Sample Depth 0.3 ☐ ft ☒ m			Sp. Conductance (umho/cm) 142				
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt) 0.07	Comments								
Location: Duke Effluent Grab	☐ Comp ☒ Grab	Collection (comp begin or grab) Date 3/7/2016	Time 1055	Eastern / Central	Composite end Date	Time					Bottle Group(s): A, B
Field ID	Matrix (type, e.g., Salt, Fresh, etc)			Diss. Oxygen ☐ mg/L ☐ % sat			Total Res. Chlorine (mg/L)				
STORET #	Temp (C)	pH		Sample Depth ☐ ft ☐ m			Sp. Conductance (umho/cm)				
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments: SAME AS ABOVE								
Location	☐ Comp ☒ Grab	Collection (comp begin or grab) Date 3/7/2016	Time 1030	Eastern / Central	Composite end Date	Time					Bottle Group(s)
Field ID	Matrix (type, e.g., Salt, Fresh, etc)			Diss. Oxygen ☐ mg/L			Total Res. Chlorine				

Request Number: RQ-2016-02-29-22

Florida Department of Environmental Protection

last revised Nov 10, 2015

Central Laboratory Submittal Form

FY15 Duke Energy Florida- Suwannee River Generating Station Sampling Inspection

Customer: NE-DIST

Project ID: FYI5

Requester: Adrienne E. Pennington

Collected By: BDavis, PO'Connor

Field Report Prepared By: BDavis

Sampling Agency: DEAR NED

Location: Duke Energy Effluent dis.	☐ Comp ☑ Grab	Collection (comp begin or grab) Date 3/9/16 Time 1000	Eastern / Central	Composite end Date	Time		Bottle Group(s) (See pg 2): B
Field ID	Matrix (type, e.g., Salt, Fresh, etc): Fresh	Diss. Oxygen 7.9 ☑ mg/L 89% ☐ % sat		Total Res. Chlorine (mg/L)			
STORET #	Temp (C) 21.05	pH 7.80	Sample Depth 0.3 ☐ ft ☐ m	Sp. Conductance (umho/cm) 143			
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt) 0.07	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)			
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)			
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)			
STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐	Sp. Conductance (umho/cm)			

Request Number: RQ-2016-02-29-22

Florida Department of Environmental Protection

Central Laboratory Submittal Form

last revised Nov 10, 2015

FY15 Duke Energy Florida- Suwannee River Generating Station Sampling Inspection

Customer: NE-DIST

Project ID: FY15

Requester: Adrienne E. Pennington

Field Report Prepared By: J. Gruentzel

Collected By: J. Parrish, P. Conroy, J. Davis, A. Schlumbacher, J. Gruentzel

Sampling Agency: FDEP NE ROC

Location @ Duke Control abv Canal	☐ Comp ☑ Grab	Collection (comp begin or grab) Date 3/7/16	Time 1235	Eastern Central	Composite end Date	Time	Bottle Group(s) (See pg 2) C				
Field ID	Matrix (type, e.g., Salt, Fresh, etc) Fresh			Diss. Oxygen 6.99 70.9	☑ mg/L ☐ % sat	Total Res. Chlorine (mg/L)					
STORET # GINE0011	Temp (C) 16.1	pH 7.9	Sample Depth 0.3	☐ ft ☑ m	Sp. Conductance (umho/cm) 136						
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt) .06	Comments								
Location	☐ Comp ☑ Grab	Collection (comp begin or grab) Date 3/7/16	Time 1245	Eastern Central	Composite end Date	Time	Bottle Group(s) C				
Field ID	Matrix (type, e.g., Salt, Fresh, etc) Fresh			Diss. Oxygen 7.03 75.7	☑ mg/L ☑ % sat	Total Res. Chlorine (mg/L)					
STORET #	Temp (C) 18.8	pH 6.93	Sample Depth 0.3	☐ ft ☑ m	Sp. Conductance (umho/cm) 144						
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt) 0.07	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)					
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)					

GINE0010 Duke Test Below Canal

Request Number: RQ-2016-02-29-22

FYI5 Duke Energy Florida- Suwannee River Generating Station Sampling Inspection

Customer: NE-DIST

Project ID: FYI5

Florida Department of Environmental Protection
Central Laboratory Submittal Form

last revised Nov 10, 2015

Requester: Adrienne E. Pennington

Collected By: P.O'Connor

Field Report Prepared By: P. O'Connor

Sampling Agency: DEAR NED ROC

Location: Duke Effluent Discharge Canal	☐ Comp ☒ Grab	Collection (comp begin or grab) Date 03/11/2016 Time	Eastern / Central	Composite end Date	Time	Bottle Group(s) (See pg 2): B
Field ID	Matrix (type, e.g., Salt, Fresh, etc): Surface Water Fresh	Diss. Oxygen 6.75 ☒ mg/L 77.7 ☒ % sat	Total Res. Chlorine (mg/L)			
STORET #	Temp (C) 22.4	pH 7.85	Sample Depth 0.3 ☐ ft ☒ m	Sp. Conductance (umho/cm) 153		
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt) 0.07	Comments: Partly cloudy, mid 70s temp.			
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)			
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)			
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)			
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	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
A. Kalback	3-11-2016 1322	Delivered by NE ROC						

Appendix E

Physical/Chemical and Habitat Assessment field sheets

Date: 3/7/2016 RQ# 2016-02-29-22 data qualified

Event Name Duke Energy FY1 Meter # 451 118154

Lab ID #	STORET#	Site Name	Matrix: Water Surface Fresh ☒ Surface Salt ☐ Effluent ☐	Comments
		Influent		

Time	Total depth(m)	Sample depth(m)	Temp °C	Conductivity µmhos	Salinity ppth	pH s.u.	D.O. mg/L	D.O. % sat	Secchi m	Vel. ft./ sec	Tide Ebb/ Flood Slack	Turb NTU	Initials Meter
1035		0.3	15.85	135	0.07	7.96	5.85	59.1	0.7				BD

Parameter	Preserved	Lot Number / Expire	Initials Preserve	Direct Grab, & pole (G)	Van Dorn Sample (S)	Composite sample(C)	# bottles	Suite A,B,C, etc.	Initials Sampler
Nutrients: NH_3, NO_2+ NO_3, TKN, TOC, TP	Ice& H_2SO_4 <2 pH			☐G	☐S	☐C			
Ortho Phosphorous	Ice & .45µm filtered -			☐G	☐S	☐C			
BOD/CBOD	Ice	N/A		☐G	☐S	☐C			
Chlorophyll, Phaeophytin	Ice	N/A		☐G	☐S	☐C			
Physical :TSS,TDS,Turb.,Color,Alk,Cl,F,SO_4	Ice	N/A		☐G	☐S	☐C			
Metals: ICP,ICPMS	HNO_3 <2 pH*	5113210 4/13/16	JG	☒G	☐S	☐C	1	F	PO
Other: Tox, BNA, Pest, O&G, AGP, CN, Macroinvertebrate, Sucralose	Ice/			☐G	☐S	☐C			
Microbiology: Fecal Coliform/ E.Coli	Ice	N/A		☐G	☐S	☐C			

Lab ID #	STORET#	Site Name	Matrix: Water Surface Fresh ☐ Surface Salt ☐ Effluent ☑	Comments
		Duke Effluent Grab Duke Effluent Grab (TOX)		

Time	Total depth(m)	Sample depth(m)	Temp °C	Conductivity µmhos	Salinity ppth	pH s.u.	D.O. mg/L	D.O. % sat	Secchi m	Vel. ft./ sec	Tide Ebb/ Flood Slack	Turb NTU	Initials Meter
1055		0.3	20.28	142	0.07	7.92	5.8	110	0.7				BD
													PO

