Effluent Quality Assessment of Richard J. Midulla Generating Station Hardee County NPDES # FL0044229 Sampled December 10, 2018

Division of Environmental Assessment and Restoration
Florida Department of Environmental Protection
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DEP Laboratory, Biology Program
2600 Blair Stone Road, MS 6515
Tallahassee, FL 32399-2400
www.floridadep.gov

Contents

Contents 2

Summary of Results 3
Facility Overview 3
Methods 3
Results 5
Literature Cited 7
Appendix A. Facility Summary 13
Appendix B. Explanations of Measurements 23
Appendix C. Chain of Custody 25
Appendix D. Chemical Analysis 35

List of Tables

Table 1. Measured field parameters 8
Table 2. Analytical water chemistry, microbiological, and toxicological data 9
Table 3. Analytical metals data 11
Table 4. Algal Growth Potential (AGPs) 12

List of Figures

Figure 1. Map of facility and sampling locations 4

Summary of Results

The facility was not discharging at the time of this inspection. Samples were collected from the cooling water pond near the cooling water intake at IMP-1, an alternate sampling site to D-001. The specific conductance measured in the cooling water pond at the time of sample collection exceeded the Class III Freshwater Quality Criterion (62-302.530(22), F.A.C.). The sample collected at IMP-1 was not toxic to either test species during the 96-hour acute screening test. Samples collected for parameters other than whole effluent toxicity, met permit limits for IMP-1 and complied with all other Class III Freshwater Quality Criteria.

Facility Overview

The Richard J. Midulla Generating Station (formally known as Payne Creek Generating Station) is a power generating facility located in a 13-acre site at the Polk and Hardee County lines west of County Road 663. A Facility Summary, including a description of the facility, summary of permit limits, and any relevant Administrative Order (AO), Consent Order (CO), and Discharge Monitoring Report (DMR) information is provided in Appendix A. The effluent is intermittently discharged into Payne Creek, a Class III Fresh Water (Figure 1).

Payne Creek falls within the West Central Nutrient Watershed Region for Numeric Nutrient Criteria (NNC). For this region, the NNC thresholds, expressed as annual geometric means, are 0.49 mg/L total phosphorus and 1.65 mg/L total nitrogen. This FYI event only provides single sample results. It should be noted that waterbody impairment assessments are based on longer-term data, and individual exceedances of a criterion do not indicate use impairment. http://ca.dep.state.fl.us/mapdirect/?focus=nutrientcriteria

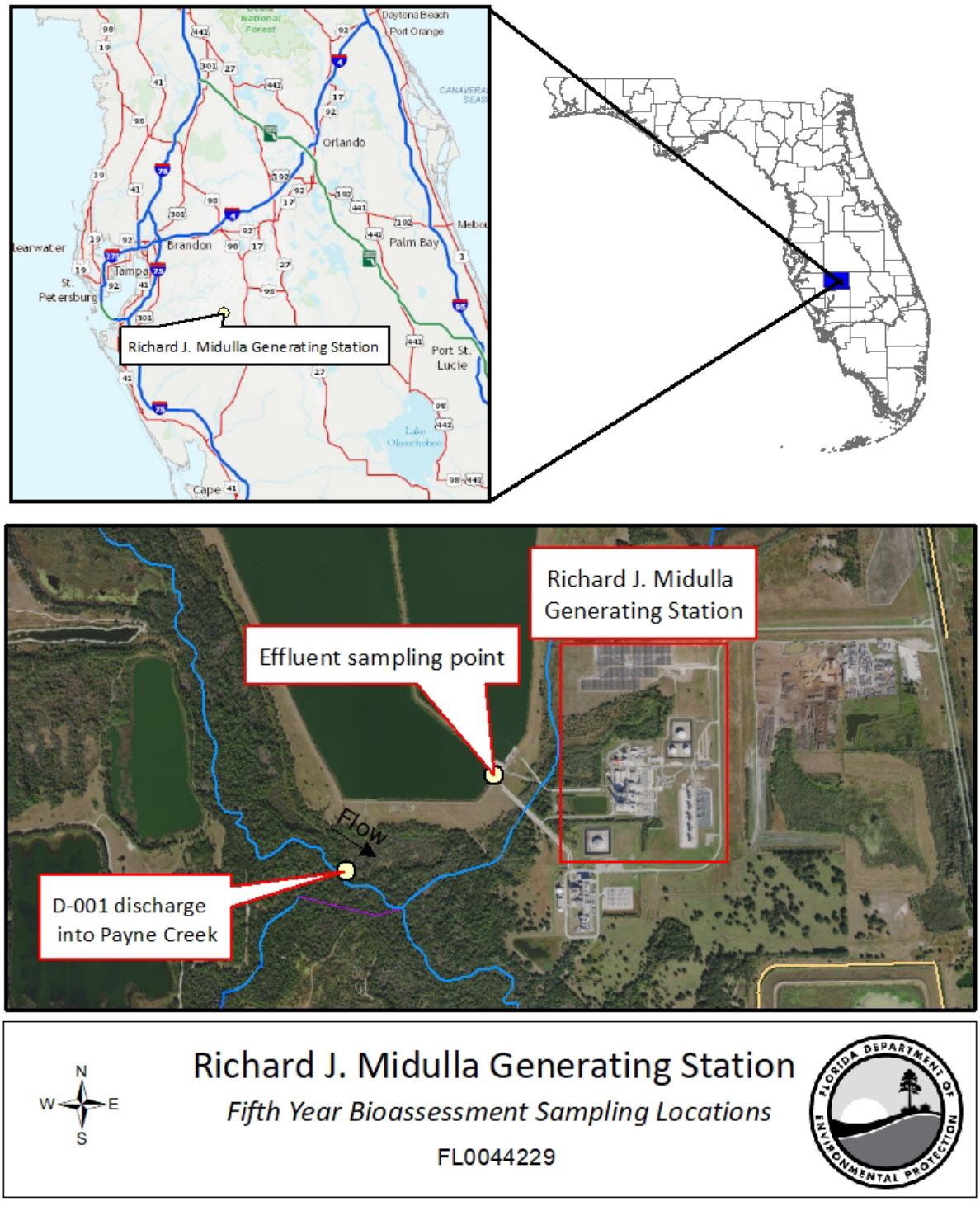
Methods

Grab samples were collected on December 10, 2018 from IMP-1 in the cooling water pond near the cooling water intake. This location is an alternate sampling site from both the D-001 and some permitted monitoring sites. This alternate site is utilized when the facility is not discharging. There was no discharge for the preceding 12-months. The last discharge occurred in September 2018 (personal communication with Southwest District).

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

All references to 62-302.530, F.A.C. are to the surface water quality criteria table with an effective date of 02/17/2016 and a notice identification number of 17115667.

Figure 1. Map of facility and sampling locations



Results

Physical and Chemical Parameters (See Table 1)

- The specific conductance measured in the cooling water pond at the time of sample collection exceeded the Class III Freshwater Quality Criterion (62-302.530(22), F.A.C.)

- Temperature, pH, and dissolved oxygen measured in the cooling water pond met Class III Freshwater Quality Criteria (62-302.530, F.A.C.) and permit limits for monitoring site IMP-1.

Analytical Water Chemistry (See Table 2 and Appendix D)

- Total alpha activity exceeded the Class III Freshwater Criterion (62-302.530(58)(b), F.A.C.).

- Total phosphorus, un-ionized ammonia, turbidity, alkalinity, cyanide and fluoride levels complied with Class III Freshwater Criteria (62-302.530, F.A.C.).

- Some analytes were detected in the field blank above the PQL (see Table 2).

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

- Tests were performed December 11 through December 15, 2018.

- The sample was collected at location IMP-1 instead of EFF-1, as stated in the permit. Collection at EFF-1 occurs when the facility discharges as needed during rainfall events. For the 96-hour acute screening test, the calculated LC50 for the water flea, *Ceriodaphnia dubia*, was 100% effluent with 0% mortality in 100% sample. The calculated LC50 for the fish, *Cyprinella leedsi*, was 100% effluent with 0% mortality in 100% sample. The sample was not toxic to the fish, *Cyprinella leedsi,* or to the water flea, *Ceriodaphnia dubia,* during the 96-hour acute screen bioassays.

- 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 D)

- All metals detected in the sample were present at levels that complied with permit limits for monitoring site IMP-1 and Class III Freshwater Quality Criteria (62-302.530, F. A. C.).

Algal Growth Potential (See Table 4 and Appendix B)

- The freshwater unicellular green alga, *Pseudokirchneriella subcapitata*, was used to determine the AGP values in the sample (Miller et al. 1978).
- The AGP result is 16.3 A mg dry wt/L, which falls within the AGP range (6.10 to 20.0 mg dry wt/L) suggested to be representative of high productivity for freshwater (Miller et al. 1978).

- The value for total nitrogen to phosphorus ratio suggests the cooling pond is co-limited (Miller et al 1978). Nitrate and nitrite were not detected in the sample therefore, half the method detection level (MDL) for nitrate and nitrite was used in the calculation for total nitrogen to phosphorus ratio.

Literature Cited

Miller, W. E., Maloney, T. E. and Greene, J. C. 1978. The *Selenastrum capricornutum* Printz algal assay bottle test. EPA600/978-018. U. S. EPA, Cincinnati, Ohio. 126 p.

Stevenson, R. J. and Bahls, L. L. 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.

