Effluent Quality Assessment of

Foley Cellulose

Taylor County

NPDES # FL0000876

Sampled March 12, 2018

February 2019

Biology Program

DEP Laboratory

Division of Environmental Assessment and Restoration

DEP Laboratory Quality Manual

NELAC Certification No. E31780

CONTENTS

Summary of Results

Methods

Sampling Location Map

Results

Literature Cited

Tables

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

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

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

Table 4. 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.

Appendices

Appendix A. Facility Summary

Appendix B. Explanation of measurements

Appendix C. Chemical Analyses of Effluent

EPA End Sheet

Summary of Results

The effluent water quality samples, collected on March 12, 2018, exceeded applicable water quality standards and/or permit conditions for carbonaceous oxygen demand, copper, iron, and total phosphorous. The effluent sample was not acutely toxic to either test species during the 96-hour acute definitive bioassays. The effluent AGP result was greater than the threshold suggested to be representative of high productivity for freshwater. This suggests that the effluent has the potential to contribute nutrients to the receiving water.

Facility Overview

Foley Cellulose is a Dissolving Kraft Pulp mill. There was an associated cellulosic bio-refinery pilot plant (dismantled and no longer in use) for the purpose of efficiently reducing ammonia nitrogen and preventing loss of existing settled solids. At the time of this sampling event, Foley Cellulose was in the process of modifying their existing wastewater treatment based on the pilot plant.

Methods

Effluent grab samples for toxicity testing, biological analyses, and chemical analyses for this facility were collected on March 12, 2018. All samples were collected from the EFF-01 NPDES sampling point for Outfall D-001 by Kristen Sapp and Brittany Dion (DEP Northeast Regional Operation Center) (see Map).

This facility is currently being monitored under AO 011-NED for process improvements, wastewater treatment modifications, permit interim effluent limits, effluent transmission pipe, and oxygen injection plan of study. These interim limits are reflected in the effluent permit limits listed in Tables 1, 2, 3, and 4. See the Facility Summary (Appendix A) for a description of the facility, summary of permit limits, Administrative Order (AO), Consent Order (CO), and Discharge Monitoring Report (DMR) information.

Receiving water for this facility is the Fenholloway River; however, the facility is in the process of moving the discharge location. The new permitted discharge will fall within the Fenholloway River Estuary portion of the Big Bend and Apalachee Bay Estuary Nutrient Watershed Region and has site-specific interpretations of the Narrative Nutrient Criterion (NNC). This FYI event can only provide single sample results; therefore, compliance should be determined with additional sampling events. http://ca.dep.state.fl.us/mapdirect/?focus=nutrientcriteria

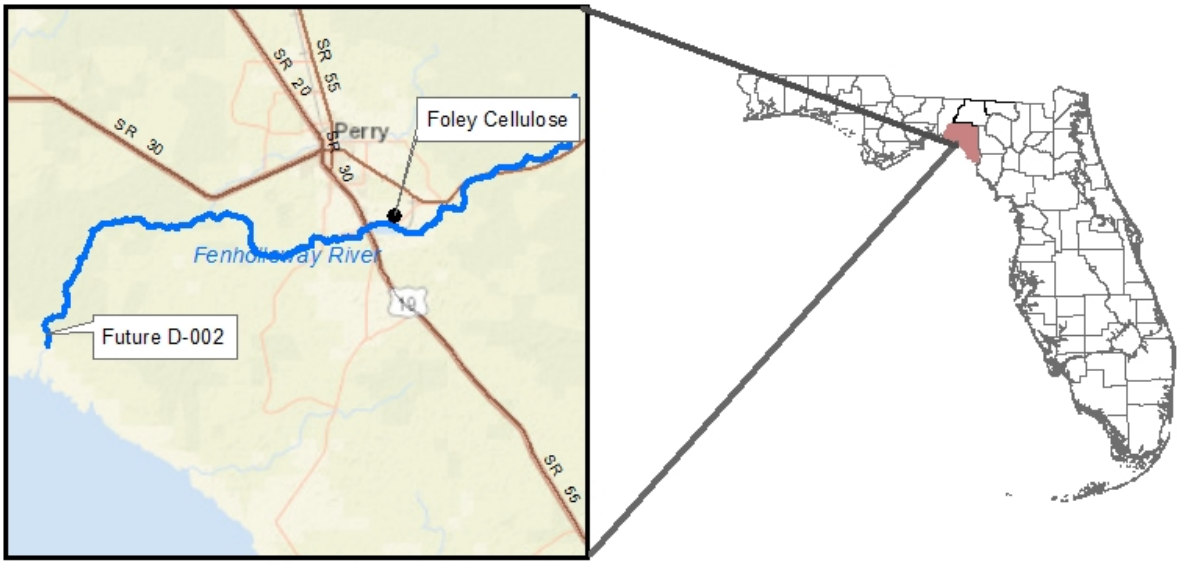
References to Rule 62-302.530, F.A.C., are to the currently applicable surface water quality criteria table with an effective date of 02/17/2016 and a notice identification number of 17115667.