Parameter	Preserved	Lot Number / Expire	Initials Preserve	Direct Grab, & pole (G)	Van Dorn Sample (S)	Composite sample(C)	# bottles	Suite A,B,C, etc.	Initials Sampler
Nutrients: NH_3, NO_2+ NO_3, TKN, TOC, TP	Ice& H_2SO_4 <2 pH	5589020 9/16/16	JG	☒G	☐S	☐C	1	A	BD PO
Ortho Phosphorous	Ice & .45µm filtered -		JG	☒G	☐S	☐C	1		
BOD/CBOD Inhib	Ice	N/A		☒G	☐S	☐C	1		
Chlorophyll, Phaeophytin	Ice	N/A		☒G	☐S	☐C	1	A	BD PO
Physical :TSS,TDS,Turb.,Color,Alk,Cl,F,SO_4	Ice	N/A		☒G	☐S	☐C	1	A,B	
Metals: ICP,ICPMS - w-Hand	HNO_3 <2 pH*	5113210 4/13/16	JG	☒G	☐S	☐C	1	A	
Other: Tox, BNA, Pest, O&G, AGP, CN, Macroinvertebrate., Sucralose DIDX	Ice/ NaSO3 -Bi Sulf		PO	☒G	☐S	☐C	AG2-1 DIDX-1 BNA4 TOX-2	A,B	
Microbiology: Fecal Coliform/ E.Coli	Ice	N/A		☐G	☐S	☐C			

Lab ID #	STORET#	Site Name	Matrix: Water Surface Fresh ☐ Surface Salt ☐ Effluent ☐	Comments

Time	Total depth(m)	Sample depth(m)	Temp °C	Conductivity µmhos	Salinity ppth	pH s.u.	D.O. mg/L	D.O. % sat	Secchi m	Vel. ft./ sec	Tide Ebb/ Flood Slack	Turb NTU	Initials Meter

Parameter	Preserved	Lot Number / Expire	Initials Preserve	Direct Grab, & pole (G)	Van Dorn Sample (S)	Composite sample(C)	# bottles	Suite A,B,C, etc.	Initials Sampler
Nutrients: NH_3, NO_2+ NO_3, TKN, TOC, TP	Ice& H_2SO_4 <2 pH			☐G	☐S	☐C			
Ortho Phosphorous	Ice & .45µm filtered -			☐G	☐S	☐C			
BOD/CBOD	Ice	N/A		☐G	☐S	☐C			
Chlorophyll, Phaeophytin	Ice	N/A		☐G	☐S	☐C			
Physical :TSS,TDS,Turb.,Color,Alk,Cl,F,SO_4	Ice	N/A		☐G	☐S	☐C			
Metals: ICP,ICPMS	HNO_3 <2 pH*			☐G	☐S	☐C			
Other: Tox, BNA, Pest, O&G, AGP, CN, Macroinvertebrate, Sucralose	Ice/			☐G	☐S	☐C			
Microbiology: Fecal Coliform/ E.Coli	Ice	N/A		☐G	☐S	☐C			

All data collected and procedures follow DEP SOP:FS1000, FT1100, FT1200, FT1300, FT1400, FT1500, FT1600, FT1700, FS2100,FS2400
Jeremy Parrish (JP), Amy Kalmbacher (AK), Pat O'Connor (PO), Sharon Piltz (SP), Jann Gruentzel (JG),Brian Davis (BD)

Relinquished	Date	Time	Shipping
JG	3/7/16	1845	HAND Delivered

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

SAMPLE ID _____ ORG ID _____ LATITUDE _____

COUNTY SUWANNEE STORET # G1NE0011 LONGITUDE _____

DATE 03/07/16 TIME 1235 SAMPLING AGENCY DEAR NED ROC

SITE NAME SUWANNEE RIVER ABOVE DUKE ENERGY DISCHARGE CANAL

FIELD ID/NAME _____ RECEIVING BODY OF WATER GOM

RIPARIAN ZONE / STREAM FEATURES

Meter ID: YSI 556 #1

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): _____

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: >18 Right Bank: >18

Hydrologic Modification Score (per FT 3101): _____

High Water Mark: 5 (m) + 1.8 (above present water level) = 6.8 (present depth) (above bed)

Artificially Impounded: ☐ Yes ☐ No

Typical Width (m) Depth (m)/Velocity (m/sec) Transect

30 m wide

_____ m/s 0.3 m/s _____ m/s

_____ m deep 1.8 m deep _____ m deep

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

	None	Slight	Moderate	Severe
Sand Smothering:	☐	☐	☒	☐
Silt Smothering:	☐	☐	☒	☐
Algae Smothering:	☒	☐	☐	☐

SUBSTRATE TYPE

Assessment Tool: ☒ SCI ☒ RPS ☐ LVS ☐ LCI ☐ BioRecon

	% Coverage	INVERT # Times Sampled	PERI # Times Sampled
Woody Debris (Snags)	21	7	
Undercut Banks / Roots	44		
Leaf Packs or Mat			
Aquatic Vegetation			
Rock or Shell Rubble	21	7	
Sand			
Mud / Muck / Silt			
Other SAND		6	
Other			

WATER QUALITY

	Depth (M)	Temp. (°C)	pH (SU)	D.O. (MG/L)	D.O. Sat (%)	Cond. (UMHO/CM)	Salinity (PPT)	SECCHI (M)
Top:								0.7
Mid:	0.3	16.1	7.9	6.99	70.9	136	0.06	TOTAL DEPTH
Bottom								

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

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: H_2SO_4 525 9020 Exp: 9/16/14

HNO_3 5113210 Exp: 4/25/16

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:	☐	☒	☐	☐

AMBIENT FIELD CONDITIONS / NOTES: SCI HA RBS. CONDUCTED ON RIGHT SIDE (DUKE ENERGY DISCHARGE SIDE) OF SUWANNEE RIVER

Hydrologic Disturbance Scoring ☐ 1-2 ☐ 3-4 ☐ 5-6 ☐ 7-8 ☐ 9-10

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

SAMPLING TEAM BELOW A. KALMBACHER, J. PARRISH — ABOVE B. DAVIS, J. GRAVENTER, P. O'CONNOR

SIGNATURE: _____

62-160.800, F.A.C. Revision Date: March 1, 2014

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

SAMPLE ID _____ ORG ID 21FLA
COUNTY Madison/Suwannee STORET # GINE0010
DATE 3/7/2016 TIME 1245
SITE NAME Suwannee River Duke Energy - Below Canal
FIELD ID/NAME _____ RECEIVING BODY OF WATER Gulf of Mexico
LATITUDE _____
LONGITUDE _____
SAMPLING AGENCY _____

RIPARIAN ZONE / STREAM FEATURES

Meter ID:

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):

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):

High Water Mark: 3 (m) + 1-2 (above present water level) = 4.2 (present depth) (above bed)

Artificially Impounded ☐ Yes ☒ No

Typical Width (m) Depth (m)/Velocity (m/sec) Transect
30 m wide
m/s 0.25 m/s m/s
m deep 1.25 m deep m deep

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)	<1%		
Undercut Banks / Roots			
Leaf Packs or Mat			
Aquatic Vegetation			
Rock or Shell Rubble..	<1%		
Sand.....	99%		
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:								0.5
Mid:	0.3	18.8	6.93	7.0	75.7	144	0.07	Total Depth
Bottom	1.2							

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

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:_____ Exp:_____

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:	☒	☐	☐	☐

AMBIENT FIELD CONDITIONS / NOTES: SCI conducted on Right side of Duke Canal side

Hydrologic Disturbance Scoring ☐ 1-2 ☐ 3-4 ☐ 5-6 ☐ 7-8 ☐ 9-10

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

SAMPLING TEAM Jeremy Parrish / Amy Kalmbacher

SIGNATURE: Jeremy Parrish

62-160.800, F.A.C.

Revision Date: March 1, 2014

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

SAMPLING AGENCY:		STORET STATION NUMBER:	DATE (MM/DD/YY):	RECEIVING BODY OF WATER:
DEAR NED ROC		GINE0011	03/07/16	GOM
REMARKS:	COUNTY: Suwannee	LOCATION: Suwannee R. Above Duke Energy Canal		FIELD ID/NAME:

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 7	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 1	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 5 Primary Score 33	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** 18	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 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 7 Left Bank 7	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankful to top of bank. Bankfull is within or above the 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 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 72	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

105 **TOTAL SCORE**

Date:	Analyst:	Signature:
3/7/2016	JBeventzel	

62-160.800, F.A.C.