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

Table 1. Measured field parameters

Permit limits, Class III Freshwater Criteria, and field parameters for Richard J. Midulla Generating Station

Parameters	Units	Class III Criteria	Permit Limits [1]	Cooling Water Pond
Sample Depth	m	-	-	0.1
Temperature	C	-	Report	20.5
pH	SU	6.0 - 8.5	Report	8.6
Specific Conductance	umhos/cm	≤ 1,275	-	1,604 e
Salinity		-	-	0.9 c
Dissolved Oxygen	% saturation	≥ 38		93.5
Dissolved Oxygen	mg/L	-	Report	8.4

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
e - Value exceeds the Class III Fresh Water Quality Criteria or permit limits
c - Value is calculated
1 - Permit limits for monitoring site IMP-1

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

Permit limits, Class III Freshwater Criteria, analytical water chemistry, microbiological, and toxicological data for Richard J. Midulla Generating Station

Analyte	Units	Class III Criteria	Permit Limits [1]	Cooling Water Pond
Ortho-phosphate	mg P/L	-	Report	0.005 I
Total Phosphorus	mg P/L	0.49 [3]	Report	0.21
Total Ammonia	mg N/L	0.71-	Report	0.009
Un-ionized Ammonia (calculated salinity)		≤ 0.02 s	Report	< 0.02 c
Nitrate and Nitrite	mg N/L	-	Report	0.004 U
Total Kjeldahl Nitrogen	mg N/L	-	Report	3.1
Organic Nitrogen	mg N/L	-	-	3.1 [4] c
Total Nitrogen	mg N/L	1.65 [3]	Report	3.1 [4] c
Total Organic Carbon	mg C/L	-	-	20
Chlorophyll *a* - Corrected	ug/L	-	-	110 A
Phaeophytin	ug/L	-	-	22 A
Chlorophyll *a*	ug/L	-	Report	130 A
BOD, 5 day, N - uninhibited	mg/L	-	-	6.8
Total Suspended Solids	mg/L	-	-	22
Total Dissolved Solids	mg/L	-	Report	1110
Turbidity	NTU	< 29 t	Report	8.7 [4]
Color (true)	PCU	-	-	14
Alkalinity	mg CaCO3/L	≥ 20	-	133
Chloride	mg Cl/L	-	-	120
Cyanide	mg/L	≤ 5.2	Report	0.0025 [4] UJ
Fluoride	mg F/L	≤ 10.0	-	3.6
Sulfate	mg SO4/L	-	-	560
Alpha, Total	pCi/L	≤ 15	Report	24.0 e
Alpha-Counting Error	pCi/L	-	-	7.84 [4]
Radium 226	pCi/L	-	-	3.08
Radium 226-Counting Error	pCi/L	-	-	0.350 [4]
Radium 228	pCi/L	-	-	0.589 U
Radium 228-Counting Error	pCi/L	-	-	0.370 [4]
Radium 226 + 228	pCi/L	≤ 5	Report	3.08 [4] c
Bioassay - Water flea *(Ceriodaphnia dubia)*	% effluent	≥100	≥100 [2] s	> 100
Bioassay - Fish *(Cyprinella leedsi)*	% effluent	≥100	≥100 [2] s	> 100

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

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

c - Value is calculated

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

J – Estimated value

1 - Permit limits for monitoring site IMP-1

2 – Permit limit for monitoring site EFF-1

3- West Central Nutrient Watershed Region for Numeric Nutrient Criteria (NNC), 62-302.531(2)(c), F.A.C. Value expressed as an annual geometric mean.
4- Analyte detected in blank.

Table 3. Analytical metals data

Permit limits, Class III Freshwater Criteria, and analytical metals data for Richard J. Midulla Generating Station

Analyte	Units	Class III Criteria	Permit Limits [1]	Cooling Water Pond
Hardness	mg $CaCO_3$/L	-	-	554 b
Aluminum	ug/L	-	Report	251
Arsenic	ug/L	≤ 50	Report	0.94
Cadmium	ug/L	≤ 0.756 b	-	0.020 U
Calcium	mg/L	-	-	91.5
Chromium, Total [4]	ug/L	≤ 268 b	-	0.40 U
Copper	ug/L	≤ 30.5 b	-	0.20 U
Iron	ug/L	≤ 1,000	Report	30 U
Lead	ug/L	≤ 18.6 b	-	0.11 I
Magnesium	mg/L	-	-	79.1
Mercury	ng/L	≤ 12.0	Report	1.5
Nickel	ug/L	≤ 169 b	-	0.20 U
Potassium	mg/L	-	-	4.2
Selenium	ug/L	≤ 5.0	Report	0.20 U
Silver	ug/L	≤ 0.07	-	0.010 U
Sodium	mg/L	-	-	187
Zinc	ug/L	≤ 388 b	-	5.0 U

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
b - Value is calculated based on hardness, (62-302.530(3))
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
1 – Permit limits for monitoring site IMP-1
4 - Class III Freshwater Quality Criterion (62-302.530(19)(a), F.A.C.) is for chromium-III

Table 4. Algal Growth Potential (AGPs)

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

Location	Test Species	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (OP) ± 20%	Predicted AGP (TN) ± 20%	Predicted AGP (TP) ± 20%	Inorganic N:P ratio	Total N:Pratio
Cooling Water Pond	*Pseudokirchneriella subcapitata*	16.3 A	not applicable [5]	2.2 ± 0.4	not applicable [5]	90.3 ± 18.1	2.2[5]	14.8[5]

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

5 - nitrate-nitrite was not detected in the sample; N:P ratios calculated using ½ method detection level (MDL) for the non-detect value.

Appendix A. Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Lance Kautz	**Contact Number:** (813) 470-5903
Facility Name (as it appears on permit): Richard J. Midulla Generating Station	**Former Names:** N/A
NPDES Permit Number: FL0044229	**Permit Expiration Date:** May 19, 2020
Physical Address: County Rd. 663 Fort Green FL 33834	
District: Southwest	**County:** Hardee
Function of Facility: Electric Generating Plant	
Facility Type: Industrial Wastewater	**Permitted Capacity (MGD): Report only**
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months):15.77125 MGD	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): N/A	
Description of type of Discharge: ☐ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☒ **Rainfall Dependent** ☐ **Other, please specify**	

Description of Sampling Location(s) - actual permit designation of permitted sampling point(s):

Monitoring Site Number	Description of Monitoring Site
FLW-1	Calculated flow, discharge for the cooling reservoir.
FLW-3	Calculated flow, upstream from the point of discharge in Payne Creek at Station "U".
EFF-1	Point of discharge from the cooling Reservoir prior to mixing with any other waste stream or the receiving waters.
SWU-1	Upstream from the point of discharge in Payne Creek. Same as Station "U", as described in the submitted Plan of Study (Plan of Study for Mixing Zone Evaluation, June 2008).
CAL-1	Calculated value for the temperature difference between the point of discharge (EFF-1) and the upstream monitoring point (SWU-1).
IMP-1	Within the cooling reservoir at the cooling water intake.

Description of Permitted Outfall(s):

Surface Water Discharge D-001: An existing Cooling Reservoir Overflow discharge to Payne Creek, (WBID 1757B) Class III Fresh Waters, which is authorized after rainfall events exceeding the 10-year 24-hour storm event. The point of discharge is located approximately at latitude 27°38' 26" N, longitude 81°58' 23" W.

Surface Water Discharge D-003: A storm water detention pond overflow discharge to Payne Creek, (WBID 1757B) Class III Fresh Waters, which is authorized after rainfall events exceeding the 10-year 24-hour storm event. The point of discharge is located approximately at latitude 27°38' 0" N, longitude 81°58' 0" W.

Internal Outfall I-002: An existing internal outfall to the cooling reservoir discharge located at approximately latitude 27°38' 00" N, longitude 81°58' 25" W.

Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility):

The Richard J. Midulla Generating Station (formerly known as Payne Creek Generating Station) is located on a 1,300-acre site at the Polk and Hardee County lines west of County Road 663. The Richard J. Midulla Generating Station consists of two combined-cycle electrical generating units with a shared steam turbine-electrical generator and five dual turbine simple-cycle units. Midulla Generating Station is a base loaded unit with a combined nominal capacity of 500 megawatts (MW). Each simple-cycle unit consists of two combustion turbines with a common electrical generator. The five simple-cycle units, with a combined nominal capacity of 310 MW, are used during peak electrical demand. All units use natural gas as its primary fuel source, with low sulfur distillate oil (No. 2 fuel oil) serving as a backup source. Cooling water for the facility is provided by a 570-acre cooling reservoir. The cooling reservoir has been designed to operate as a closed-loop circulation cooling water system that discharges during extreme or cumulative storm events in excess of the 10-year, 24-hour storm event.

WASTEWATER TREATMENT:
Low volume waste generated during the operation of the Richard J. Midulla Generating Station will be treated prior to discharge to the on-site cooling reservoir. Treatment of the various low volume waste streams will consist of chemical neutralization, sedimentation, oil and grease removal and/or biological treatment.