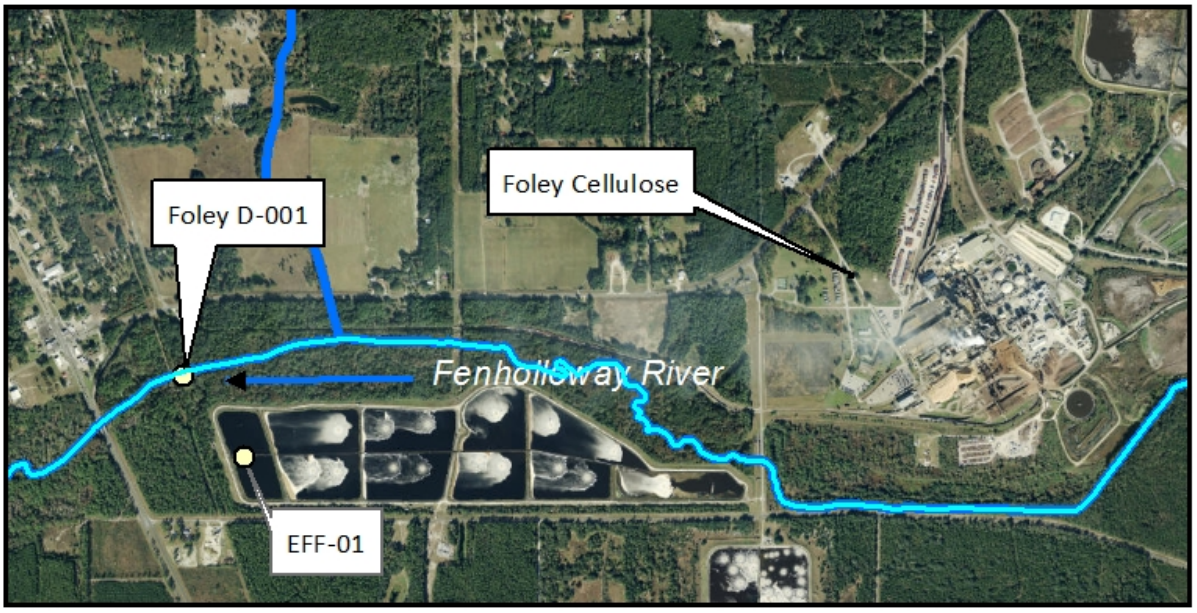
Explanations of specific methods and measurements can be found in Appendix B. All field and laboratory methods followed DEP Standard Operating Procedures (see https://floridadep.gov/dear/quality-assurance/content/dep-sops and https://floridadep.gov/dear/florida-dep-laboratory/content/dep-laboratory-quality-assurance-manual-and-sops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

Map: Foley Cellulose, One Buckeye Drive, Perry, Taylor County, Florida, 32348. NPDES #FL0000876.

Foley Cellulose

Third Year Inspection Sampling Locations





0 0.2 0.4 0.8 Miles

0 0.3 0.6 1.2 Kilometers

FL0000876

N W E S

Map produced by Lisa Homann on 1/4/19

Results

Analytical Water Chemistry (See Table 1, Table 2, Table 3 and Appendix C)

- The effluent grab sample total phosphorus was 1.8 mg/L (~599 lbs/day, calculated using the annual mean flow of 40.0 mgd) and total nitrogen was 8.4 mg/L (~2794 lbs/day, calculated using the annual mean flow of 40.0 mgd). The measured chlorophyll-a for this event was 7.2 µg/L.
- Total residual chlorine was not detected in the bioassay sample in the laboratory. Total ammonia measured in the bioassay sample in the laboratory was 2.4 mg N/L. The total ammonia concentration in the grab sample collected and preserved for chemical analysis was 3.3 mg N/L. Based on the pH, salinity, and temperature of the grab sample as collected, the calculated un-ionized ammonia concentration was < 0.02 mg/L.
- The effluent's copper, iron, and total phosphorous exceeded either their respective Class III Marine Water Criterion or permitted limits. All other water chemistry analytes and metals were either non-detects or were detected at levels that comply with their effluent permit limits and Class III Marine Water Quality Criteria (62-302.530, F.A.C.).
- 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) was analyzed by ALS Environmental—Jacksonville Laboratory. It was not detected (1.84 U pg/L).
- There was no microbiology scheduled for this event.

Algal Growth Potential (See Table 4 and Appendix C)

- The effluent Algal Growth Potential (AGP) was 30.8 mg dry wt/L of the unicellular freshwater green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum.*
- The effluent AGP result is greater than the AGP range (6.10 to 20.0 mg dry wt/L) suggested to be representative of high productivity for freshwater (Miller et al. 1978).
- An aliquot of the AGP sample was salinity adjusted from an apparent salinity of approximately 1.2 parts per thousand (ppth) to a salinity of approximately 8.1 ppth by the addition of artificial sea salts to meet the salinity requirements of the test species.
- The salinity adjusted effluent AGP was 108 mg dry wt/L of the saltwater species *Dunaliella tertiolecta*.
- The analytical chemistry suggests that the effluent is nitrogen-limited (Miller et al. 1978).

Toxicity Test Results (See Appendix C)

- Tests were performed March 13 through March 17, 2018.
- Acute bioassay results are reported as the Concentration Lethal to 50% of the test organisms (LC50). In a 96-hour acute definitive test of 100% effluent, mortality of <20% provides confidence that the effluent meets the acute toxicity criterion of Florida's Surface Water Quality Standards (Rule and 62-302.500(1)a, F.A.C.). Mortality between 20 and 50% indicates low to moderate levels of toxicity, and further action may be required. Mortality of >50% indicates that the effluent fails to meet the minimum requirement to discharge to waters of the state (Rule 62-4.244(3) (a), F.A.C.).
- For the 96-hour acute definitive bioassay, the calculated LC50 for the mysid, *Americamysis bahia*, was greater than 100% effluent with 0% mortality in 100% sample. The calculated LC50 for the fish, *Menidia beryllina*, was greater than 100% effluent with 0% mortality in 100% sample. The bioassay samples were not acutely toxic to the test organisms.
- For additional information or copies of the bioassay bench sheets, please contact the Biology Laboratory at 850-245-8177.

Literature Cited

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.

Raschke, R. L. and D. A. Schultz. 1987. The use of the algal growth potential test for data assessment. J. Wat. Poll. Cont. Fed. 59(4): 222-227.

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.

USEPA. 2002. Methods for measuring the acute toxicity of effluents to freshwater and marine organisms. 5th edition. EPA-821-R-02-012.

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

Foley Cellulose	Units	Class III Criteria	Effluent Permit Limits	Foley Cellulose Grab
Sample Depth	ft	-	-	1
Temperature	C	-	-	21.7
pH	SU	6.5 - 8.5	6.5 - 8.5	7.21
Specific Conductance	µmhos/cm	-	≤ 4000	2323
Salinity	ppt	-	-	1.20
Dissolved Oxygen	mg/L	-	≥ 5.0	3.76[1]
Dissolved Oxygen	% Saturation	≥ 42	-	43 c[1]

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

c - Value is calculated

1 - Dissolved Oxygen measured at EFF-01 grab site. Permit limit is for end-of-pipe at D-001.