Revision Date: March 1, 2014

SCI

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

SAMPLING AGENCY:		STORET STATION NUMBER:	DATE (MM/DD/YY):	RECEIVING BODY OF WATER:
FDEP - NERoc		21NE0010	3/7/2016	
REMARKS:	COUNTY: Suwannee Madison	LOCATION: Suwannee River - Duke Energy Below Cany		FIELD ID/NAME:

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components **Substrate Diversity** 8	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 1	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 16	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 8 Primary Score 33	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 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 5 Left Bank 5	Bankfull > 60% of bank height. Slope of bank ≤ 60° from bankful to top of bank. Bankfull is within or above the 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 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 70	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

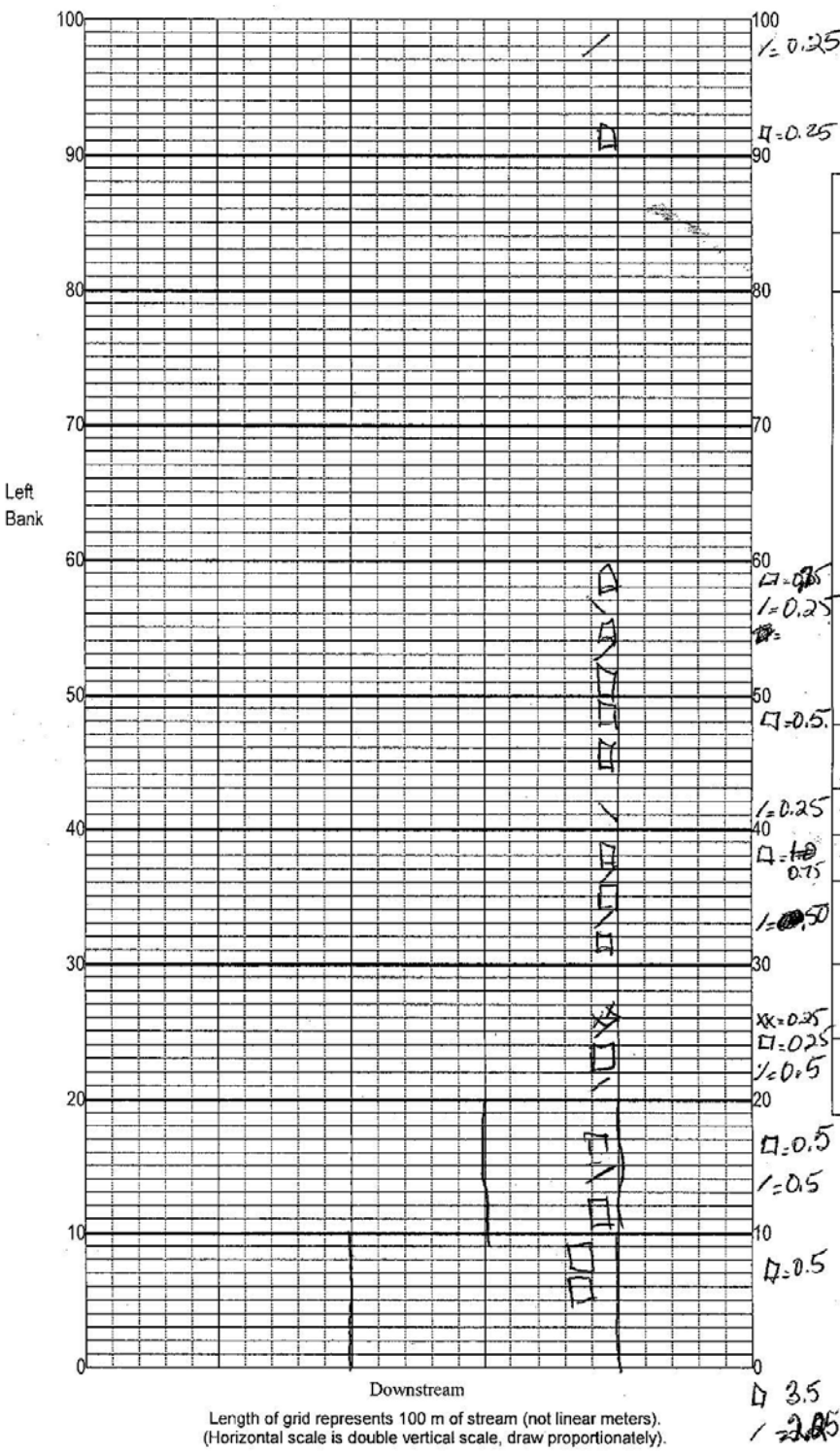
103 **TOTAL SCORE**

Date: 3/7/2016	Analyst: Jeremy Parrish	Signature: Jeremy Parrish

62-160.800, F.A.C.

Revision Date: March 1, 2014

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



Location: Suwannee R Above Duke Energy Rd

Date: 3/7/16

Sampler: P O'Connor

100 m: Latitude _____
Longitude _____

0 m: Latitude _____
Longitude _____

Substrates: Code key, draw proportionate habitat abundance. %

- Snags 0.225
- Roots/undercut banks ____
- Leaf Packs (or mats) ____
- Aquatic Macrophytes ____
- Bed rock 0.35%
- total 0.575%
- Pools total # observed = ____ # range expected = ____

Average width 30 m
Average depth 3 m

Velocity measured at 0 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.

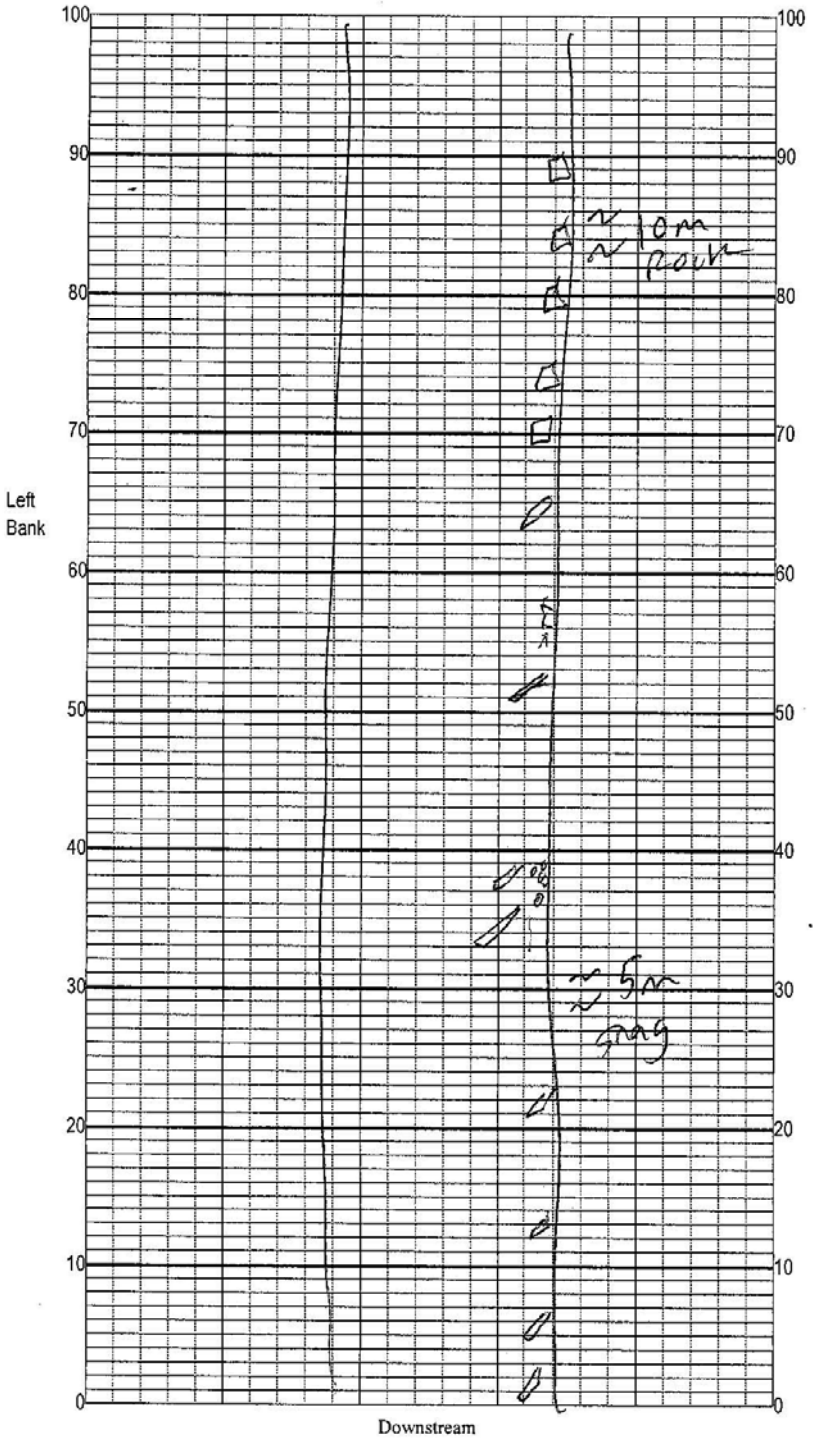
Riparian Buffer Width:
Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed / other notes:

62-160.800, F.A.C

Revision Date: March 1, 2014

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).