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)

D-001:

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max /Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
Flow	MGD	Max	Report	Daily Maximum	Daily, when discharging	Calculated	FLW-1 FLW-3	
Temperature (F), Water	Deg F	Max	98.0	Daily Maximum	Weekly, when discharging	Grab	EFF-1	See I.A.3, and I.A.5
			Report	Daily Maximum	Weekly, when discharging	Grab	SWU-1	See I.A.3, and I.A.5
Temp. Diff. between EFF-1 and SWU-1 (ΔT)	Deg F	Max	17.0	Daily Maximum	Weekly, when discharging	Grab	CAL-1	See I.A.5 and I.A.6
pH	s.u.	Max Min	9.92 6.0	Daily Maximum Daily Minimum	Weekly, when discharging	Grab	EFF-1	See I.A.3, and I.A.5
		Max	Report	Daily Maximum	Weekly, when discharging	Grab	SWU-1	See I.A.3, and I.A.5
					Semi-Annually; twice per year	Grab	IMP-1	See I.A.3
Beryllium, Total Recoverable	ug/L	Max	0.13	Annual Average	Weekly, when discharging	Grab	EFF-1	See I.A.7
Oxygen, Dissolved (DO)	mg/L	Min	Report	Daily Minimum	Weekly, when discharging	Grab	EFF-1	
Solids, Total Dissolved (TDS)	mg/L	Max	Report	Daily Maximum	Weekly, when discharging	Grab	EFF-1	
					Annually	Grab	IMP-1	
Oxidants, Total Residual	mg/L	Max	0.01	Daily Maximum	Weekly, when discharging	Grab	EFF-1	
Temperature (C), Water	Deg C	Max	Report	Daily Maximum	Weekly, when discharging	Grab	EFF-1 SWU-1	See I.A.3
					Semi-Annually; twice per year	Grab	IMP-1	See I.A.3
Nitrogen, Ammonia, Total (as N)	mg/L	Max	Report	Daily Maximum	Weekly, when discharging	Grab	EFF-1 SWU-1	See I.A.3
					Semi-Annually; twice per year	Grab	IMP-1	See I.A.3
Ammonia, Unionized (as NH3)	mg/L	Max	0.40	Daily Maximum	Weekly, when discharging	Calculated	EFF-1 SWU-1	See I.A.3, and I.A.5
			Report	Daily Maximum	Semi-Annually; twice per year	Calculated	IMP-1	See I.A.3
Nitrite plus Nitrate, Total 1 det. (as N)	mg/L	Max	Report	Daily Maximum	Weekly, when discharging	Grab	EFF-1 SWU-1	
					Semi-Annually; twice per year	Grab	IMP-1	
Nitrogen, Kjeldahl, Total (as N)	mg/L	Max	Report	Daily Maximum	Weekly, when discharging	Grab	EFF-1 SWU-1	

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max /Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
					Semi-Annually; twice per year	Grab	IMP-1	
Nitrogen, Total	mg/L	Max	Report	Daily Maximum	Weekly, when discharging	Grab	EFF-1 SWU-1	
					Semi-Annually; twice per year	Grab	IMP-1	
Chlorophyll a	mg/L	Max	Report	Daily Maximum	Semi-Annually; twice per year	Grab	IMP-1	
Phosphate, Ortho (as PO4)	mg/L	Max	Report	Daily Maximum	Semi-Annually; twice per year	Grab	IMP-1	
Phosphorus, Total (as P)	mg/L	Max	Report	Daily Maximum	Semi-Annually; twice per year	Grab	IMP-1	
Aluminum, Total	mg/L	Max	Report	Daily Maximum	Annually	Grab	IMP-1	See I.A.7
Arsenic, Total Recoverable	ug/L	Max	Report	Daily Maximum	Annually	Grab	IMP-1	See I.A.7
Cyanide, Total (as CN)	mg/L	Max	Report	Daily Maximum	Annually	Grab	IMP-1	See I.A.7
Iron, Total Recoverable	mg/L	Max	Report	Daily Maximum	Annually	Grab	IMP-1	See I.A.7
Mercury, Total Recoverable	ug/L	Max	Report	Daily Maximum	Annually	Grab	IMP-1	See I.A.7
Selenium, Total Recoverable	ug/L	Max	Report	Daily Maximum	Annually	Grab	IMP-1	See I.A.7
Alpha, Gross Particle Activity	pCi/L	Max	Report	Daily Maximum	Annually	Grab	IMP-1	See I.A.7
Radium 226 + Radium 228, Total	pCi/L	Max	Report	Daily Maximum	Annually	Grab	IMP-1	See I.A.7
Turbidity	NTU	Max	Report	Daily Maximum	Annually	Grab	IMP-1	
Acute Whole Effluent Toxicity, 96 Hour LC50 (Ceriodaphnia dubia)	percent	Min	100	Single Sample	Annually	Grab	EFF-1	See I.A.4
Acute Whole Effluent Toxicity, 96 Hour LC50 (Cyprinella leedsi)	percent	Min	100	Single Sample	Annually	Grab	EFF-1	See I.A.4

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

4. The permittee shall comply with the following requirements to evaluate acute whole effluent toxicity of the discharge from outfall D-001.

   a. Effluent Limitation
      (1) In any routine or additional follow-up test for acute whole effluent toxicity, the 96-hour LC50 shall not be less than 100% effluent. [Rules 62-302.200(1), 62-302.500(1)(a)4., 62-4.244(3)(a), and 62-4.241, F.A.C.]

   b. Monitoring Frequency
      (1) Routine toxicity tests shall be conducted annually, the first starting upon the first discharge event and lasting for the duration of this permit.

   c. Sampling Requirements
      (1) All tests shall be conducted on a single grab sample of final effluent.

   d. Test Requirements
      (1) Routine Tests: All routine tests shall be conducted using a control (0% effluent) and a minimum of five dilutions: **100%, 75%, 50%, 25%**, and **12.5%** effluent.
      (2) The permittee shall conduct 96-hour acute static renewal multi-concentration toxicity tests using the daphnid, **Ceriodaphnia dubia**, and the bannerfin shiner, **Cyprinella leedsi**, concurrently.
      (3) All test species, procedures and quality assurance criteria used shall be in accordance with **Methods for Measuring Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms**, 5th Edition, EPA-821-R-02-012. Any deviation of the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use. In the event the above method is revised, the permittee shall conduct acute toxicity testing in accordance with the revised method.
      (4) The control water and dilution water shall be moderately hard water as described in EPA-821-R-02-012, Table 7.

   e. Quality Assurance Requirements
      (1) A standard reference toxicant (SRT) quality assurance (QA) acute toxicity test shall be conducted with each species used in the required toxicity tests either concurrently or initiated no more than 30 days before the date of each routine or additional follow-up test conducted. Additionally, the SRT test must be conducted concurrently if the test organisms are obtained from outside the test laboratory unless the test organism supplier provides control chart data from at least the last five monthly acute toxicity tests using the same reference toxicant and test conditions. If the organism supplier provides the required SRT data, the organism supplier's SRT data and the test laboratory's monthly SRT-QA data shall be included in the reports for each companion routine or additional follow-up test required.
      (2) If the mortality in the control (0% effluent) exceeds 10% for either species in any test, the test for that species (including the control) shall be invalidated and the test repeated. The repeat test shall begin within 14 days after the last day of the invalid test.
      (3) If 100% mortality occurs in all effluent concentrations for either species prior to the end of any test and the control mortality is less than 10% at that time, the test (including the control) for that species shall be terminated with the conclusion that the test fails and constitutes non-compliance.
      (4) Routine and additional follow-up tests shall be evaluated for acceptability based on the concentration-response relationship, as required by EPA-821-R-02-012, Section 12.2.6.2., and included with the bioassay laboratory reports.

   f. Reporting Requirements
      (1) Results from all required tests shall be reported on the Discharge Monitoring Report (DMR) as follows:
         (a) Routine Test Results: If an LC50 >100% effluent occurs in the test for the test species, ">100%" shall be entered on the DMR for that test species. If an LC50 <100% effluent occurs, the calculated LC50 effluent concentration shall be entered on the DMR for that test species.
         (b) Additional Follow-up Test Results: For each additional test required, the calculated LC50 value shall be entered on the DMR for that test species.

(2) A bioassay laboratory report for the routine test shall be prepared according to EPA-821-R-02-012, Section 12, Report Preparation and Test Review, and mailed to the Department at the address below within 30 days after the last day of the test.
(3) For additional follow-up tests, a single bioassay laboratory report shall be prepared according to EPA-821-R-02-012, Section 12, and mailed within 30 days after the last day of the second valid additional follow-up test.
(4) Data for invalid tests shall be included in the bioassay laboratory report for the repeat test.
(5) The same bioassay data shall not be reported as the results of more than one test.
(6) All bioassay laboratory reports shall be sent to:
Florida Department of Environmental Protection
Southwest District
13051 N Telecom Parkway
Temple Terrace, FL 33637-0926
Phone Number - (813) 470-5700
FAX Number - (813) 470-5995 Test Failures
(7) A test fails when the test results do not meet the limits in 3.a.(1).
(8) Additional Follow-up Tests:
(a) If a routine test does not meet the acute toxicity limitation in 3.a.(1) above, the permittee shall notify the Department at the address above within 21 days after the last day of the failed routine test and conduct two additional follow-up tests on each species that failed the test in accordance with 3.d.
(b) The first test shall be initiated within 28 days after the last day of the failed routine test. The remaining additional follow-up tests shall be conducted weekly thereafter until a total of two valid additional follow-up tests are completed.
(c) The first additional follow-up test shall be conducted using a control (0% effluent) and a minimum of five dilutions: 100%, 75%, 50%, 25%, and 12.5% effluent. The permittee may modify the dilution series in the second additional follow-up test to more accurately bracket the toxicity such that at least two dilutions above and two dilutions below the target concentration and a control (0% effluent) are run. All test results shall be statistically analyzed according to the procedures in EPA-821-R-02-012.
(9) In the event of three valid test failures (whether routine or additional follow-up tests) within a 12-month period, the permittee shall notify the Department within 21 days after the last day of the third test failure.
(a) The permittee shall submit a plan for correction of the effluent toxicity within 60 days after the last day of the third test failure.
(b) The Department shall review and approve the plan before initiation.
(c) The plan shall be initiated within 30 days following the Department's written approval of the plan.
(d) Progress reports shall be submitted quarterly to the Department at the address above.
(e) During the implementation of the plan, the permittee shall conduct quarterly routine whole effluent toxicity tests in accordance with 3.d. Additional follow-up tests are not required while the plan is in progress. Following completion or termination of the plan, the frequency of monitoring for routine and additional follow-up tests shall return to the schedule established in 3.b.(1). If a routine test is invalid according to the acceptance criteria in EPA-821-R-02-012, a repeat test shall be initiated within 14 days after the last day of the invalid routine test.
(f) Upon completion of four consecutive quarterly valid routine tests that demonstrate compliance with the effluent limitation in 3.a.(1) above, the permittee may submit a written request to the Department to terminate the plan. The plan shall be terminated upon written verification by the Department that the facility has passed at least four consecutive quarterly valid routine whole effluent toxicity tests. If a test within the sequence of the four is deemed invalid, but is replaced by a repeat valid test initiated within 14 days after the last day of the invalid test, the invalid test will not be counted against the requirement for four consecutive quarterly valid routine tests for the purpose of terminating the plan.
(10) The additional follow-up testing and the plan do not preclude the Department taking enforcement action for whole effluent toxicity failures.