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

Foley Cellulose	Units	Class III Criteria	Effluent Permit Limits	Foley Cellulose Grab
Ortho-phosphate	mg P/L	-	-	1.0 Q
Total Phosphorus	mg P/L	< 0.1	Report	1.8 e
Total Ammonia	mg N/L	3.8 c	Report	3.3
Un-ionized Ammonia (calculated)	mg NH_3/L	-	Report	< 0.02 c
Nitrate and Nitrite	mg N/L	-	-	0.019
Total Kjeldahl Nitrogen	mg N/L	-	-	8.4
Organic Nitrogen	mg N/L	-	-	5.1 c
Total Nitrogen	mg N/L	-	Report	8.4 c
Total Organic Carbon	mg C/L	-	-	76 A
Chlorophyll *a* - Corrected	µg/L	-	-	12
Phaeophytin	µg/L	-	-	2.0 U
Chlorophyll *a* - Uncorrected	µg/L	-	-	7.2
CBOD, 5 day, N - inhibited	mg/L	-	≤ 41 c	22 A
Total Residual Chlorine	mg/L	< 0.01	-	< 0.03[2]
Total Suspended Solids	mg/L	-	≤ 104 c	51
Turbidity	NTU	< 29 t	-	65
Color (true)	PCU	-	Report	2.5 U
Alkalinity	mg $CaCO_3$/L	-	-	242 A
Chloride	mg Cl/L	≤ 10 %[3]	-	200 A
Cyanide	µg/L	≤ 1.0	-	-
Fluoride	mg F/L	≤ 5.0	-	0.15
Sulfate	mg SO_4/L	-	-	610 A
Toxicity (96-hour Acute Definitive, LC50 % effluent)				
Bioassay - Mysid *(Americamysis bahia)*	% effluent	≥ 100	≥ 100	> 100
Bioassay - Fish *(Menidia beryllina)*	% effluent	≥ 100	≥ 100	> 100

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
c - Value is calculated
e - Value exceeds the Class III Marine Water Quality Criteria or permit limits
t - Shall not exceed 29 NTUs above background
A - Value reported is the mean of two or more determinations
Q - Sample held beyond normal holding time
U - Material analyzed for but not detected; value reported is the method detection limit
2 - Measurement taken in the DEP Toxicology laboratory
3 - Shall not exceed 10% mg Cl/L above background

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

Foley Cellulose	Units	Class III Criteria	Effluent Permit Limits	Foley Cellulose Grab
Hardness	mg $CaCO_3$/L	-	-	223 c
Aluminum	µg/L	≤ 1500	-	779
Arsenic	µg/L	-	-	0.58
Cadmium	µg/L	≤ 8.8	-	0.551
Calcium	mg/L	-	-	54.4
Chromium, Total[4]	µg/L	≤ 50	-	6.0
Copper	µg/L	≤ 3.7	Report	7.62 e[5]
Iron	µg/L	≤ 300	≤ 1000	480 e
Lead	µg/L	≤ 8.5	-	0.83
Magnesium	mg/L	-	-	21.2
Nickel	µg/L	≤ 8.3	Report	7.86
Potassium	mg/L	-	-	9.5
Selenium	µg/L	≤ 71	-	0.20 U
Silver	µg/L	≤ 2.3	-	0.145
Sodium	mg/L	-	-	466
Zinc	µg/L	≤ 86	-	46

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
c - Value is calculated
e - Value exceeds the Class III Marine Water Quality Criteria or permit limits
U - Material analyzed for but not detected; value reported is the method detection limit
4 - Class III Marine Water Quality Criterion (62-302.530(19)(b), F.A.C.) is for chromium-VI
5 - Analyte was detected in both the sample and equipment blank (1.86 µg/L copper)

Table 4. 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.

Foley Cellulose								
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**
Foley Cellulose Grab	*Pseudokirchneriella subcapitata*	30.8	126.1 ± 25.2	430 ± 86	319.9 ± 64	774 ± 154.8	3.3	4.7
Foley Cellulose Grab	*Dunaliella tertiolecta*	108 *	not applicable [6]	not applicable [6]	not applicable [6]	not applicable [6]	3.3	4.7

* - sample salinity adjusted to 8.1 ppth

6 - Predictions not applicable to marine matrix

Appendix A

Facility Summary

State of Florida

Department of Environmental Protection

Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Nick Williams	Contact Number: (904) 256-1608
Facility Name (as it appears on permit): Foley Cellulose	Former Names: Buckeye
NPDES Permit Number: FL0000876	Permit Expiration Date: March 5, 2019
Physical Address: One Buckeye Drive, Perry, Florida 32348	
District: Northeast	County: Taylor
Function of Facility: Facility is a Dissolving Kraft Pulp mill with an associated cellulosic bio-refinery pilot plant owned by the University of Florida.	
Facility Type: Industrial	Permitted Capacity (MGD): 58 MGD
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): January 2017 – December 2017 D-001 - 40.0 MGP	
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 Locations - actual permit designation of permitted sampling points: EFF-1 –Final effluent after treatment prior to discharge into the pipeline EFF-1A – Exit of discharge pipe. CAL-1 – Calculated value from EFF-1 concentrations	
Description of Permitted Outfalls: D-001 – Current discharge location: Upper Fenholloway River about 25 miles upstream from the Gulf of Mexico, Class III Fresh Waters (WBID# 3473B).	

D-002 - New discharge location: Lower Fenholloway River and Estuary, Class III Marine Waters (WBID# 3473A), with a diffuser which is approximately 100 feet in length and discharges at a depth of approximately 8 feet (MSL), will be located at approximate mile point 1.5 upstream of the River mouth. The point of discharge is located approximately at latitude 29□59' 44" N, longitude 83□46' 40" W.

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

Existing Treatment System: A 58 million gallon per day (design) industrial wastewater treatment system that includes a lift station, bar racks, a 320-foot diameter primary clarifier with skimming pond, sludge pumps, 225 acres of solids settling basins with conveyance structures, and a 30-acre aerated stabilization basin followed by a 120-acre aerated stabilization basin.