Location: Below canal

Date: 3/7/16

Sampler: JRamsh

100 m: Latitude	
Longitude	
0 m: Latitude	
Longitude	

Substrates: Code key, draw proportionate habitat abundance.	%
Snags	<1
Roots/undercut banks	
Leaf Packs (or mats)	
Aquatic Macrophytes	
Rock	<1
Pools — total # observed = ; # range expected =	

Average width 30 m

Average depth _____ m

Velocity measured at 10 meter mark.

WQ & chemistry taken at 80 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:

62-160.800, F.A.C

Revision Date: March 1, 2014

DEP FORM FD 9000-25 Rapid Periphyton Survey Field Sheet

Site: * DUKE ENERGY Control Site | County: SUWANNEE | Date: 3/7/16 | Investigators: P O'Connor, J. Parrish

STORET Station Number: G1NE0011

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

Transect (m)	Point 1=right	Algal Thickness Rank (N-6, X)	Estimated	Canopy Cover
60	1	N		
	2		N	
	3			
	4			
	5			0
	6			
	7			
	8			
	9			
70	1	N		
	2		N	
	3			
	4			
	5			0
	6			
	7			
	8			
	9			
80	1	N		
	2		N	
	3			
	4			
	5			0
	6			
	7			
	8			
	9			
90	1	N		
	2		N	
	3			
	4			
	5			0
	6			
	7			
	8			
	9			
100	1	N		
	2		N	
	3			
	4			
	5			0
	6			
	7			
	8			
	9			

Secchi depth	0.7
Estimated?	

# points ranked 4-6	0
total points assessed	10
% 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- 2016-02-29-22

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

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%.

* SUWANNEE R. Above DUKE ENERGY INTAKE CANAL

62-160.800, F.A.C.

Revision Date: March 1, 2014

NOT conducted JP

DEP FORM FD 9000-25 Rapid Periphyton Survey Field Sheet

Site: Suwannee River below Dowling Park

County: Suwannee

Date: 3/7/16

Investigators: J Parrish, A Kalmbacher

STORET Station Number:

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

Secchi depth	
Estimated?	

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

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

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

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: March 1, 2014

Appendix F

Chemical analysis of effluent and receiving water

Date Sampled	UDL	SCH_Group	Component	Result	Units	MDL	PQL
3/7/2016 10:55	Effluent	AGP/LN	Algal Growth Potential	15.4 A	mg DryWt/L	0.3	0.9
3/7/2016 10:55	Effluent	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.67 U	ug/L	0.67	2
3/7/2016 10:55	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll/Phaeophytin Ratio	1.7		0	0
3/7/2016 10:55	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.92 U	ug/L	0.92	2.8
3/7/2016 10:55	Effluent	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	0.91 I	ug/L	0.67	2
3/7/2016 10:55	Effluent	Metals	Arsenic	0.7	ug/L	0.05	0.2
3/7/2016 10:55	Effluent	Metals	Potassium	1.8	mg/L	0.3	1.2
3/7/2016 10:55	Effluent	Metals	Nickel	0.64	ug/L	0.05	0.2
3/7/2016 10:55	Effluent	Metals	Iron	890	ug/L	30	120
3/7/2016 10:55	Effluent	Metals	Calcium	19.1	mg/L	0.075	0.3
3/7/2016 10:55	Effluent	Metals	Sodium	4.4	mg/L	0.5	2
3/7/2016 10:55	Effluent	Metals	Zinc	5.0 U	ug/L	5	20
3/7/2016 10:55	Effluent	Metals	Silver	0.0050 U	ug/L	0.005	0.02
3/7/2016 10:55	Effluent	Metals	Selenium	0.23 I	ug/L	0.2	0.8
3/7/2016 10:55	Effluent	Metals	Aluminum	528	ug/L	2	8
3/7/2016 10:55	Effluent	Metals	Chromium	0.88	ug/L	0.05	0.2
3/7/2016 10:55	Effluent	Metals	Hardness	61.7	mg/L	0.35	1.4
3/7/2016 10:55	Effluent	Metals	Lead	0.61	ug/L	0.05	0.2
3/7/2016 10:55	Effluent	Metals	Copper	2.43	ug/L	0.1	0.4
3/7/2016 10:55	Effluent	Metals	Magnesium	3.41	mg/L	0.04	0.16
3/7/2016 10:55	Effluent	Metals	Cadmium	0.031 I	ug/L	0.02	0.08
3/7/2016 10:55	Effluent	Nutrients	O-Phosphate-P	0.065	mg P/L	0.004	0.01
3/7/2016 10:55	Effluent	Nutrients	NO2NO3-N	0.22	mg N/L	0.004	0.01
3/7/2016 10:55	Effluent	Nutrients	Total-P	0.12	mg P/L	0.005	0.05
3/7/2016 10:55	Effluent	Nutrients	Turbidity	7.1	NTU	0.1	0.1
3/7/2016 10:55	Effluent	Nutrients	Fluoride	0.11	mg F/L	0.035	0.1
3/7/2016 10:55	Effluent	Nutrients	Total Alkalinity	47	mg CaCO3/L	0.65	2.5
3/7/2016 10:55	Effluent	Nutrients	Sulfate	8.8	mg SO4/L	0.2	0.5
3/7/2016 10:55	Effluent	Nutrients	Organic Carbon	20	mg C/L	0.5	1
3/7/2016 10:55	Effluent	Nutrients	Color (true)	220	PCU	7.5	18
3/7/2016 10:55	Effluent	Nutrients	Chloride	8.1	mg Cl/L	0.2	0.5
3/7/2016 10:55	Effluent	Nutrients	Ammonia-N	0.017	mg N/L	0.002	0.005
3/7/2016 10:55	Effluent	Nutrients	Kjeldahl Nitrogen	0.86	mg N/L	0.08	0.2
3/7/2016 10:55	Effluent	Pesticides	Atrazine	0.011 I	ug/L	0.01	0.04