'41, 62-620.620(3)]

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.): N/A

Facility Mixing Zone Details (if applicable):

5. Mixing zones for the following water quality criterion have been granted in Payne Creek, extending downstream (length) and out into (width) the creek at the point of discharge. Compliance with the effluent limitations in Condition I.A.1 above will provide demonstration that the Florida Surface Water Quality Criterion pursuant to 62-302.530, F.A.C. will be achieved at the edge of the approved mixing zones: Notwithstanding the limitations in Condition I.A.1, effluent from this outfall shall no *[62.4-244(1)(a) F.A.C.]*

Water Quality Criterion	Effluent Limitation	Length of Mixing Zone (meters)	Width of Mixing Zone (meters)
pH (SU)	9.92	4.7	2.1
Temperature, Water	98.0°F	34.6	5.9
Temp. Diff. between Sample and Upstm (ΔT)	17.0°F	34.6	5.9
Nitrogen, Ammonia, Total unionized (as NH_3) (MG/L)	0.40	34.9	5.9

Notwithstanding the limitations in Condition I.A.1, effluent from this outfall shall not cause an exceedance of Water Quality Standard (WQS) criteria contained in Chapter 62-302, F.A.C. at the edge of the mixing zones. Compliance with these limitations shall be deemed met without additional monitoring, if effluent sampling results are less than or equal to those provided in Condition I.A.1.

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

Describe previous FYI and WQBEL study:
N/A

Describe previous or current Enforcement Actions (including WLs):
N/A

Describe any violations or problems noted in previous inspection:
N/A

Discuss whether DMR trends within previous five years are improving or declining:
There is not a trend in the DMR data. They are below the permitted limits where appropriate.

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

Richard J. Midulla Generating Station

PART II: Post-FYI Sampling Event Information

Date(s) sample collected: **10 December 2018**	**Sampler(s):** **Pete Wenner**
Temperature (Deg C): **20.5**	**pH (SU):** **8.62**
Dissolved Oxygen (mg/L): **8.42**	**Conductivity (umhos/cm):** **1604**
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):
N/A: Samples collected from alternate sample point which is utilized when facility is not discharging.

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): No discharges for the preceding 12-months.

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:

Appendix B. Explanations of Measurements

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

- **Quality Assurance and Quality Control**

  All field and laboratory methods followed DEP Standard Operating Procedures (see https://floridadep.gov/dear/quality-assurance/content/dep-sops and https://floridadep.gov/dear/florida-dep-laboratory/content/dep-laboratory-quality-assurance-manual-and-sops for details) and met DEP quality assurance/quality control standards (see https://floridadep.gov/dear/quality-assurance).

- **Chemical Analyses of the Effluent**

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

- **Toxicity Bioassays**

  Greater than 50% mortality in an acute toxicity test may constitute an exceedance of 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.

- **Algal Growth Potential (AGP)**

  The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. AGP results within the range 6.10 to 20.0 mg dry wt/L are suggested to be representative of high productivity for freshwaters (Miller et al. 1978). High AGP values may constitute exceedances of 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 ± 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.

- **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 C. Chain of Custody

RQ-2018-10-08-34 **Log-in Checklist** Login Station ID: # 3

Shipping Method: FedEx | UPS | HD | Greyhound Date/Time of Receipt: 12/11/2018 / 10:19

Cooler Temperature*	* All Samples in Cooler Preserved with		Number of Sample Containers in Cooler	Evidence Tape				Tracking # (fill out only if waybill copy is damaged)
				Present?		*Intact?		
	HNO_3	Formalin		Yes	No	Yes	No	
2.9C			11		X			
1.3C			2		X			
2.1C			9		X			
1.8C			6		X			
0.9C			2		X			4385 5034 2808

* HNO3 and Formalin persevered samples do NOT have a temperature requirement. For all others, if the temperature of a cooler is above 6.0 °C (or above 10.0 °C for W-1-4-DIOX), or if Evidence Seal is damaged. Identify the containers in the affected cooler(s) on back of this form.

**Note: If "No" is checked in any of the fields below, fill out the back of this form with additional details (Field ID, Test IDs, etc.) and generate an NCR.

**Chain of Custody/ Field Sheet(s) Included? Yes X No

Micro-Biology Overflow Chain of Custody/ Field Sheet(s) Included? Yes No X Date

CONTAINER CHECK

**Evidence Tape on Bottles? Yes No X If yes, is it intact? Yes No

**Caps on tight? Yes X No **Containers intact? Yes No

**Sufficient Sample Volume: Yes X No

CHLORINE CHECK REQUIRED? (Blue dot on container) Yes ✓ No Init: ABS

Check the Box marked "Yes" or "No" for the Presence of Chlorine. If Cl detected, an NCR is required.					
Analysis	Yes	No	Analysis	Yes	No
W-1,4 DIOX			W-PC-AA-SF		
W-E8321-DI, -MS, -21			W-NP-AA-SF		—
W-BNA (-625, -R)		—	W-PDQUAT		
W-CARB-AA (-CAB-AA-R)			W-PCL-SQ-R		
W-U2060-MS			W-TR-TQ		
W-PCB-R			W-CT-CI-R		
W-PAH (-R)			W-PSNP-TQ		

PRESERVATION CHECK (EXCLUDING SAMPLES SENT TO OVERFLOW LABS, "OV-")

**Acid Preserved Samples: pH ≤ 2.0? Yes X No NA Init: ABS

**W-1-4-DIOX (Green dot on container) preserved to pH < 4.0? Yes No NA X Init: ABS

Coolers Unpacked/Checked by: ABS Date: 12/11/2018 NCRs (Y/N)? —

Event ID: FYI3 Seminole Electric Cooperative SW-DIST-2018-12-11-02 (FYI3) NCR #

Page 1 of 2, 8/07/2018, Form LB-020-1.17

Log-in Checklist

Samples with Incorrect pH Preservation or presence of Chlorine

Field ID	Bottle Test ID(s)	pH / Cl	Action Taken

***Samples in Coolers* with Incorrect Preservation or Damaged Evidence Tape**

Cooler ID	Field ID	Bottle Test ID(s)

Bottles Not Intact

Field ID	Bottle Test ID(s)	Loose Cap	Damaged Cap		Damaged Container		Evidence Tape Not Intact
			CK	BR	CK	BR	

Samples with Insufficient Volume for Analyses

Field ID	Bottle Test ID(s)	Action Taken

Infrared Thermometer ID:	REC_03_2018
pH Paper 0.0 – 3.0 Lot #	
pH Paper 0 – 13 Lot #	215517 EXP:06/01/2020
Chlorine Test Strips Lot #	7226 EXP:2020/07

Additional Comments:

ENCORE SAMPLES

S-VOC-MS samples in Encores must be frozen within 48 hours of collection.

Were Encore samples received? Yes_____ No__x__

Date and time placed in freezer _____

Were all samples placed in freezer within 48 hours of collection? Yes_____If No_____

no, were samples shipped on dry ice? Yes_____No_____

FOR CLEAN LAB USE ONLY – Total Mercury Preservation Check (W-HG-AF;W-HG-AF-F):

Samples preserved within 48 hours? Yes__✓__ No_____

Date and time samples preserved: R.M. Vijayalakshmi 2:53 PM 12/10/2018

Request Number: RQ-2018-10-08-34

FY13 Seminole Electric Cooperative/Payne Creek Generating Station__ Sampling Inspection