Modified Treatment System: Construction and operation of modifications to the existing wastewater treatment based on a required pilot plant intended to provide efficient reduction of ammonia nitrogen and prevent loss of existing settled solids and effluent disposal system including adequate wastewater holding capacity (30 million gallons), secondary clarification system, an effluent pump station, an approximately 15 mile treated wastewater pipeline, an effluent oxygenation system if needed, and an outfall/diffuser structure discharging treated effluent to the Fenholloway River estuary through Outfall D-002.

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	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow	MGD	Max		Report		Report (Daily Max)	Continuous	Recording with Flow Meter with Totalizer	EFF-1	
BOD, Carbonaceous 5 day, 20C	mg/L	Max		Report			3 Days/Week	24-hr FPC	EFF-1	
BOD, Carbonaceous 5 day, 20C	lb/day	Max		13,200		19,800 (Daily Max)	3 Days/Week	Calculated	CAL-1	
Solids, Total Suspended	mg/L	Max		Report			3 Days/Week	24-hr FPC	EFF-1	
Solids, Total Suspended	lb/day	Max		25,000		50,000 (Daily Max)	3 Days/Week	Calculated	CAL-1	
pH**	s.u.	Min				6.0 (Daily Min)	3 Days/Week	Grab	EFF-1	
		Max				8.5 (Daily Max)				
Oxygen, Dissolved (DO)	mg/L	Min				5.0 (Daily Min)	3 Days/Week	Grab	EFF-1A*	

Ammonia, Unionized (as N)**	mg/L	Max				Report (Daily Max)	Monthly	Calculated	CAL-1	
Nitrogen, Total	mg/L	Max		Report			Monthly	Grab	EFF-1	
Nitrogen, Total	lb/day	Max		Report		Report (Daily Max)	Monthly	Calculated	CAL-1	
Nitrogen, Ammonia, Total (as N)**	mg/L	Max		Report		Report (Daily Max)	Monthly	Grab	EFF-1	
Phosphorus, Total (as P)	mg/L	Max		Report			Monthly	Grab	EFF-1	
Phosphorus, Total (as P)	lb/day	Max		Report		Report (Daily Max)	Monthly	Calculated	CAL-1	
Temperature (C), Water**	Deg C	Max				Report (Daily Max)	3 Days/Week	Grab	EFF-1	
Specific Conductance	µmhos/cm	Max				4,000 (Daily Max)	Monthly	Grab	EFF-1	
Color	lb/day	Max			438,350		Monthly	Calculated	CAL-1	
Color	PCU	Max		Report		Report (Daily Max)	Monthly	Grab	EFF-1	
Copper, Total Recoverable	µg/L	Max				Report (Daily Max)	Monthly	Grab	EFF-1	
Nickel, Total Recoverable	µg/L	Max				Report (Daily Max)	Quarterly	Grab	EFF-1	

2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)	pg/L	Max				Report (Daily Max)	Quarterly	24-hr FPC	EFF-1	
Acute Whole Effluent Toxicity, 96-hr LC50 (Americamysis bahia)	percent	Min				100	Quarterly	Derived from chronic survival data	EFF-1	
Acute Whole Effluent Toxicity, 96-hr LC50 (Menidia beryllina)		Min				100	Quarterly	Derived from chronic survival data	EFF-1	
Chronic Whole Effluent Toxicity, 7-Day IC25 (Americamysis bahia)	percent	Min				Report	Quarterly	24-hr FPC	EFF-1	
Chronic Whole Effluent Toxicity, 7-Day IC25 (Menidia beryllina)	percent	Min				Report	Quarterly	24-hr FPC	EFF-1	
Iron, Total Recoverable	mg/L	Mac				1.0 (Daily Max)	Quarterly	Grab	EFF-1	

* DO concentration is measured at exit of the discharge pipe into the discharge canal.

** Effluent samples for pH and temperature shall be monitored at the same time and location as the total ammonia grab sample which is used to calculate the un-ionized ammonia value. Un-ionized ammonia shall be calculated using the DEP Standard Operating Procedure for "Calculation of Un-Ionized Ammonia in Fresh Water" dated February 12, 2001. [Rules 62-4.246(4) and 62-302.530(3), F.A.C.]

PART I: Continued

Receiving Waters:	Classification (indicate whether fresh or marine):
Fenholloway River estuary	Class III Marine Waters

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

The permittee shall comply with the following requirements to evaluate whole effluent toxicity of the discharge from outfall D-002.

a. Effluent Limitation

(1) In any routine or additional follow-up test for chronic whole effluent toxicity, the 25 percent inhibition concentration (IC25) shall not be less than 25% effluent. [Rules 62-302.530(61) and 62-4.241(2)(b), F.A.C.]

(2) For acute whole effluent toxicity, the 96-hour LC50 shall not be less than 100% effluent in any test. [Rule 62-302.500(1)(a)4 and 62-4.241(2)(a), F.A.C.]

b. Monitoring Frequency

(1) Routine toxicity tests shall be conducted once every quarter the first starting within 60 days of the issuance date of this permit and lasting for the duration of this permit.

c. Sampling Requirements

(1) For each routine test or additional follow-up test conducted, a total of three flow proportional 24-hour composite samples of final effluent shall be collected and used in accordance with the sampling protocol discussed in EPA-821-R-02-014, Section 8.

(2) The first sample shall be used to initiate the test. The remaining two samples shall be collected according to the protocol and used as renewal solutions on Day 3 (48 hours) and Day 5 (96 hours) of the test.

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

d. Test Requirements

(1) Routine Tests: All routine tests shall be conducted using a control (0% effluent) and a minimum of five test dilutions: 100%, 50%, 25%, 12.5%, and 6.25% final effluent.

(2) The permittee shall conduct 7-day survival and growth chronic toxicity tests with a mysid shrimp, Americamysis bahia, Method 1007.0, and an inland silverside, Menidia beryllina, Method 1006.0, concurrently.

(3) All test species, procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, 3rd Edition, EPA-821-R-02-014. Any deviation of the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use. In the event the above method is revised, the permittee shall conduct chronic toxicity testing in accordance with the revised method.