Date Sampled	UDL	SCH_Group	Component	Result	Units	MDL	PQL
3/7/2016 10:55	Effluent	Pesticides	Butylate	0.020 U	ug/L	0.02	0.08
3/7/2016 10:55	Effluent	Pesticides	Metribuzin	0.020 U	ug/L	0.02	0.08
3/7/2016 10:55	Effluent	Pesticides	Parathion Methyl	0.010 U	ug/L	0.01	0.04
3/7/2016 10:55	Effluent	Pesticides	Simazine	0.015 U	ug/L	0.015	0.06
3/7/2016 10:55	Effluent	Pesticides	Hexazinone	0.030 UJ	ug/L	0.03	0.12
3/7/2016 10:55	Effluent	Pesticides	Phorate	0.0050 U	ug/L	0.005	0.02
3/7/2016 10:55	Effluent	Pesticides	Alachlor	0.060 U	ug/L	0.06	0.24
3/7/2016 10:55	Effluent	Pesticides	Ametryn	0.010 U	ug/L	0.01	0.04
3/7/2016 10:55	Effluent	Pesticides	Azinphos Methyl	0.020 U	ug/L	0.02	0.08
3/7/2016 10:55	Effluent	Pesticides	Ethoprop	0.0050 U	ug/L	0.005	0.02
3/7/2016 10:55	Effluent	Pesticides	Fonofos	0.010 U	ug/L	0.01	0.04
3/7/2016 10:55	Effluent	Pesticides	Prometon	0.020 U	ug/L	0.02	0.08
3/7/2016 10:55	Effluent	Pesticides	Atrazine Desethyl	0.010 U	ug/L	0.01	0.04
3/7/2016 10:55	Effluent	Pesticides	Atrazine Desisopropyl	0.010 UJ	ug/L	0.01	0.04
3/7/2016 10:55	Effluent	Pesticides	Bromacil	0.040 U	ug/L	0.04	0.16
3/7/2016 10:55	Effluent	Pesticides	Fenamiphos	0.030 U	ug/L	0.03	0.12
3/7/2016 10:55	Effluent	Pesticides	Malathion	0.010 U	ug/L	0.01	0.04
3/7/2016 10:55	Effluent	Pesticides	Parathion Ethyl	0.020 U	ug/L	0.02	0.08
3/7/2016 10:55	Effluent	Pesticides	Chlorpyrifos Ethyl	0.010 U	ug/L	0.01	0.04
3/7/2016 10:55	Effluent	Pesticides	Disulfoton	0.0050 U	ug/L	0.005	0.02
3/7/2016 10:55	Effluent	Pesticides	Naled	0.040 U	ug/L	0.04	0.16
3/7/2016 10:55	Effluent	Pesticides	Norflurazon	0.030 U	ug/L	0.03	0.12
3/7/2016 10:55	Effluent	Pesticides	Chlorpyrifos Methyl	0.010 U	ug/L	0.01	0.04
3/7/2016 10:55	Effluent	Pesticides	Demeton	0.024 U	ug/L	0.024	0.096
3/7/2016 10:55	Effluent	Pesticides	Metalaxyl	0.040 UJ	ug/L	0.04	0.16
3/7/2016 10:55	Effluent	Pesticides	Mevinphos	0.010 U	ug/L	0.01	0.04
3/7/2016 10:55	Effluent	Pesticides	Prometryn	0.020 U	ug/L	0.02	0.08
3/7/2016 10:55	Effluent	Pesticides	Diazinon	0.010 U	ug/L	0.01	0.04
3/7/2016 10:55	Effluent	Pesticides	Ethion	0.010 U	ug/L	0.01	0.04
3/7/2016 10:55	Effluent	Pesticides	Metolachlor	0.060 U	ug/L	0.06	0.24
3/7/2016 10:55	Effluent	Priority Organic Pollutants	2,4-Dichlorophenol	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Phenol	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9 U	ug/L	1.9	7.5
3/7/2016 10:55	Effluent	Priority Organic Pollutants	2,4-Dinitrophenol	14 U	ug/L	14	57
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Hexachloroethane	2.8 U	ug/L	2.8	11
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.8 U	ug/L	2.8	11
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Dimethyl phthalate	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19 U	ug/L	0.19	0.75

Date Sampled	UDL	SCH_Group	Component	Result	Units	MDL	PQL
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19 U	ug/L	0.19	0.75
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Benzidine	94 U	ug/L	94	380
3/7/2016 10:55	Effluent	Priority Organic Pollutants	2,6-Dinitrotoluene	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Acenaphthene	0.19 U	ug/L	0.19	0.75
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Acenaphthylene	0.19 U	ug/L	0.19	0.75
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19 U	ug/L	0.19	0.75
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Hexachlorobenzene	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19 U	ug/L	0.19	0.75
3/7/2016 10:55	Effluent	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9 U	ug/L	1.9	7.5
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Nitrobenzene	1.9 U	ug/L	1.9	7.5
3/7/2016 10:55	Effluent	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.8 U	ug/L	2.8	11
3/7/2016 10:55	Effluent	Priority Organic Pollutants	2-Nitrophenol	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Priority Organic Pollutants	4-Nitrophenol	14 U	ug/L	14	57
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Phenanthrene	0.19 U	ug/L	0.19	0.75
3/7/2016 10:55	Effluent	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Priority Organic Pollutants	2,4-Dinitrotoluene	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Priority Organic Pollutants	2-Chlorophenol	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9 U	ug/L	1.9	7.5
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Anthracene	0.19 U	ug/L	0.19	0.75
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Benzo(a)pyrene	0.19 U	ug/L	0.19	0.75
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Diethyl phthalate	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Di-n-octyl phthalate	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Fluoranthene	0.19 U	ug/L	0.19	0.75
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Fluorene	0.19 U	ug/L	0.19	0.75
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Pentachlorophenol	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38 U	ug/L	38	150
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Benzo(a)anthracene	0.19 U	ug/L	0.19	0.75
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19 U	ug/L	0.19	0.75
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.8 U	ug/L	2.8	11
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Chrysene	0.19 U	ug/L	0.19	0.75
3/7/2016 10:55	Effluent	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.8 U	ug/L	2.8	11
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Naphthalene	0.19 U	ug/L	0.19	0.75
3/7/2016 10:55	Effluent	Priority Organic Pollutants	2-Chloronaphthalene	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Butyl benzyl phthalate	0.94 U	ug/L	0.94	3.8

Date Sampled	UDL	SCH_Group	Component	Result	Units	MDL	PQL
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Di-n-butyl phthalate	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Hexachlorobutadiene	2.8 U	ug/L	2.8	11
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Isophorone	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	ug/L	1.9	7.5
3/7/2016 10:55	Effluent	Priority Organic Pollutants	Pyrene	0.19 U	ug/L	0.19	0.75
3/7/2016 10:55	Effluent	Priority Organic Pollutants	1,4-Dioxane	0.020 U	ug/L	0.02	0.1
3/7/2016 10:55	Effluent	Priority Organic Pollutants	2,4-Dimethylphenol	9.4 U	ug/L	9.4	38
3/7/2016 10:55	Effluent	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.94 U	ug/L	0.94	3.8
3/7/2016 10:55	Effluent	Nutrients	Specific Conductance	142	umhos/cm		
3/7/2016 10:55	Effluent	Nutrients	Sample Depth	0.3	m		
3/7/2016 10:55	Effluent	Nutrients	pH	7.92			
3/7/2016 10:55	Effluent	Nutrients	Temperature	20.28	C		
3/7/2016 10:55	Effluent	Nutrients	Dissolved Oxygen	5.8	mg/L		
3/7/2016 10:55	Effluent	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.51 I	mg/L	0.2	2
3/7/2016 10:55	Effluent	Toxicology	Bioassay-Chron-Def-FW-C.dubia, IC25	100 L	IC25		
3/7/2016 10:55	Effluent	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	100	NOEC		
3/7/2016 10:55	Effluent	Toxicology	Bioassay-Chron-Def-FW-C.dubia, NOEC	100	NOEC		
3/7/2016 10:55	Effluent	Toxicology	Bioassay-Chron-Def-FW-Fish, IC25	100 L	IC25		
3/7/2016 10:55	Effluent	Nutrients	TSS	7 I	mg/L	2	10
3/7/2016 10:55	Effluent	Nutrients	Sample Depth	0.3	m		
3/7/2016 10:55	Effluent	Nutrients	Temperature	20.28	C		
3/7/2016 10:55	Effluent	Nutrients	Specific Conductance	142	umhos/cm		
3/7/2016 10:55	Effluent	Nutrients	Dissolved Oxygen	5.8	mg/L		
3/7/2016 10:55	Effluent	Nutrients	pH	7.92			
3/7/2016 12:35	Control Site	AGP/LN	Algal Growth Potential	18.7	mg DryWt/L	0.3	0.9
3/7/2016 12:35	Control Site	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.9 I	mg/L	0.2	2
3/7/2016 12:35	Control Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.40 U	ug/L	0.4	1.2
3/7/2016 12:35	Control Site	Chlorophyll/Grain Size/BOD	Chlorophyll/Phaeophytin Ratio	1.5		0	0
3/7/2016 12:35	Control Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.97 I	ug/L	0.55	1.7
3/7/2016 12:35	Control Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	1.2 I	ug/L	0.4	1.2
3/7/2016 12:35	Control Site	Metals	Lead	0.64	ug/L	0.05	0.2
3/7/2016 12:35	Control Site	Metals	Zinc	5.0 U	ug/L	5	20
3/7/2016 12:35	Control Site	Metals	Sodium	5.1	mg/L	0.5	2
3/7/2016 12:35	Control Site	Metals	Chromium	0.86	ug/L	0.05	0.2
3/7/2016 12:35	Control Site	Metals	Selenium	0.26 I	ug/L	0.2	0.8
3/7/2016 12:35	Control Site	Metals	Hardness	59.5	mg/L	0.35	1.4
3/7/2016 12:35	Control Site	Metals	Calcium	18.3	mg/L	0.075	0.3
3/7/2016 12:35	Control Site	Metals	Nickel	0.5	ug/L	0.05	0.2