Customer: SW-DIST

Project ID: FY13

Florida Department of Environmental Protection

Central Laboratory Submittal Form

Page 1 of 4

last revised Jan 25, 2018

Requester: Tanya Welborn

Field Report Prepared By: PETE WENNER

Collected By: PETE WENNER, LANCE KAUTZ, ILEANA HERNANDEZ

Sampling Agency: FDEP / SWS

Location: COOLING WATER POND	☐ Comp ☑ Grab	Collection (comp begin or grab) Date 12/10/18 Time 1015	Eastern / Central	Composite end Date	Time	Bottle Group(s) (See pg 2): A					
Field ID	Matrix (type, e.g., Salt, Fresh, etc): FRESH	Diss. Oxygen: 8.42	☑ mg/L ☐ % sat	Total Res. Chlorine (mg/L)							
WIN/STORET #	Temp (C): 20.5	pH: 8.62	Sample Depth: 0.1	☐ ft ☑ m	Sp. Conductance (umho/cm): 1604						
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments: Hg SAMPLE & BLANK SHIPPED VIA SEPARATE COOLER & COC								
Location: FIELD BLANK	☐ Comp ☑ Grab	Collection (comp begin or grab) Date 12/10/18 Time 1050	Eastern / Central	Composite end Date	Time	Bottle Group(s): B					
Field ID	Matrix (type, e.g., Salt, Fresh, etc): DI H_2O	Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)							
WIN/STORET #	Temp (C)	pH	Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)						
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments: Hg SAMPLE & BLANK SHIPPED VIA SEPARATE COOLER & COC								
Location: COOLING WATER POND	☐ Comp ☑ Grab	Collection (comp begin or grab) Date 12/10/18 Time 1015	Eastern / Central	Composite end Date	Time	Bottle Group(s): A					
Field ID: 1003-TZ	Matrix (type, e.g., Salt, Fresh, etc): FRESH	Diss. Oxygen: 8.42	☑ mg/L ☐ % sat	Total Res. Chlorine (mg/L)							
~~WIN/STORET #~~ DATE / LOT #: 03 OCTOBER 2018 / 2018 1003-2018	Temp (C): 20.5	pH: 8.62	Sample Depth: 0.1	☐ ft ☑ m	Sp. Conductance (umho/cm): 1604						
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments								
Location: FIELD BLANK	☐ Comp ☑ Grab	Collection (comp begin or grab) Date 12/10/18 Time 1050	Eastern / Central	Composite end Date	Time	Bottle Group(s): B					
Field ID: 1003-TZ	Matrix (type, e.g., Salt, Fresh, etc)	Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)							
~~WIN/STORET #~~ DATE / LOT #: 03 OCTOBER 2018 / 2018 1003-2018	Temp (C)	pH	Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)						
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments: Hg SAMPLE & BLANK SHIPPED VIA SEPARATE COOLER & COC								

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
	12/10/18 / 1700	FEDEX	5		12-11-18 / 10:19

2 biosafety jugs 12.11.18 @ 1125 HJ

Page 2 of 4

Group: A	Bottle Type: AA-AGP	OP-500ML	# of Bottles: 2	Preservative:	ICE	Enter Number of Bottles Sent to Lab	2
Group: A	Bottle Type: ALKALINITY TURBIDITY W-CL-IC W-COLOR W-F W-SO4-IC W-TDS W-TSS	P-1L	# of Bottles: 1	Preservative:	ICE	Enter Number of Bottles Sent to Lab	1
Group: A	Bottle Type: BOD-INHB	P-1L	# of Bottles: 1	Preservative:	ICE	Enter Number of Bottles Sent to Lab	1
Group: A	Bottle Type: BSY-AS-FCD BSY-AS-FFS	BG-4L	# of Bottles: 2	Preservative:	ICE	Enter Number of Bottles Sent to Lab	2
Group: A	Bottle Type: CHLSUITE-W	BP-1L	# of Bottles: 1	Preservative:	ICE	Enter Number of Bottles Sent to Lab	1
Group: A	Bottle Type: OV-ALPHA	P-1L	# of Bottles: 1	Preservative:	HNO3	HNO3 LOT# N92888870 EXP: 03/21/19 nt to Lab	1
Group: A	Bottle Type: OV-CN-W	P-1L	# of Bottles: 1	Preservative:	Ice And NaOH	NaOH LOT# SH8192880 EXP: [illegible] 7/11/19 t to Lab	1
Group: A	Bottle Type: OV-OILGR-W	BG-500ML-WDMTH	# of Bottles: 4	Preservative:	ICE And H2SO4	H2SO4 LOT# SA8197090 EXP: 07/16/2019 t to Lab	4
Group: A	Bottle Type: OV-RAD226 OV-RAD228	P-1L	# of Bottles: 1	Preservative:	HNO3	Enter Number of Bottles Sent to Lab HNO3 LOT# N92888870 EXP: 03/21/19	1
Group: A	Bottle Type: W-BNA	BG-1L	# of Bottles: 4	Preservative:	ICE	Enter Number of Bottles Sent to Lab	4
Group: A	Bottle Type: W-HG-AF	SHIPPED BY HG GROUP	# of Bottles: 1	Preservative:	Post-preserved with HCL in the Lab	Enter Number of Bottles Sent to Lab	1

Page 3 of 4

Group: A	Bottle Type: W-ICP W-ICPMS	P-500ML	# of Bottles: 1	Preservative:	HNO3	Enter Number of Bottles Sent to Lab 1
Group: A	Bottle Type: W-NH3 W-NO2NO3 W-S-A-TP W-TKN W-TOC	P-500ML	# of Bottles: 1	Preservative:	ICE And H2SO4	Enter Number of Bottles Sent to Lab 1 H2SO4 LOT# SA8187650 EXP: 07/16/2019
Group: A	Bottle Type: W-NP-AA-SF	BG-1L	# of Bottles: 4	Preservative:	ICE	Enter Number of Bottles Sent to Lab 4
Group: A	Bottle Type: W-PO4-F	P-125ML	# of Bottles: 1	Preservative:	FILTER-ICE	Enter Number of Bottles Sent to Lab 1
Group: B	Bottle Type: ALKALINITY TURBIDITY W-CL-IC W-COLOR W-F W-SO4-IC	P-500ML	# of Bottles: 1	Preservative:	ICE	Enter Number of Bottles Sent to Lab 1
Group: B	Bottle Type: OV-ALPHA	P-1L	# of Bottles: 1	Preservative:	HNO3	Enter Number of Bottles Sent to Lab 1
Group: B	Bottle Type: OV-CN-W	P-1L	# of Bottles: 1	Preservative:	Ice And NaOH	NaOH LOT# SA8192880 EXP: 7/24/2019 7/4/19 t to Lab 1
Group: B	Bottle Type: OV-OILGR-W	BG-500ML-WDMTH	# of Bottles: 2	Preservative:	ICE And H2SO4	H2SO4 LOT# SA8197690 EXP: 07/16/2019 nt to Lab 2
Group: B	Bottle Type: OV-RAD226 OV-RAD228	P-1L	# of Bottles: 1	Preservative:	HNO3	Enter Number of Bottles Sent to Lab 1 HNO3 LOT# N38382870 EXP: 03/21/19
Group: B	Bottle Type: W-BNA	BG-1L	# of Bottles: 2	Preservative:	ICE	Enter Number of Bottles Sent to Lab 2
Group: B	Bottle Type:	SHIPPED BY HG GROUP	# of Bottles: 1	Preservative:	Post-preserved with HCL in the Lab	Enter Number of Bottles Sent to Lab 1 SHIPPED ON SEPARATE COOLER & COC 1

Page 4 of 4

Group: B	Bottle Type: SHIPPED BY HG GROUP	# of Bottles: 1	Preservative:	Post-preserved with HCL in the Lab	Enter Number of Bottles Sent to Lab	1	
W-HG-AF					SHIPPED IN SEPARATE COOLER & COC		
Group: B	Bottle Type: P-500ML	# of Bottles: 1	Preservative:	HNO3	Enter Number of Bottles Sent to Lab	1	
W-ICP W-ICPMS					HNO3 LOT# N38080870 EXP: 03/21/19		
Group: B	Bottle Type: P-500ML	# of Bottles: 1	Preservative:	ICE And H2SO4	Enter Number of Bottles Sent to Lab	1	
W-NH3 W-NO2NO3 W-S-A-TP W-TKN W-TOC					H2SO4 LOT# SA3197090 EXP: 07/15/2019		
Group: B	Bottle Type: BG-1L	# of Bottles: 2	Preservative:	ICE	Enter Number of Bottles Sent to Lab	2	
W-NP-AA-SF							
Group: B	Bottle Type: P-125ML	# of Bottles: 1	Preservative:	FILTER-ICE	Enter Number of Bottles Sent to Lab	1	
W-PO4-F							

Request Number: RQ-2018-10-08-34

FYI3 Seminole Electric Cooperative/Payne Creek Generating Station__ Sampling Inspection

Customer: SW-DIST

Project ID: FYI3

Florida Department of Environmental Protection
Central Laboratory Submittal Form

last revised Jan 25, 2018

Requester: Tanya Welborn

Field Report Prepared By: PETE WELLVER

Collected By: PETE WELLVER, LANCE KAUTZ, ILIANA HERNANDEZ

Sampling Agency: FPEP / SWD

Location: COOLING WATER POND	☐ Comp ☑ Grab	Collection (comp begin or grab) Date 12/10/18 Time 1015	Eastern / Central	Composite end Date	Time	Bottle Group(s) (See pg 2): A			
Field ID: 1003-T2	Matrix (type, e.g., Salt, Fresh, etc): FRESH	Diss. Oxygen: 8.42 ☑ mg/L ☐ % sat	Total Res. Chlorine (mg/L)						
~~WIN/STORET #~~ DATE/LOT #: 03 OCTOBER 2018 / 20181003-2018	Temp (C): 20.5	pH: 8.62	Sample Depth: 0.1 ☐ ft ☑ m	Sp. Conductance (umho/cm): 1604					
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments: Hg SAMPLE						
Location: FIELD BLANK	☐ Comp ☑ Grab	Collection (comp begin or grab) Date 12/10/18 Time 1050	Eastern / Central	Composite end Date	Time	Bottle Group(s): B			
Field ID: 1003-T2	Matrix (type, e.g., Salt, Fresh, etc)	Diss. Oxygen ☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)						
~~WIN/STORET #~~ DATE/LOT #: 03 OCTOBER 2018 / 20181003-2018	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)					
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments: Hg FIELD BLANK						
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern / Central	Composite end Date	Time	Bottle Group(s)			
Field ID	Matrix (type, e.g., Salt, Fresh, etc)	Diss. Oxygen ☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)						
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)					
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments						
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern / Central	Composite end Date	Time	Bottle Group(s)			
Field ID	Matrix (type, e.g., Salt, Fresh, etc)	Diss. Oxygen ☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)						
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)					
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments						

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
	12/10/18 / 1700	FEDEX	1	Tyler Reynolds	12/11/18 @ 10:19am