(4) The control water and dilution water shall be prepared with artificial sea salts as described in EPA-821-R-02-014, Section 7.2. The test salinity shall be determined as follows:

(a) For the Americamysis bahia bioassays, the effluent shall be adjusted to a salinity of 20 parts per thousand (ppt) with artificial sea salts. The salinity of the control/dilution water (0% effluent) shall be 20 ppt. If the salinity of the effluent is greater than 20 ppt, no salinity adjustment shall be made to the effluent and the test shall be run at the effluent salinity. The salinity of the control/dilution water shall match the salinity of the effluent.

(b) For the Menidia beryllina bioassays, if the effluent salinity is less than 5 ppt, the salinity shall be adjusted to 5 ppt with artificial sea salts. The salinity of the control/dilution water (0% effluent) shall be 5 ppt. If the salinity of the effluent is greater than 5 ppt, no salinity adjustment shall be made to the effluent and the test shall be run at the effluent salinity. The salinity of the control/dilution water shall match the salinity of the effluent.

(c) If the salinity of the effluent requires adjustment, a salinity adjustment control should be prepared and included with each bioassay. The salinity adjustment control is intended to identify toxicity resulting

from adjusting the effluent salinity with artificial sea salts. To prepare the salinity adjustment control, dilute the control/dilution water to the salinity of the effluent and adjust the salinity of the salinity adjustment control at the same time and to the same salinity that the salinity of the effluent is adjusted using the same artificial sea salts.

e. Quality Assurance Requirements

(1) A standard reference toxicant (SRT) quality assurance (QA) chronic toxicity test shall be conducted with each species used in the required toxicity tests either concurrently or initiated no more than 30 days before the date of each routine or additional follow-up test conducted. Additionally, the SRT test must be conducted concurrently if the test organisms are obtained from outside the test laboratory unless the test organism supplier provides control chart data from at least the last five monthly chronic toxicity tests using the same reference toxicant and test conditions. If the organism supplier provides the required SRT data, the organism supplier's SRT data and the test laboratory's monthly SRT-QA data shall be included in the reports for each companion routine or additional follow-up test required.

(2) If the mortality in the control (0% effluent) exceeds 20% for either species in any test or any other test acceptability criteria are not met, the test for that species (including the control) shall be invalidated and the test repeated. Test acceptability criteria for each species are defined in EPA-821-R-02-014, Section 14.12 (Americamysis bahia) and Section 13.12 (Menidia beryllina). The repeat test shall begin within 21 days after the last day of the invalid test.

(3) If 100% mortality occurs in all effluent concentrations for either species prior to the end of any test and the control mortality is less than 20% at that time, the test (including the control) for that species shall be terminated with the conclusion that the test fails and constitutes non-compliance.

(4) Routine and additional follow-up tests shall be evaluated for acceptability based on the observed dose-response relationship as required by EPA-821-R-02-014, Section 10.2.6., and the evaluation shall be 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 the calculated IC25 for each test species.

(2) A bioassay laboratory report for each routine test shall be prepared according to EPA-821-R-02-014, Section 10, Report Preparation and Test Review, and mailed or emailed 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-02-014, Section 10, and mailed or emailed 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 mailed or emailed within 30 days to Jacksonville only:

Florida Department of Environmental Protection

Northeast District – Wastewater Compliance

8800 Baymeadows Way West, Suite 100

Jacksonville, Florida 32256Test

g. Failures

(1) A test fails when the test results do not meet the limits in 4.a.(1).

(2) Additional Follow-up Tests:

(a) If a routine test does not meet the chronic toxicity limitation in 4.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 4.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 additional follow-up tests shall be conducted using a control (0% effluent) and a minimum of five

dilutions: 100%, 50%, 25%, 12.5%, and 6.25% effluent. The permittee may modify the dilution series in the additional follow-up tests 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 analyzed according to the procedures in EPA-821-R-02-014.

(3) 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 4.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 4.b.(1). If a routine test is invalid according to the acceptance criteria in EPA-821-R-02-014, a repeat test shall be initiated within 21 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 4.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.

(g) If a test within the sequence of the four is deemed invalid, but is replaced by a repeat valid test initiated within 21 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.

(4) If chronic toxicity test results indicate greater than 50% mortality within 96 hours in an effluent concentration equal to or less than the effluent concentration specified as the acute toxicity limit in 4.(a)(2), the Department may revise this permit to require acute definitive whole effluent toxicity testing.

(5) The additional follow-up testing and the plan do not preclude the Department taking enforcement action for acute or chronic whole effluent toxicity failures.

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.):
Administrative Order 011-NED was included in the current permit (FL0000876-005-MR) when issued on March 6, 2014. The AO is for process improvements, wastewater treatment modifications, permit interim effluent limits, effluent transmission pipe, and oxygen injection plan of study. Interim limits are reflected in the effluent limits listed above and run through March 6, 2021.

Facility Mixing Zone Details (if applicable):

The maximum length of the mixing zones specified below equates to a spatial area of 120,000 square meters.

Parameter	Mixing zone length
Chronic Toxicity	1,300 meters (100 meters upstream, 1200 meters downstream)
Copper, Total Recoverable	250 meters (50 meters upstream, 200 meters downstream)
Temperature, Water	1,300 meters (100 meters upstream, 1200 meters downstream)

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

Date	Parameter and Units	Limit	Result
N/A	N/A	N/A	N/A

Describe previous FYI and WQBEL study:

- Toxicity Test Results

Tests were performed July 24 - 31, 2012.

Americamysis bahia 7-day chronic definitive bioassay – NOEC: < 12.5% & IC25: 54.3%
Menidia beryllina 7-day chronic definitive bioassay – NOEC: 12.5% & IC25: 27.3%

The bioassay samples were chronically toxic to both the Americamysis bahia and Menidia beryllina test organisms. However, based on the proposed limit (IC25 ≥ 25%) under which these tests were performed, the noted toxicity was not an exceedance.

- Algal Growth Potential

The salinity-adjusted effluent Algal Growth Potential (AGP) was 123 A mg dry wt/L of the saltwater species Dunaliella tertiolecta. Raschke and Schultz determined that AGP values above 10.0 mg dry weight/L represent a "problem" threshold for marine receiving waters, implying nutrient enrichment (personal communication, Marshall Faircloth, et. al. FDEP, with Ron Raschke USEPA Region 4, 1987). Although the current receiving waters are Class III freshwater, the AGP test used the marine species due to the apparent salinity of the effluent being > 1.0 ppth. However, based on the very high AGP value and the nutrient concentrations in the effluent, an inference can be made that there is potential nutrient enrichment in the fresh receiving waters. The ratio (3.0:1) of total nitrogen to total phosphorus suggests that the effluent is nitrogen-limited (Maloney et al. 1978).