Date Sampled	UDL	SCH_Group	Component	Result	Units	MDL	PQL
3/7/2016 12:35	Control Site	Metals	Potassium	1.9	mg/L	0.3	1.2
3/7/2016 12:35	Control Site	Metals	Silver	0.0050 U	ug/L	0.005	0.02
3/7/2016 12:35	Control Site	Metals	Copper	0.59	ug/L	0.1	0.4
3/7/2016 12:35	Control Site	Metals	Cadmium	0.032 I	ug/L	0.02	0.08
3/7/2016 12:35	Control Site	Metals	Magnesium	3.34	mg/L	0.04	0.16
3/7/2016 12:35	Control Site	Metals	Aluminum	481	ug/L	2	8
3/7/2016 12:35	Control Site	Metals	Arsenic	0.69	ug/L	0.05	0.2
3/7/2016 12:35	Control Site	Metals	Iron	890	ug/L	30	120
3/7/2016 12:35	Control Site	Nutrients	Fluoride	0.1	mg F/L	0.035	0.1
3/7/2016 12:35	Control Site	Nutrients	Total Alkalinity	45	mg CaCO3/L	0.65	2.5
3/7/2016 12:35	Control Site	Nutrients	Ammonia-N	0.016	mg N/L	0.002	0.005
3/7/2016 12:35	Control Site	Nutrients	Chloride	8.3	mg Cl/L	0.2	0.5
3/7/2016 12:35	Control Site	Nutrients	Organic Carbon	19	mg C/L	0.5	1
3/7/2016 12:35	Control Site	Nutrients	Total-P	0.1	mg P/L	0.005	0.05
3/7/2016 12:35	Control Site	Nutrients	Color (true)	210	PCU	10	24
3/7/2016 12:35	Control Site	Nutrients	Sulfate	8	mg SO4/L	0.2	0.5
3/7/2016 12:35	Control Site	Nutrients	Kjeldahl Nitrogen	0.74	mg N/L	0.08	0.2
3/7/2016 12:35	Control Site	Nutrients	Turbidity	6.9	NTU	0.1	0.1
3/7/2016 12:35	Control Site	Nutrients	O-Phosphate-P	0.061	mg P/L	0.004	0.01
3/7/2016 12:35	Control Site	Nutrients	NO2NO3-N	0.27	mg N/L	0.004	0.01
3/7/2016 12:35	Control Site	Nutrients	TSS	6 I	mg/L	2	10
3/7/2016 12:35	Control Site	Priority Organic Pollutants	4-Nitrophenol	14 U	ug/L	14	57
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19 U	ug/L	0.19	0.75
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Nitrobenzene	1.9 U	ug/L	1.9	7.5
3/7/2016 12:35	Control Site	Priority Organic Pollutants	2,6-Dinitrotoluene	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Anthracene	0.19 U	ug/L	0.19	0.75
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Butyl benzyl phthalate	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19 U	ug/L	0.19	0.75
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Hexachlorobutadiene	2.8 U	ug/L	2.8	11
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Phenanthrene	0.19 U	ug/L	0.19	0.75
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Benzidine	94 U	ug/L	94	380
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Benzo(a)pyrene	0.19 U	ug/L	0.19	0.75
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.8 U	ug/L	2.8	11
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Dimethyl phthalate	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	2,4-Dinitrotoluene	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38 U	ug/L	38	150
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Acenaphthene	0.19 U	ug/L	0.19	0.75

Date Sampled	UDL	SCH_Group	Component	Result	Units	MDL	PQL
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Benzo(a)anthracene	0.19 U	ug/L	0.19	0.75
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Di-n-octyl phthalate	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Hexachloroethane	2.8 U	ug/L	2.8	11
3/7/2016 12:35	Control Site	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9 U	ug/L	1.9	7.5
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19 U	ug/L	0.19	0.75
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9 U	ug/L	1.9	7.5
3/7/2016 12:35	Control Site	Priority Organic Pollutants	2,4-Dinitrophenol	14 U	ug/L	14	57
3/7/2016 12:35	Control Site	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.8 U	ug/L	2.8	11
3/7/2016 12:35	Control Site	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Chrysene	0.19 U	ug/L	0.19	0.75
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Di-n-butyl phthalate	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Diethyl phthalate	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Fluorene	0.19 U	ug/L	0.19	0.75
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.8 U	ug/L	2.8	11
3/7/2016 12:35	Control Site	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	ug/L	1.9	7.5
3/7/2016 12:35	Control Site	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	2,4-Dichlorophenol	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Acenaphthylene	0.19 U	ug/L	0.19	0.75
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19 U	ug/L	0.19	0.75
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Fluoranthene	0.19 U	ug/L	0.19	0.75
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19 U	ug/L	0.19	0.75
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Isophorone	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.8 U	ug/L	2.8	11
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Pentachlorophenol	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Pyrene	0.19 U	ug/L	0.19	0.75
3/7/2016 12:35	Control Site	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	2,4-Dimethylphenol	9.4 U	ug/L	9.4	38
3/7/2016 12:35	Control Site	Priority Organic Pollutants	2-Chloronaphthalene	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	2-Chlorophenol	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	2-Nitrophenol	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9 U	ug/L	1.9	7.5
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Hexachlorobenzene	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Naphthalene	0.19 U	ug/L	0.19	0.75
3/7/2016 12:35	Control Site	Priority Organic Pollutants	Phenol	0.94 U	ug/L	0.94	3.8
3/7/2016 12:35	Control Site	Priority Organic Pollutants	1,4-Dioxane	0.020 U	ug/L	0.02	0.1
3/7/2016 12:35	Control Site	Nutrients	Specific Conductance	136	umhos/cm		

Date Sampled	UDL	SCH_Group	Component	Result	Units	MDL	PQL
3/7/2016 12:35	Control Site	Nutrients	pH	7.9			
3/7/2016 12:35	Control Site	Nutrients	pH	7.9			
3/7/2016 12:35	Control Site	Nutrients	Specific Conductance	136	umhos/cm		
3/7/2016 12:35	Control Site	Nutrients	Dissolved Oxygen	6.99	mg/L		
3/7/2016 12:35	Control Site	Nutrients	Sample Depth	0.3	m		
3/7/2016 12:35	Control Site	Nutrients	Temperature	16.1	C		
3/7/2016 12:35	Control Site	Nutrients	Sample Depth	0.3	m		
3/7/2016 12:35	Control Site	Nutrients	Temperature	16.1	C		
3/7/2016 12:35	Control Site	Nutrients	Dissolved Oxygen	6.99	mg/L		
3/7/2016 12:45	Test Site	AGP/LN	Algal Growth Potential	14.9	mg DryWt/L	0.3	0.9
3/7/2016 12:45	Test Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.86 I	ug/L	0.79	2.4
3/7/2016 12:45	Test Site	Chlorophyll/Grain Size/BOD	Chlorophyll/Phaeophytin Ratio	1.5		0	0
3/7/2016 12:45	Test Site	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.6 I	mg/L	0.2	2
3/7/2016 12:45	Test Site	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.57 U	ug/L	0.57	1.7
3/7/2016 12:45	Test Site	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	1.1 I	ug/L	0.57	1.7
3/7/2016 12:45	Test Site	Metals	Copper	1.84	ug/L	0.1	0.4
3/7/2016 12:45	Test Site	Metals	Cadmium	0.034 I	ug/L	0.02	0.08
3/7/2016 12:45	Test Site	Metals	Selenium	0.24 I	ug/L	0.2	0.8
3/7/2016 12:45	Test Site	Metals	Chromium	0.88	ug/L	0.05	0.2
3/7/2016 12:45	Test Site	Metals	Sodium	4.9	mg/L	0.5	2
3/7/2016 12:45	Test Site	Metals	Iron	950	ug/L	30	120
3/7/2016 12:45	Test Site	Metals	Hardness	62.5	mg/L	0.35	1.4
3/7/2016 12:45	Test Site	Metals	Potassium	1.9	mg/L	0.3	1.2
3/7/2016 12:45	Test Site	Metals	Silver	0.0050 U	ug/L	0.005	0.02
3/7/2016 12:45	Test Site	Metals	Lead	0.62	ug/L	0.05	0.2
3/7/2016 12:45	Test Site	Metals	Arsenic	0.69	ug/L	0.05	0.2
3/7/2016 12:45	Test Site	Metals	Aluminum	521	ug/L	2	8
3/7/2016 12:45	Test Site	Metals	Calcium	19.3	mg/L	0.075	0.3
3/7/2016 12:45	Test Site	Metals	Magnesium	3.5	mg/L	0.04	0.16
3/7/2016 12:45	Test Site	Metals	Nickel	0.69	ug/L	0.05	0.2
3/7/2016 12:45	Test Site	Metals	Zinc	5.0 U	ug/L	5	20
3/7/2016 12:45	Test Site	Nutrients	Chloride	8.2	mg Cl/L	0.2	0.5
3/7/2016 12:45	Test Site	Nutrients	TSS	9 I	mg/L	2	10
3/7/2016 12:45	Test Site	Nutrients	O-Phosphate-P	0.062	mg P/L	0.004	0.01
3/7/2016 12:45	Test Site	Nutrients	Kjeldahl Nitrogen	0.75	mg N/L	0.08	0.2
3/7/2016 12:45	Test Site	Nutrients	Organic Carbon	20	mg C/L	0.5	1
3/7/2016 12:45	Test Site	Nutrients	NO2NO3-N	0.24	mg N/L	0.004	0.01
3/7/2016 12:45	Test Site	Nutrients	Total-P	0.11	mg P/L	0.005	0.05