Page 2 of 4

Group: A	Bottle Type: AA-AGP	OP-500ML	# of Bottles: 2	Preservative:	ICE	Enter Number of Bottles Sent to Lab		2
Group: A	Bottle Type: ALKALINITY TURBIDITY W-CL-IC W-COLOR W-F W-SO4-IC W-TDS W-TSS	P-1L	# of Bottles: 1	Preservative:	ICE	Enter Number of Bottles Sent to Lab		1
Group: A	Bottle Type: BOD-INHB	P-1L	# of Bottles: 1	Preservative:	ICE	Enter Number of Bottles Sent to Lab		1
Group: A	Bottle Type: BSY-AS-FCD BSY-AS-FFS	BG-4L	# of Bottles: 2	Preservative:	ICE	Enter Number of Bottles Sent to Lab		2
Group: A	Bottle Type: CHLSUITE-W	BP-1L	# of Bottles: 1	Preservative:	ICE	Enter Number of Bottles Sent to Lab		1
Group: A	Bottle Type: OV-ALPHA	P-1L	# of Bottles: 1	Preservative:	HNO3	HNO3 LOT# NA8888970 EXP: 03/21/19	nt to Lab	1
Group: A	Bottle Type: OV-CN-W	P-1L	# of Bottles: 1	Preservative:	Ice And NaOH	NaOH LOT# SH8192089 EXP: [illegible] 7/11/19	t to Lab	1
Group: A	Bottle Type: OV-OILGR-W	BG-500ML-WDMTH	# of Bottles: 4	Preservative:	ICE And H2SO4	H2SO4 LOT# SA8197890 EXP: 07/16/2019	t to Lab	4
Group: A	Bottle Type: OV-RAD226 OV-RAD228	P-1L	# of Bottles: 1	Preservative:	HNO3	Enter Number of Bottles Sent to Lab HNO3 LOT# NA8888970 EXP: 03/21/19		1
Group: A	Bottle Type: W-BNA	BG-1L	# of Bottles: 4	Preservative:	ICE	Enter Number of Bottles Sent to Lab		4
Group: A	Bottle Type: W-HG-AF	SHIPPED BY HG GROUP	# of Bottles: 1	Preservative:	Post-preserved with HCL in the Lab	Enter Number of Bottles Sent to Lab		1

Page 3 of 4

Group: A	Bottle Type: W-ICP W-ICPMS	P-500ML	# of Bottles: 1	Preservative:	HNO3	Enter Number of Bottles Sent to Lab	1
Group: A	Bottle Type: W-NH3 W-NO2NO3 W-S-A-TP W-TKN W-TOC	P-500ML	# of Bottles: 1	Preservative:	ICE And H2SO4	Enter Number of Bottles Sent to Lab H2SO4 LOT# SA3167060 EXP: 07/16/2019	1
Group: A	Bottle Type: W-NP-AA-SF	BG-1L	# of Bottles: 4	Preservative:	ICE	Enter Number of Bottles Sent to Lab	4
Group: A	Bottle Type: W-PO4-F	P-125ML	# of Bottles: 1	Preservative:	FILTER-ICE	Enter Number of Bottles Sent to Lab	1
Group: B	Bottle Type: ALKALINITY TURBIDITY W-CL-IC W-COLOR W-F W-SO4-IC	P-500ML	# of Bottles: 1	Preservative:	ICE	Enter Number of Bottles Sent to Lab	1
Group: B	Bottle Type: OV-ALPHA	P-1L	# of Bottles: 1	Preservative:	HNO3	Enter Number of Bottles Sent to Lab	1
Group: B	Bottle Type: OV-CN-W	P-1L	# of Bottles: 1	Preservative:	Ice And NaOH	NaOH LOT# SA3192660 EXP: 7/4/19 t to Lab	1
Group: B	Bottle Type: OV-OILGR-W	BG-500ML-WDMTH	# of Bottles: 2	Preservative:	ICE And H2SO4	H2SO4 LOT# SA3167060 EXP: 07/16/2019 nt to Lab	2
Group: B	Bottle Type: OV-RAD226 OV-RAD228	P-1L	# of Bottles: 1	Preservative:	HNO3	Enter Number of Bottles Sent to Lab HNO3 LOT# N9698878 EXP: 03/21/19	1
Group: B	Bottle Type: W-BNA	BG-1L	# of Bottles: 2	Preservative:	ICE	Enter Number of Bottles Sent to Lab	2
Group: B	Bottle Type:	SHIPPED BY HG GROUP	# of Bottles: 1	Preservative:	Post-preserved with HCL in the Lab	Enter Number of Bottles Sent to Lab	1

Group: B	Bottle Type: SHIPPED BY HG GROUP	# of Bottles: 1	Preservative:	Post-preserved with HCL in the Lab	Enter Number of Bottles Sent to Lab		1
	W-HG-AF						
Group: B	Bottle Type: P-500ML	# of Bottles: 1	Preservative:	HNO3	Enter Number of Bottles Sent to Lab	HNO3 LOT# NA8038976 EXP: 03/21/19	1
	W-ICP						
	W-ICPMS						
Group: B	Bottle Type: P-500ML	# of Bottles: 1	Preservative:	ICE And H2SO4	Enter Number of Bottles Sent to Lab	H2SO4 LOT# SA8197098 EXP: 07/16/2019	1
	W-NH3						
	W-NO2NO3						
	W-S-A-TP						
	W-TKN						
	W-TOC						
Group: B	Bottle Type: BG-1L	# of Bottles: 2	Preservative:	ICE	Enter Number of Bottles Sent to Lab		2
	W-NP-AA-SF						
Group: B	Bottle Type: P-125ML	# of Bottles: 1	Preservative:	FILTER-ICE	Enter Number of Bottles Sent to Lab		1
	W-PO4-F						

Appendix D. Chemical Analysis

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
12/10/2018	Cooling Pond	AGP/LN	Algal Growth Potential	16.3 A	mg DryWt/L	0.3	0.9
12/10/2018	Cooling Pond	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	110 A	ug/L	2.1	6.4
12/10/2018	Cooling Pond	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day	6.8	mg/L	0.2	2
12/10/2018	Cooling Pond	Chlorophyll/Grain Size/BOD	Phaeophytin-a	22 A	ug/L	2.2	6.8
12/10/2018	Cooling Pond	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	130 A	ug/L	1.5	4.5
12/10/2018	Cooling Pond	Toxicology	Bioassay-Acute-Screen-FW-Fish, LC50	100 L	LC50		
12/10/2018	Cooling Pond	Toxicology	Bioassay-Acute-Screen-FW-C.dubia, LC50	100 L	LC50		
12/10/2018	Cooling Pond	Metals	Sodium	187	mg/L	2.5	10
12/10/2018	Cooling Pond	Metals	Magnesium	79.1	mg/L	0.04	0.16
12/10/2018	Cooling Pond	Metals	Beryllium	0.011 I	ug/L	0.01	0.04
12/10/2018	Cooling Pond	Metals	Selenium	0.20 U	ug/L	0.2	0.8
12/10/2018	Cooling Pond	Metals	Copper	0.20 U	ug/L	0.2	0.8
12/10/2018	Cooling Pond	Metals	Calcium	91.5	mg/L	0.075	0.3
12/10/2018	Cooling Pond	Metals	Aluminum	251	ug/L	3	12
12/10/2018	Cooling Pond	Metals	Silver	0.010 U	ug/L	0.01	0.04
12/10/2018	Cooling Pond	Metals	Zinc	5.0 U	ug/L	5	20
12/10/2018	Cooling Pond	Metals	Arsenic	0.94	ug/L	0.05	0.2
12/10/2018	Cooling Pond	Metals	Iron	30 U	ug/L	30	120
12/10/2018	Cooling Pond	Metals	Lead	0.11 I	ug/L	0.05	0.2
12/10/2018	Cooling Pond	Metals	Cadmium	0.020 U	ug/L	0.02	0.08
12/10/2018	Cooling Pond	Metals	Potassium	4.2	mg/L	0.3	1.2
12/10/2018	Cooling Pond	Metals	Mercury	1.5	ng/L	0.1	0.3
12/10/2018	Cooling Pond	Metals	Nickel	0.20 U	ug/L	0.2	0.8
12/10/2018	Cooling Pond	Metals	Chromium	0.40 U	ug/L	0.4	1.6
12/10/2018	Cooling Pond	Nutrients	TSS	22	mg/L	3.3	17
12/10/2018	Cooling Pond	Nutrients	Color (true)	14	PCU	2.5	6
12/10/2018	Cooling Pond	Nutrients	Kjeldahl Nitrogen	3.1	mg N/L	0.08	0.2
12/10/2018	Cooling Pond	Nutrients	Sulfate	560	mg SO4/L	2	6
12/10/2018	Cooling Pond	Nutrients	TDS	1.11E+03	mg/L	30	50