- Chemistry Results

Total residual chlorine was not detected in any of the three bioassay samples in the bioassay laboratory. Total ammonia was detected in the bioassay samples in the bioassay laboratory in the samples collected on July 23, 2012 (3.00 mg N/L), July 25, 2012 (2.58 mg N/L), and July 27, 2012 (2.50 mg N/L). The total ammonia concentration in the sample collected and preserved for chemical analysis on July 23, 2012, was 3.1 mg N/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was 0.10 mg/L. The unionized ammonia concentration exceeded the Freshwater Surface Water Quality Criteria for Class III freshwater ((≤ 0.02 mg NH3 / L 62-302.530) (3) F.A.C.).

Cadmium, chromium, copper, fluoride, iron, nickel and zinc were detected in the effluent at levels that comply with Class III freshwater quality criteria (62-302.530, F.A.C.). Carbonaceous biological oxygen demand (CBOD), conductivity, dissolved oxygen (DO) and total phosphorus were detected at levels that were in compliance with permitted limits. Total suspended solids (TSS) and oils and greases were detected between the MDL and PQL and complied with permit limits. Arsenic, lead and silver were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL)

and complied with Class III freshwater quality criteria. Aluminum was also detected in the effluent.

Conclusion

The effluent samples collected from the EFF-1 NPDES sampling point for Outfall D-001 for this facility on July 23, 25, and 27, 2012, were chronically toxic to both the Americamysis bahia and Menidia beryllina test organisms during the 7-day chronic definitive bioassays; however, the noted toxicity did not exceed the proposed IC25 limit of ≥ 25% effluent under which these tests were performed. The cause of toxicity was not determined. The effluent algal growth potential (AGP) greatly exceeded the "problem" threshold for marine waters. Based on the very high AGP value and the nutrient concentrations in the effluent, an inference can be made that there is potential nutrient enrichment in the fresh receiving waters. The effluent unionized ammonia concentration exceeded the Freshwater Surface Water Quality Criteria for Class III freshwater ((≤ 0.02 mg NH3 / L 62-302.530) (3) F.A.C.). Additional water quality samples collected on July 23, 2012, did not exceed any applicable water quality standards and/or violate any permit conditions.

Describe previous or current Enforcement Actions (including WLs):

No enforcement actions in the last five years.

Describe any violations or problems noted in previous inspection:

Last CEI was conducted on June 19, 2017. The facility was determined to be in-compliance. No issues were found during the inspection.

Discuss whether DMR trends within previous five years are improving or declining:

Annual average for Color appears to be declining slightly as it has fallen from around 35,000 PCU to 25,000 PCU over the course of two years from 2015 to 2017. No other noticeable trends were observed with other parameters.

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	
Dates sample collected:	Samplers:
Temperature (Deg C):	pH (SU):
Dissolved Oxygen (mg/L):	Conductivity (umhos/cm):
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):	
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):	
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

Explanation 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.

(1) Quality Assurance and Quality Control

DEP'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 (DEP SOPs). Methods for all analyses are on file at the DEP 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/sop/sops.htm.

(2) 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.

(3) Toxicity Bioassays

Greater than 50% mortality in an acute toxicity test may constitute an exceedance of 62.302.200(1), F.A.C., and 62-302.500(1)a, F.A.C., 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 62-302.200(5), F.A.C., and 62-302.530(20), F.A.C., 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(20), F.A.C., and/or facility permit limits. Standard reference toxicant (SRT) tests are conducted monthly to ensure quality in toxicity testing.

(4) Bacteriological Testing

High levels of fecal coliform bacteria may constitute an exceedance of facility permit limits. Class III Water Quality Criteria are based on *Eschericia coli* and enterococci levels (F.A.C. 62-302.530(11)(c) and (d)).

(5) Chlorophyll *a* Content

Chlorophyll *a* content is an estimate algal biomass. High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may constitute exceedances of 62-302.530(89), F.A.C. 62-302.530(90)(a), F.A.C., and/or 62-302.530(90)(b), F.A.C..

(6) 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. The AGP range of 6.10 to 20.0 mg dry wt/L is suggested to be representative of high productivity for freshwater (Miler et al. 1978). High AGP values may constitute exceedances of 62-302.530(89), F.A.C., 62-302.530(90)(a), F.A.C. and/or 62-302.530(90)(b), F.A.C..

The concentration of nutrients in a water sample may be used to calculate the expected yield of AGP in a low salinity sample 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 (EPA-822-B-00-002). 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(108) F.A.C. Expected AGP is not calculated for marine samples incubated with *Dunaliella*.