Date Sampled	UDL	SCH_Group	Component	Result	Units	MDL	PQL
3/7/2016 12:45	Test Site	Nutrients	Fluoride	0.1	mg F/L	0.035	0.1
3/7/2016 12:45	Test Site	Nutrients	Color (true)	220	PCU	10	24
3/7/2016 12:45	Test Site	Nutrients	Total Alkalinity	46	mg CaCO3/L	0.65	2.5
3/7/2016 12:45	Test Site	Nutrients	Sulfate	8.4	mg SO4/L	0.2	0.5
3/7/2016 12:45	Test Site	Nutrients	Ammonia-N	0.017	mg N/L	0.002	0.005
3/7/2016 12:45	Test Site	Nutrients	Turbidity	7.2	NTU	0.1	0.1
3/7/2016 12:45	Test Site	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	2,4-Dinitrophenol	14 U	ug/L	14	58
3/7/2016 12:45	Test Site	Priority Organic Pollutants	2,6-Dinitrotoluene	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	2-Chlorophenol	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Fluoranthene	0.19 U	ug/L	0.19	0.77
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9 U	ug/L	2.9	12
3/7/2016 12:45	Test Site	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	2,4-Dimethylphenol	9.6 U	ug/L	9.6	38
3/7/2016 12:45	Test Site	Priority Organic Pollutants	2,4-Dinitrotoluene	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Acenaphthene	0.19 U	ug/L	0.19	0.77
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Isophorone	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9 U	ug/L	1.9	7.7
3/7/2016 12:45	Test Site	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9 U	ug/L	2.9	12
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Pentachlorophenol	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9 U	ug/L	1.9	7.7
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Dimethyl phthalate	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	2,4-Dichlorophenol	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	ug/L	2.9	12
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Benzidine	96 U	ug/L	96	380
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Benzo(a)anthracene	0.19 U	ug/L	0.19	0.77
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Butyl benzyl phthalate	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Chrysene	0.19 U	ug/L	0.19	0.77
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Diethyl phthalate	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Hexachlorobutadiene	2.9 U	ug/L	2.9	12
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Hexachloroethane	2.9 U	ug/L	2.9	12
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Naphthalene	0.19 U	ug/L	0.19	0.77
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19 U	ug/L	0.19	0.77
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Di-n-octyl phthalate	0.96 U	ug/L	0.96	3.8

Date Sampled	UDL	SCH_Group	Component	Result	Units	MDL	PQL
3/7/2016 12:45	Test Site	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38 U	ug/L	38	150
3/7/2016 12:45	Test Site	Priority Organic Pollutants	4-Nitrophenol	14 U	ug/L	14	58
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Acenaphthylene	0.19 U	ug/L	0.19	0.77
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19 U	ug/L	0.19	0.77
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19 U	ug/L	0.19	0.77
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Fluorene	0.19 U	ug/L	0.19	0.77
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19 U	ug/L	0.19	0.77
3/7/2016 12:45	Test Site	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	ug/L	1.9	7.7
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Phenanthrene	0.19 U	ug/L	0.19	0.77
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Pyrene	0.19 U	ug/L	0.19	0.77
3/7/2016 12:45	Test Site	Priority Organic Pollutants	2-Nitrophenol	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Anthracene	0.19 U	ug/L	0.19	0.77
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Benzo(a)pyrene	0.19 U	ug/L	0.19	0.77
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Di-n-butyl phthalate	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Nitrobenzene	1.9 U	ug/L	1.9	7.7
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Phenol	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	2-Chloronaphthalene	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9 U	ug/L	1.9	7.7
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19 U	ug/L	0.19	0.77
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9 U	ug/L	2.9	12
3/7/2016 12:45	Test Site	Priority Organic Pollutants	Hexachlorobenzene	0.96 U	ug/L	0.96	3.8
3/7/2016 12:45	Test Site	Priority Organic Pollutants	1,4-Dioxane	0.020 U	ug/L	0.02	0.1
3/7/2016 12:45	Test Site	Nutrients	pH	6.93			
3/7/2016 12:45	Test Site	Nutrients	Specific Conductance	144	umhos/cm		
3/7/2016 12:45	Test Site	Nutrients	Temperature	18.8	C		
3/7/2016 12:45	Test Site	Nutrients	Specific Conductance	144	umhos/cm		
3/7/2016 12:45	Test Site	Nutrients	Dissolved Oxygen	7.03	mg/L		
3/7/2016 12:45	Test Site	Nutrients	Sample Depth	0.3	m		
3/7/2016 12:45	Test Site	Nutrients	Temperature	18.8	C		
3/7/2016 12:45	Test Site	Nutrients	pH	6.93			
3/7/2016 12:45	Test Site	Nutrients	Dissolved Oxygen	7.03	mg/L		
3/7/2016 12:45	Test Site	Nutrients	Sample Depth	0.3	m		
3/7/2016 10:30	Field Blank	Metals	Copper	0.10 U	ug/L	0.1	0.4
3/7/2016 10:30	Field Blank	Metals	Arsenic	0.050 U	ug/L	0.05	0.2
3/7/2016 10:30	Field Blank	Metals	Magnesium	0.040 U	mg/L	0.04	0.16
3/7/2016 10:30	Field Blank	Metals	Cadmium	0.020 U	ug/L	0.02	0.08
3/7/2016 10:30	Field Blank	Metals	Lead	0.050 U	ug/L	0.05	0.2
3/7/2016 10:30	Field Blank	Metals	Iron	30 U	ug/L	30	120