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
12/10/2018	Cooling Pond	Nutrients	Ammonia-N	0.009	mg N/L	0.002	0.005
12/10/2018	Cooling Pond	Nutrients	O-Phosphate-P	0.005 I	mg P/L	0.004	0.01
12/10/2018	Cooling Pond	Nutrients	Turbidity	8.7	NTU	0.1	0.13
12/10/2018	Cooling Pond	Nutrients	Fluoride	3.6	mg F/L	0.035	0.1
12/10/2018	Cooling Pond	Nutrients	Chloride	120	mg Cl/L	2	6
12/10/2018	Cooling Pond	Nutrients	Organic Carbon	20	mg C/L	0.5	1
12/10/2018	Cooling Pond	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
12/10/2018	Cooling Pond	Nutrients	Total-P	0.21	mg P/L	0.005	0.05
12/10/2018	Cooling Pond	Nutrients	Total Alkalinity	133	mg CaCO3/L	0.65	2.5
12/10/2018	Cooling Pond	Overflow	Alpha-Counting Error	7.84	pCi/L	8.77	
12/10/2018	Cooling Pond	Overflow	Radium 226	3.08	pCi/L	0.115	
12/10/2018	Cooling Pond	Overflow	Alpha, Total	24.0	pCi/L	8.77	
12/10/2018	Cooling Pond	Overflow	Radium 228-Counting Error	0.370	pCi/L	0.589	
12/10/2018	Cooling Pond	Overflow	HEM	1.5 U	mg/L	1.5	5.4
12/10/2018	Cooling Pond	Overflow	Radium 228	0.589 U	pCi/L	0.589	
12/10/2018	Cooling Pond	Overflow	Cyanide	0.0025 UJ	mg/L	0.0025	0.01
12/10/2018	Cooling Pond	Overflow	Radium 226-Counting Error	0.350	pCi/L	0.115	
12/10/2018	Cooling Pond	Pesticides	Bromacil	0.038 U	ug/L	0.038	0.15
12/10/2018	Cooling Pond	Pesticides	Diazinon	0.0094 U	ug/L	0.0094	0.038
12/10/2018	Cooling Pond	Pesticides	Disulfoton	0.0047 U	ug/L	0.0047	0.019
12/10/2018	Cooling Pond	Pesticides	Ethion	0.0094 U	ug/L	0.0094	0.038
12/10/2018	Cooling Pond	Pesticides	Parathion Methyl	0.0094 U	ug/L	0.0094	0.038
12/10/2018	Cooling Pond	Pesticides	Simazine	0.0094 U	ug/L	0.0094	0.038
12/10/2018	Cooling Pond	Pesticides	Ametryn	0.0094 U	ug/L	0.0094	0.038
12/10/2018	Cooling Pond	Pesticides	Azinphos Methyl	0.085 U	ug/L	0.085	0.34
12/10/2018	Cooling Pond	Pesticides	Butylate	0.047 U	ug/L	0.047	0.19
12/10/2018	Cooling Pond	Pesticides	Metalaxyl	0.17 UJ	ug/L	0.17	0.68
12/10/2018	Cooling Pond	Pesticides	Metribuzin	0.047 U	ug/L	0.047	0.19
12/10/2018	Cooling Pond	Pesticides	Naled	0.075 U	ug/L	0.075	0.3
12/10/2018	Cooling Pond	Pesticides	Prometryn	0.019 U	ug/L	0.019	0.075
12/10/2018	Cooling Pond	Pesticides	Atrazine Desisopropyl	0.0094 U	ug/L	0.0094	0.038
12/10/2018	Cooling Pond	Pesticides	Malathion	0.0094 U	ug/L	0.0094	0.038
12/10/2018	Cooling Pond	Pesticides	Prometon	0.019 U	ug/L	0.019	0.075
12/10/2018	Cooling Pond	Pesticides	Chlorpyrifos Methyl	0.0094 U	ug/L	0.0094	0.038

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
12/10/2018	Cooling Pond	Pesticides	Ethoprop	0.0047 U	ug/L	0.0047	0.019
12/10/2018	Cooling Pond	Pesticides	Mevinphos	0.0094 U	ug/L	0.0094	0.038
12/10/2018	Cooling Pond	Pesticides	Parathion Ethyl	0.019 U	ug/L	0.019	0.075
12/10/2018	Cooling Pond	Pesticides	Atrazine	0.0094 U	ug/L	0.0094	0.038
12/10/2018	Cooling Pond	Pesticides	Metolachlor	0.11 U	ug/L	0.11	0.45
12/10/2018	Cooling Pond	Pesticides	Fonofos	0.0094 U	ug/L	0.0094	0.038
12/10/2018	Cooling Pond	Pesticides	Hexazinone	0.066 UJ	ug/L	0.066	0.26
12/10/2018	Cooling Pond	Pesticides	Norflurazon	0.047 U	ug/L	0.047	0.19
12/10/2018	Cooling Pond	Pesticides	Phorate	0.0047 U	ug/L	0.0047	0.019
12/10/2018	Cooling Pond	Pesticides	Alachlor	0.056 U	ug/L	0.056	0.23
12/10/2018	Cooling Pond	Pesticides	Demeton	0.023 U	ug/L	0.023	0.09
12/10/2018	Cooling Pond	Pesticides	Atrazine Desethyl	0.0094 UJ	ug/L	0.0094	0.038
12/10/2018	Cooling Pond	Pesticides	Chlorpyrifos Ethyl	0.0094 U	ug/L	0.0094	0.038
12/10/2018	Cooling Pond	Pesticides	Fenamiphos	0.028 U	ug/L	0.028	0.11
12/10/2018	Cooling Pond	Priority Organic Pollutants	2,4-Dichlorophenol	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	Nitrobenzene	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	Fluorene	0.024 U	ug/L	0.024	0.095
12/10/2018	Cooling Pond	Priority Organic Pollutants	Di-n-octyl phthalate	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.048 UJ	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	4-Nitrophenol	9.5 U	ug/L	9.5	38
12/10/2018	Cooling Pond	Priority Organic Pollutants	Acenaphthylene	0.024 U	ug/L	0.024	0.095
12/10/2018	Cooling Pond	Priority Organic Pollutants	Benzo(b)fluoranthene	0.024 U	ug/L	0.024	0.095
12/10/2018	Cooling Pond	Priority Organic Pollutants	Chrysene	0.024 U	ug/L	0.024	0.095

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
12/10/2018	Cooling Pond	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.024 U	ug/L	0.024	0.095
12/10/2018	Cooling Pond	Priority Organic Pollutants	2,6-Dinitrotoluene	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	2-Chloronaphthalene	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	2-Nitrophenol	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	3,3'-Dichlorobenzidine	9.5 UJ	ug/L	9.5	38
12/10/2018	Cooling Pond	Priority Organic Pollutants	Di-n-butyl phthalate	1.9 U	ug/L	1.9	7.6
12/10/2018	Cooling Pond	Priority Organic Pollutants	Fluoranthene	0.024 U	ug/L	0.024	0.095
12/10/2018	Cooling Pond	Priority Organic Pollutants	Naphthalene	0.095 U	ug/L	0.095	0.38
12/10/2018	Cooling Pond	Priority Organic Pollutants	Pentachlorophenol	0.48 U	ug/L	0.48	1.9
12/10/2018	Cooling Pond	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	2,4-Dinitrophenol	9.5 U	ug/L	9.5	38
12/10/2018	Cooling Pond	Priority Organic Pollutants	Anthracene	0.024 U	ug/L	0.024	0.095
12/10/2018	Cooling Pond	Priority Organic Pollutants	Benzo(a)anthracene	0.024 U	ug/L	0.024	0.095
12/10/2018	Cooling Pond	Priority Organic Pollutants	Benzo(k)fluoranthene	0.024 U	ug/L	0.024	0.095
12/10/2018	Cooling Pond	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	4.8 U	ug/L	4.8	19
12/10/2018	Cooling Pond	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	0.095 U	ug/L	0.095	0.38

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
12/10/2018	Cooling Pond	Priority Organic Pollutants	Phenanthrene	0.095 U	ug/L	0.095	0.38
12/10/2018	Cooling Pond	Priority Organic Pollutants	2,4-Dimethylphenol	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	Benzidine	9.5 U	ug/L	9.5	38
12/10/2018	Cooling Pond	Priority Organic Pollutants	Benzo(a)pyrene	0.024 U	ug/L	0.024	0.095
12/10/2018	Cooling Pond	Priority Organic Pollutants	Dimethyl phthalate	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	Hexachlorobutadiene	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.048 UJ	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	Hexachloroethane	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	2-Chlorophenol	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.024 U	ug/L	0.024	0.095
12/10/2018	Cooling Pond	Priority Organic Pollutants	Butyl benzyl phthalate	0.95 U	ug/L	0.95	3.8
12/10/2018	Cooling Pond	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.024 U	ug/L	0.024	0.095
12/10/2018	Cooling Pond	Priority Organic Pollutants	Diethyl phthalate	1.9 U	ug/L	1.9	7.6
12/10/2018	Cooling Pond	Priority Organic Pollutants	Hexachlorobenzene	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	Isophorone	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	ug/L	1.9	7.6
12/10/2018	Cooling Pond	Priority Organic Pollutants	Pyrene	0.095 U	ug/L	0.095	0.38
12/10/2018	Cooling Pond	Priority Organic Pollutants	2,4-Dinitrotoluene	0.048 U	ug/L	0.048	0.19