(7) 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

Chemical analysis of effluent

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/12/2018	Foley Cellulose Grab	AGP/LN	Algal Growth Potential	30.8	mg DryWt/L	0.3	0.9
3/12/2018	Foley Cellulose Grab	AGP/LN	Algal Growth Potential-Salinity Adjusted	108	mg DryWt/L	3	3
3/12/2018	Foley Cellulose Grab	Chlorophyll/Grain Size/BOD	Phaeophytin-a	2.0 U	µg/L	2	6
3/12/2018	Foley Cellulose Grab	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	22 A	mg/L	0.2	2
3/12/2018	Foley Cellulose Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	12	µg/L	2.8	8.5
3/12/2018	Foley Cellulose Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	7.2	µg/L	2	6
3/12/2018	Foley Cellulose Grab	Toxicology	Bioassay-Acute-Def-SW-Mysid, LC50	100 L	LC50		
3/12/2018	Foley Cellulose Grab	Toxicology	Bioassay-Acute-Def-SW-Fish, LC50	100 L	LC50		
3/12/2018	Foley Cellulose Grab	Metals	Lead	0.83	µg/L	0.05	0.2
3/12/2018	Foley Cellulose Grab	Metals	Nickel	7.86	µg/L	0.2	0.8
3/12/2018	Foley Cellulose Grab	Metals	Copper	7.62	µg/L	0.2	0.8
3/12/2018	Foley Cellulose Grab	Metals	Selenium	0.20 U	µg/L	0.2	0.8
3/12/2018	Foley Cellulose Grab	Metals	Zinc	46	µg/L	5	20
3/12/2018	Foley Cellulose Grab	Metals	Cadmium	0.551	µg/L	0.02	0.08
3/12/2018	Foley Cellulose Grab	Metals	Arsenic	0.58	µg/L	0.05	0.2
3/12/2018	Foley Cellulose Grab	Metals	Potassium	9.5	mg/L	0.3	1.2
3/12/2018	Foley Cellulose Grab	Metals	Calcium	54.4	mg/L	0.075	0.3
3/12/2018	Foley Cellulose Grab	Metals	Aluminum	779	µg/L	3	12
3/12/2018	Foley Cellulose Grab	Metals	Chromium	6.0	µg/L	0.4	1.6
3/12/2018	Foley Cellulose Grab	Metals	Sodium	466	mg/L	2.5	10
3/12/2018	Foley Cellulose Grab	Metals	Silver	0.145	µg/L	0.01	0.04
3/12/2018	Foley Cellulose Grab	Metals	Magnesium	21.2	mg/L	0.04	0.16
3/12/2018	Foley Cellulose Grab	Metals	Iron	480	µg/L	30	120
3/12/2018	Foley Cellulose Grab	Nutrients	Turbidity	65	NTU	0.2	0.25
3/12/2018	Foley Cellulose Grab	Nutrients	TSS	51	mg/L	5	25
3/12/2018	Foley Cellulose Grab	Nutrients	Sulfate	610 A	mg SO4/L	4	10
3/12/2018	Foley Cellulose Grab	Nutrients	Kjeldahl Nitrogen	8.4	mg N/L	0.4	1
3/12/2018	Foley Cellulose Grab	Nutrients	NO2NO3-N	0.019	mg N/L	0.004	0.01
3/12/2018	Foley Cellulose Grab	Nutrients	Fluoride	0.15	mg F/L	0.035	0.1
3/12/2018	Foley Cellulose Grab	Nutrients	Ammonia-N	3.3	mg N/L	0.2	0.5
3/12/2018	Foley Cellulose Grab	Nutrients	Organic Carbon	76 A	mg C/L	1	2
3/12/2018	Foley Cellulose Grab	Nutrients	Total-P	1.8	mg P/L	0.025	0.25

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/12/2018	Foley Cellulose Grab	Nutrients	Total Alkalinity	242 A	mg CaCO3/L	0.65	2.5
3/12/2018	Foley Cellulose Grab	Nutrients	O-Phosphate-P	1.0 Q	mg P/L	0.04	0.1
3/12/2018	Foley Cellulose Grab	Nutrients	Chloride	200 A	mg Cl/L	4	10
3/12/2018	Foley Cellulose Grab	Pesticides	Naled	0.039 U	µg/L	0.039	0.16
3/12/2018	Foley Cellulose Grab	Pesticides	Ethoprop	0.0048 U	µg/L	0.0048	0.019
3/12/2018	Foley Cellulose Grab	Pesticides	Fenamiphos	0.029 UJ	µg/L	0.029	0.12
3/12/2018	Foley Cellulose Grab	Pesticides	Pendimethalin	0.039 U	µg/L	0.039	0.16
3/12/2018	Foley Cellulose Grab	Pesticides	Phorate	0.0048 U	µg/L	0.0048	0.019
3/12/2018	Foley Cellulose Grab	Pesticides	Azinphos Methyl	0.019 U	µg/L	0.019	0.078
3/12/2018	Foley Cellulose Grab	Pesticides	Metolachlor	0.058 UJ	µg/L	0.058	0.23
3/12/2018	Foley Cellulose Grab	Pesticides	Atrazine Desisopropyl	0.0097 U	µg/L	0.0097	0.039
3/12/2018	Foley Cellulose Grab	Pesticides	Demeton	0.023 U	µg/L	0.023	0.093
3/12/2018	Foley Cellulose Grab	Pesticides	Diazinon	0.0097 U	µg/L	0.0097	0.039
3/12/2018	Foley Cellulose Grab	Pesticides	Parathion Ethyl	0.019 U	µg/L	0.019	0.078
3/12/2018	Foley Cellulose Grab	Pesticides	Terbufos	0.0048 UJ	µg/L	0.0048	0.019
3/12/2018	Foley Cellulose Grab	Pesticides	Butylate	0.019 U	µg/L	0.019	0.078
3/12/2018	Foley Cellulose Grab	Pesticides	Chlorpyrifos Ethyl	0.0097 UJ	µg/L	0.0097	0.039
3/12/2018	Foley Cellulose Grab	Pesticides	Parathion Methyl	0.0097 U	µg/L	0.0097	0.039
3/12/2018	Foley Cellulose Grab	Pesticides	Atrazine	0.0097 U	µg/L	0.0097	0.039
3/12/2018	Foley Cellulose Grab	Pesticides	Chlorpyrifos Methyl	0.0097 UJ	µg/L	0.0097	0.039
3/12/2018	Foley Cellulose Grab	Pesticides	Ethion	0.0097 UJ	µg/L	0.0097	0.039
3/12/2018	Foley Cellulose Grab	Pesticides	Hexazinone	0.029 UJ	µg/L	0.029	0.12
3/12/2018	Foley Cellulose Grab	Pesticides	Metalaxyl	0.039 UJ	µg/L	0.039	0.16
3/12/2018	Foley Cellulose Grab	Pesticides	Metribuzin	0.019 U	µg/L	0.019	0.078
3/12/2018	Foley Cellulose Grab	Pesticides	Alachlor	0.058 U	µg/L	0.058	0.23
3/12/2018	Foley Cellulose Grab	Pesticides	Ametryn	0.0097 U	µg/L	0.0097	0.039
3/12/2018	Foley Cellulose Grab	Pesticides	Atrazine Desethyl	0.0097 U	µg/L	0.0097	0.039
3/12/2018	Foley Cellulose Grab	Pesticides	Fonofos	0.0097 U	µg/L	0.0097	0.039
3/12/2018	Foley Cellulose Grab	Pesticides	Norflurazon	0.029 U	µg/L	0.029	0.12
3/12/2018	Foley Cellulose Grab	Pesticides	Prometon	0.019 U	µg/L	0.019	0.078
3/12/2018	Foley Cellulose Grab	Pesticides	Prometryn	0.019 U	µg/L	0.019	0.078
3/12/2018	Foley Cellulose Grab	Pesticides	Bromacil	0.039 U	µg/L	0.039	0.16
3/12/2018	Foley Cellulose Grab	Pesticides	Disulfoton	0.0048 U	µg/L	0.0048	0.019
3/12/2018	Foley Cellulose Grab	Pesticides	Malathion	0.0097 U	µg/L	0.0097	0.039
3/12/2018	Foley Cellulose Grab	Pesticides	Mevinphos	0.0097 U	µg/L	0.0097	0.039