Date Sampled	UDL	SCH_Group	Component	Result	Units	MDL	PQL
3/7/2016 10:30	Field Blank	Metals	Aluminum	2.0 U	ug/L	2	8
3/7/2016 10:30	Field Blank	Metals	Sodium	0.50 U	mg/L	0.5	2
3/7/2016 10:30	Field Blank	Metals	Hardness	0.35 U	mg/L	0.35	1.4
3/7/2016 10:30	Field Blank	Metals	Silver	0.0050 U	ug/L	0.005	0.02
3/7/2016 10:30	Field Blank	Metals	Chromium	0.050 U	ug/L	0.05	0.2
3/7/2016 10:30	Field Blank	Metals	Nickel	0.050 U	ug/L	0.05	0.2
3/7/2016 10:30	Field Blank	Metals	Potassium	0.30 U	mg/L	0.3	1.2
3/7/2016 10:30	Field Blank	Metals	Zinc	5.0 U	ug/L	5	20
3/7/2016 10:30	Field Blank	Metals	Selenium	0.20 U	ug/L	0.2	0.8
3/7/2016 10:30	Field Blank	Metals	Calcium	0.075 U	mg/L	0.075	0.3
3/7/2016 10:30	Field Blank	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.004	0.01
3/7/2016 10:30	Field Blank	Nutrients	Turbidity	0.10 U	NTU	0.1	0.1
3/7/2016 10:30	Field Blank	Nutrients	Sulfate	0.20 U	mg SO4/L	0.2	0.5
3/7/2016 10:30	Field Blank	Nutrients	Ammonia-N	0.002 U	mg N/L	0.002	0.005
3/7/2016 10:30	Field Blank	Nutrients	Color (true)	2.5 U	PCU	2.5	6
3/7/2016 10:30	Field Blank	Nutrients	Chloride	0.20 U	mg Cl/L	0.2	0.5
3/7/2016 10:30	Field Blank	Nutrients	Total-P	0.002 I	mg P/L	0.002	0.005
3/7/2016 10:30	Field Blank	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
3/7/2016 10:30	Field Blank	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.1
3/7/2016 10:30	Field Blank	Nutrients	Organic Carbon	0.50 U	mg C/L	0.5	1
3/7/2016 10:30	Field Blank	Nutrients	Total Alkalinity	0.65 U	mg CaCO3/L	0.65	2.5
3/7/2016 10:30	Field Blank	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.08	0.2
3/7/2016 10:30	Field Blank	Pesticides	Fonofos	0.0095 U	ug/L	0.0095	0.038
3/7/2016 10:30	Field Blank	Pesticides	Fenamiphos	0.029 U	ug/L	0.029	0.11
3/7/2016 10:30	Field Blank	Pesticides	Hexazinone	0.029 UJ	ug/L	0.029	0.11
3/7/2016 10:30	Field Blank	Pesticides	Disulfoton	0.0048 U	ug/L	0.0048	0.019
3/7/2016 10:30	Field Blank	Pesticides	Metalaxyl	0.038 UJ	ug/L	0.038	0.15
3/7/2016 10:30	Field Blank	Pesticides	Butylate	0.019 U	ug/L	0.019	0.076
3/7/2016 10:30	Field Blank	Pesticides	Chlorpyrifos Ethyl	0.0095 U	ug/L	0.0095	0.038
3/7/2016 10:30	Field Blank	Pesticides	Mevinphos	0.0095 U	ug/L	0.0095	0.038
3/7/2016 10:30	Field Blank	Pesticides	Azinphos Methyl	0.019 U	ug/L	0.019	0.076
3/7/2016 10:30	Field Blank	Pesticides	Bromacil	0.038 U	ug/L	0.038	0.15
3/7/2016 10:30	Field Blank	Pesticides	Simazine	0.0095 U	ug/L	0.0095	0.038
3/7/2016 10:30	Field Blank	Pesticides	Alachlor	0.057 U	ug/L	0.057	0.23
3/7/2016 10:30	Field Blank	Pesticides	Ametryn	0.0095 U	ug/L	0.0095	0.038
3/7/2016 10:30	Field Blank	Pesticides	Atrazine Desisopropyl	0.0095 UJ	ug/L	0.0095	0.038
3/7/2016 10:30	Field Blank	Pesticides	Chlorpyrifos Methyl	0.0095 U	ug/L	0.0095	0.038
3/7/2016 10:30	Field Blank	Pesticides	Norflurazon	0.029 U	ug/L	0.029	0.11

Date Sampled	UDL	SCH_Group	Component	Result	Units	MDL	PQL
3/7/2016 10:30	Field Blank	Pesticides	Atrazine Desethyl	0.0095 U	ug/L	0.0095	0.038
3/7/2016 10:30	Field Blank	Pesticides	Atrazine	0.0095 U	ug/L	0.0095	0.038
3/7/2016 10:30	Field Blank	Pesticides	Malathion	0.0095 U	ug/L	0.0095	0.038
3/7/2016 10:30	Field Blank	Pesticides	Metribuzin	0.019 U	ug/L	0.019	0.076
3/7/2016 10:30	Field Blank	Pesticides	Parathion Ethyl	0.019 U	ug/L	0.019	0.076
3/7/2016 10:30	Field Blank	Pesticides	Phorate	0.0048 U	ug/L	0.0048	0.019
3/7/2016 10:30	Field Blank	Pesticides	Parathion Methyl	0.0095 U	ug/L	0.0095	0.038
3/7/2016 10:30	Field Blank	Pesticides	Prometryn	0.019 U	ug/L	0.019	0.076
3/7/2016 10:30	Field Blank	Pesticides	Demeton	0.023 U	ug/L	0.023	0.091
3/7/2016 10:30	Field Blank	Pesticides	Diazinon	0.0095 U	ug/L	0.0095	0.038
3/7/2016 10:30	Field Blank	Pesticides	Ethion	0.0095 U	ug/L	0.0095	0.038
3/7/2016 10:30	Field Blank	Pesticides	Ethoprop	0.0048 U	ug/L	0.0048	0.019
3/7/2016 10:30	Field Blank	Pesticides	Metolachlor	0.057 U	ug/L	0.057	0.23
3/7/2016 10:30	Field Blank	Pesticides	Naled	0.038 U	ug/L	0.038	0.15
3/7/2016 10:30	Field Blank	Pesticides	Prometon	0.019 U	ug/L	0.019	0.076
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9 U	ug/L	2.9	11
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Chrysene	0.19 U	ug/L	0.19	0.76
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Acenaphthylene	0.19 U	ug/L	0.19	0.76
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	ug/L	2.9	11
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Nitrobenzene	1.9 U	ug/L	1.9	7.6
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Hexachlorobutadiene	2.9 U	ug/L	2.9	11
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19 U	ug/L	0.19	0.76
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19 U	ug/L	0.19	0.76
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	4-Nitrophenol	14 U	ug/L	14	57
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9 U	ug/L	2.9	11
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Di-n-butyl phthalate	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Benzidine	95 U	ug/L	95	380
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Anthracene	0.19 U	ug/L	0.19	0.76
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38 U	ug/L	38	150
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	2,4-Dimethylphenol	9.5 U	ug/L	9.5	38
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Pyrene	0.19 U	ug/L	0.19	0.76
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Naphthalene	0.19 U	ug/L	0.19	0.76
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	ug/L	1.9	7.6
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19 U	ug/L	0.19	0.76
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9 U	ug/L	1.9	7.6
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Acenaphthene	0.19 U	ug/L	0.19	0.76

Date Sampled	UDL	SCH_Group	Component	Result	Units	MDL	PQL
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	2,4-Dinitrophenol	14 U	ug/L	14	57
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Pentachlorophenol	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9 U	ug/L	1.9	7.6
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Fluoranthene	0.19 U	ug/L	0.19	0.76
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Diethyl phthalate	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9 U	ug/L	2.9	11
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.19 U	ug/L	0.19	0.76
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	2-Nitrophenol	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	1,4-Dioxane	0.020 U	ug/L	0.02	0.1
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Phenol	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Isophorone	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Hexachlorobenzene	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19 U	ug/L	0.19	0.76
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Butyl benzyl phthalate	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Fluorene	0.19 U	ug/L	0.19	0.76
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Dimethyl phthalate	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19 U	ug/L	0.19	0.76
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Phenanthrene	0.19 U	ug/L	0.19	0.76
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Hexachloroethane	2.9 U	ug/L	2.9	11
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.95 U	ug/L	0.95	3.8
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.19 U	ug/L	0.19	0.76
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9 U	ug/L	1.9	7.6
3/7/2016 10:30	Field Blank	Priority Organic Pollutants	2-Chlorophenol	0.95 U	ug/L	0.95	3.8
3/7/2016 10:35	Influent	Metals	Iron	980	ug/L	30	120
3/7/2016 10:35	Influent	Nutrients	Temperature	15.85	C		
3/7/2016 10:35	Influent	Nutrients	Sample Depth	0.3	m		
3/7/2016 10:35	Influent	Nutrients	Specific Conductance	135	umhos/cm		
3/7/2016 10:35	Influent	Nutrients	pH	7.96			
3/7/2016 10:35	Influent	Nutrients	Dissolved Oxygen	5.85	mg/L		

Appendix F Qualifiers

J - Estimated value

L - Actual value is known to be greater than value given

The Bioassay of the Suwannee River Power Plant effluent sampled on March 07, 2016, NPDES #FL0000183

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 0 0 1 8 3 11 12	1 6 0 3 0 7	# B	# S	# 2

Remarks

66

The Priority Pollutants Analysis of the Suwannee River Power Plant effluent sampled on March 07, 2016 NPDES #FL0000183

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 0 0 1 8 3 11 12	1 6 0 3 0 7	# X	# S	# 2

Remarks

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Biological Analyses of the Suwannee River Power Plant effluent sampled on March 07, 2016, NPDES #FL0000183

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 0 0 1 8 3 11 12	1 6 0 3 0 7	# S	# S	# 2

Remarks

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