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
12/10/2018	Cooling Pond	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	ug/L	2.9	11
12/10/2018	Cooling Pond	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Priority Organic Pollutants	Acenaphthene	0.024 U	ug/L	0.024	0.095
12/10/2018	Cooling Pond	Priority Organic Pollutants	Phenol	0.048 U	ug/L	0.048	0.19
12/10/2018	Cooling Pond	Nutrients	Specific Conductance	1604	umhos/cm		
12/10/2018	Cooling Pond	Nutrients	Sample Depth	0.1	m		
12/10/2018	Cooling Pond	Nutrients	Dissolved Oxygen	8.42	mg/L		
12/10/2018	Cooling Pond	Nutrients	Temperature	20.5	C		
12/10/2018	Cooling Pond	Nutrients	pH	8.62			
12/10/2018	Blank	Metals	Zinc	5.0 U	ug/L	5	20
12/10/2018	Blank	Metals	Sodium	0.50 U	mg/L	0.5	2
12/10/2018	Blank	Metals	Calcium	0.075 U	mg/L	0.075	0.3
12/10/2018	Blank	Metals	Cadmium	0.020 U	ug/L	0.02	0.08
12/10/2018	Blank	Metals	Copper	0.20 U	ug/L	0.2	0.8
12/10/2018	Blank	Metals	Aluminum	3.0 U	ug/L	3	12
12/10/2018	Blank	Metals	Selenium	0.20 U	ug/L	0.2	0.8
12/10/2018	Blank	Metals	Silver	0.010 U	ug/L	0.01	0.04
12/10/2018	Blank	Metals	Chromium	0.40 U	ug/L	0.4	1.6
12/10/2018	Blank	Metals	Nickel	0.20 U	ug/L	0.2	0.8
12/10/2018	Blank	Metals	Beryllium	0.010 U	ug/L	0.01	0.04
12/10/2018	Blank	Metals	Potassium	0.30 U	mg/L	0.3	1.2
12/10/2018	Blank	Metals	Mercury	0.10 U	ng/L	0.1	0.3
12/10/2018	Blank	Metals	Arsenic	0.050 U	ug/L	0.05	0.2
12/10/2018	Blank	Metals	Lead	0.050 U	ug/L	0.05	0.2
12/10/2018	Blank	Metals	Magnesium	0.040 U	mg/L	0.04	0.16
12/10/2018	Blank	Metals	Iron	30 U	ug/L	30	120
12/10/2018	Blank	Nutrients	Turbidity	0.10 I	NTU	0.1	0.13
12/10/2018	Blank	Nutrients	Ammonia-N	0.002 U	mg N/L	0.002	0.005
12/10/2018	Blank	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.004	0.01
12/10/2018	Blank	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.1
12/10/2018	Blank	Nutrients	Sulfate	0.20 U	mg SO4/L	0.2	0.6

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
12/10/2018	Blank	Nutrients	Color (true)	2.5 U	PCU	2.5	6
12/10/2018	Blank	Nutrients	Chloride	0.20 U	mg Cl/L	0.2	0.6
12/10/2018	Blank	Nutrients	Total-P	0.002 U	mg P/L	0.002	0.005
12/10/2018	Blank	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.08	0.2
12/10/2018	Blank	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
12/10/2018	Blank	Nutrients	Organic Carbon	0.50 U	mg C/L	0.5	1
12/10/2018	Blank	Nutrients	Total Alkalinity	0.65 U	mg CaCO3/L	0.65	2.5
12/10/2018	Blank	Overflow	Cyanide	0.0045 I	mg/L	0.0025	0.01
12/10/2018	Blank	Overflow	Alpha, Total	0.850 U	pCi/L	0.85	
12/10/2018	Blank	Overflow	Alpha-Counting Error	0.481	pCi/L	0.85	
12/10/2018	Blank	Overflow	HEM	1.6 U	mg/L	1.6	5.7
12/10/2018	Blank	Overflow	Radium 226	0.0847 U	pCi/L	0.0847	
12/10/2018	Blank	Overflow	Radium 228-Counting Error	0.214	pCi/L	0.418	
12/10/2018	Blank	Overflow	Radium 226-Counting Error	0.0319	pCi/L	0.0847	
12/10/2018	Blank	Overflow	Radium 228	0.418 U	pCi/L	0.418	
12/10/2018	Blank	Pesticides	Atrazine	0.0098 U	ug/L	0.0098	0.039
12/10/2018	Blank	Pesticides	Chlorpyrifos Methyl	0.0098 U	ug/L	0.0098	0.039
12/10/2018	Blank	Pesticides	Fenamiphos	0.029 U	ug/L	0.029	0.12
12/10/2018	Blank	Pesticides	Metolachlor	0.12 U	ug/L	0.12	0.47
12/10/2018	Blank	Pesticides	Mevinphos	0.0098 U	ug/L	0.0098	0.039
12/10/2018	Blank	Pesticides	Ametryn	0.0098 U	ug/L	0.0098	0.039
12/10/2018	Blank	Pesticides	Demeton	0.023 U	ug/L	0.023	0.094
12/10/2018	Blank	Pesticides	Diazinon	0.0098 U	ug/L	0.0098	0.039
12/10/2018	Blank	Pesticides	Norflurazon	0.049 U	ug/L	0.049	0.2
12/10/2018	Blank	Pesticides	Azinphos Methyl	0.088 U	ug/L	0.088	0.35
12/10/2018	Blank	Pesticides	Alachlor	0.059 U	ug/L	0.059	0.23
12/10/2018	Blank	Pesticides	Butylate	0.049 U	ug/L	0.049	0.2
12/10/2018	Blank	Pesticides	Naled	0.078 U	ug/L	0.078	0.31
12/10/2018	Blank	Pesticides	Parathion Ethyl	0.020 U	ug/L	0.02	0.078
12/10/2018	Blank	Pesticides	Parathion Methyl	0.0098 U	ug/L	0.0098	0.039
12/10/2018	Blank	Pesticides	Atrazine Desisopropyl	0.0098 U	ug/L	0.0098	0.039
12/10/2018	Blank	Pesticides	Disulfoton	0.0049 U	ug/L	0.0049	0.02
12/10/2018	Blank	Pesticides	Metribuzin	0.049 U	ug/L	0.049	0.2
12/10/2018	Blank	Pesticides	Phorate	0.0049 U	ug/L	0.0049	0.02

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
12/10/2018	Blank	Pesticides	Atrazine Desethyl	0.0098 UJ	ug/L	0.0098	0.039
12/10/2018	Blank	Pesticides	Bromacil	0.039 U	ug/L	0.039	0.16
12/10/2018	Blank	Pesticides	Hexazinone	0.068 UJ	ug/L	0.068	0.27
12/10/2018	Blank	Pesticides	Malathion	0.0098 U	ug/L	0.0098	0.039
12/10/2018	Blank	Pesticides	Metalaxyl	0.18 UJ	ug/L	0.18	0.7
12/10/2018	Blank	Pesticides	Prometryn	0.020 U	ug/L	0.02	0.078
12/10/2018	Blank	Pesticides	Simazine	0.0098 U	ug/L	0.0098	0.039
12/10/2018	Blank	Pesticides	Chlorpyrifos Ethyl	0.0098 U	ug/L	0.0098	0.039
12/10/2018	Blank	Pesticides	Ethion	0.0098 U	ug/L	0.0098	0.039
12/10/2018	Blank	Pesticides	Ethoprop	0.0049 U	ug/L	0.0049	0.02
12/10/2018	Blank	Pesticides	Fonofos	0.0098 U	ug/L	0.0098	0.039
12/10/2018	Blank	Pesticides	Prometon	0.020 U	ug/L	0.02	0.078
12/10/2018	Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	Hexachlorobenzene	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.024 U	ug/L	0.024	0.097
12/10/2018	Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	Diethyl phthalate	1.9 U	ug/L	1.9	7.8
12/10/2018	Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.049 UJ	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.024 U	ug/L	0.024	0.097
12/10/2018	Blank	Priority Organic Pollutants	Nitrobenzene	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	ug/L	2.9	12
12/10/2018	Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	4-Nitrophenol	9.7 U	ug/L	9.7	39
12/10/2018	Blank	Priority Organic Pollutants	Benzidine	9.7 U	ug/L	9.7	39

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
12/10/2018	Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.049 UJ	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.024 U	ug/L	0.024	0.097
12/10/2018	Blank	Priority Organic Pollutants	Dimethyl phthalate	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	Hexachloroethane	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	Isophorone	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	Fluoranthene	0.024 U	ug/L	0.024	0.097
12/10/2018	Blank	Priority Organic Pollutants	Anthracene	0.024 U	ug/L	0.024	0.097
12/10/2018	Blank	Priority Organic Pollutants	Acenaphthylene	0.024 U	ug/L	0.024	0.097
12/10/2018	Blank	Priority Organic Pollutants	2,4-Dinitrophenol	9.7 U	ug/L	9.7	39
12/10/2018	Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	Pyrene	0.097 U	ug/L	0.097	0.39
12/10/2018	Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	Di-n-butyl phthalate	1.9 U	ug/L	1.9	7.8
12/10/2018	Blank	Priority Organic Pollutants	Hexachlorobutadiene	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	2-Nitrophenol	0.049 U	ug/L	0.049	0.19

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
12/10/2018	Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	9.7 UJ	ug/L	9.7	39
12/10/2018	Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.024 U	ug/L	0.024	0.097
12/10/2018	Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	4.9 U	ug/L	4.9	19
12/10/2018	Blank	Priority Organic Pollutants	Fluorene	0.024 U	ug/L	0.024	0.097
12/10/2018	Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	Pentachlorophenol	0.49 U	ug/L	0.49	1.9
12/10/2018	Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	2,4-Dimethylphenol	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	Acenaphthene	0.024 U	ug/L	0.024	0.097
12/10/2018	Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.024 U	ug/L	0.024	0.097
12/10/2018	Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.024 U	ug/L	0.024	0.097
12/10/2018	Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.024 U	ug/L	0.024	0.097
12/10/2018	Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	Naphthalene	0.097 U	ug/L	0.097	0.39
12/10/2018	Blank	Priority Organic Pollutants	Phenol	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	2-Chlorophenol	0.049 U	ug/L	0.049	0.19
12/10/2018	Blank	Priority Organic Pollutants	Phenanthrene	0.097 U	ug/L	0.097	0.39
12/10/2018	Blank	Priority Organic Pollutants	Butyl benzyl phthalate	0.97 U	ug/L	0.97	3.9

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
12/10/2018	Blank	Priority Organic Pollutants	Chrysene	0.024 U	ug/L	0.024	0.097
12/10/2018	Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	ug/L	1.9	7.8
12/10/2018	Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	0.097 U	ug/L	0.097	0.39