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/12/2018	Foley Cellulose Grab	Pesticides	Simazine	0.0097 U	µg/L	0.0097	0.039
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.25	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	2-Nitrophenol	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Phenol	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Isophorone	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Dimethyl phthalate	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Benzo(a)pyrene	0.024 UJ	µg/L	0.024	0.095
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Benzo(a)anthracene	0.024 UJ	µg/L	0.024	0.095
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	1,4-Dioxane	0.020 U	µg/L	0.02	0.08
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Butyl benzyl phthalate	0.95 UJ	µg/L	0.95	3.8
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Fluoranthene	0.034 IJ	µg/L	0.024	0.095
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Fluorene	0.024 UJ	µg/L	0.024	0.095
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Hexachlorobenzene	0.048 UJ	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Naphthalene	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	2,4-Dinitrotoluene	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Di-n-butyl phthalate	1.9 U	µg/L	1.9	7.6
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Pyrene	0.095 IJ	µg/L	0.024	0.095
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	2,4-Dichlorophenol	0.072 I	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	2,4-Dinitrophenol	9.5 UJ	µg/L	9.5	38
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	2-Chloronaphthalene	0.048 UJ	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	4-Nitrophenol	9.5 U	µg/L	9.5	38
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Chrysene	0.024 UJ	µg/L	0.024	0.095
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Benzo(k)fluoranthene	0.024 UJ	µg/L	0.024	0.095
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Benzidine	9.5 UJ	µg/L	9.5	38
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Hexachlorobutadiene	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Hexachloroethane	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.024 UJ	µg/L	0.024	0.095
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	µg/L	1.9	7.6

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Phenanthrene	0.038 I	µg/L	0.024	0.095
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	0.095 U	µg/L	0.095	0.38
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	2,6-Dinitrotoluene	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	2-Chlorophenol	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	3,3'-Dichlorobenzidine	9.5 UJ	µg/L	9.5	38
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Anthracene	0.024 U	µg/L	0.024	0.095
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9 UJ	µg/L	1.9	7.6
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Di-n-octyl phthalate	0.048 UJ	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Diethyl phthalate	1.9 U	µg/L	1.9	7.6
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Pentachlorophenol	0.48 U	µg/L	0.48	1.9
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	2,4-Dimethylphenol	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	µg/L	2.9	11
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Acenaphthene	0.024 U	µg/L	0.024	0.095
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Acenaphthylene	0.024 U	µg/L	0.024	0.095
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Benzo(b)fluoranthene	0.024 UJ	µg/L	0.024	0.095
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.024 UJ	µg/L	0.024	0.095
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.024 UJ	µg/L	0.024	0.095
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	Nitrobenzene	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.048 U	µg/L	0.048	0.19
3/12/2018	Foley Cellulose Grab	Nutrients	pH	7.21			
3/12/2018	Foley Cellulose Grab	Nutrients	Specific Conductance	2323	µmhos/cm		
3/12/2018	Foley Cellulose Grab	Nutrients	Sample Depth	7	ft		
3/12/2018	Foley Cellulose Grab	Nutrients	Temperature	21.7	C		
3/12/2018	Equipment Blank	Metals	Calcium	0.075 U	mg/L	0.075	0.3
3/12/2018	Equipment Blank	Metals	Lead	0.050 U	µg/L	0.05	0.2
3/12/2018	Equipment Blank	Metals	Aluminum	3.0 U	µg/L	3	12
3/12/2018	Equipment Blank	Metals	Chromium	0.40 U	µg/L	0.4	1.6
3/12/2018	Equipment Blank	Metals	Iron	30 U	µg/L	30	120
3/12/2018	Equipment Blank	Metals	Selenium	0.20 U	µg/L	0.2	0.8
3/12/2018	Equipment Blank	Metals	Silver	0.010 U	µg/L	0.01	0.04
3/12/2018	Equipment Blank	Metals	Magnesium	0.040 U	mg/L	0.04	0.16
3/12/2018	Equipment Blank	Metals	Sodium	0.50 U	mg/L	0.5	2
3/12/2018	Equipment Blank	Metals	Zinc	5.0 U	µg/L	5	20
3/12/2018	Equipment Blank	Metals	Arsenic	0.050 U	µg/L	0.05	0.2

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/12/2018	Equipment Blank	Metals	Cadmium	0.020 U	µg/L	0.02	0.08
3/12/2018	Equipment Blank	Metals	Nickel	0.20 U	µg/L	0.2	0.8
3/12/2018	Equipment Blank	Metals	Copper	1.86	µg/L	0.2	0.8
3/12/2018	Equipment Blank	Metals	Potassium	0.30 U	mg/L	0.3	1.2
3/12/2018	Equipment Blank	Nutrients	Ammonia-N	0.002 U	mg N/L	0.002	0.005
3/12/2018	Equipment Blank	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.08	0.2
3/12/2018	Equipment Blank	Nutrients	Total-P	0.002 U	mg P/L	0.002	0.005
3/12/2018	Equipment Blank	Nutrients	Chloride	0.20 U	mg Cl/L	0.2	0.5
3/12/2018	Equipment Blank	Nutrients	Color (true)	2.5 U	PCU	2.5	6
3/12/2018	Equipment Blank	Nutrients	Sulfate	0.20 U	mg SO4/L	0.2	0.5
3/12/2018	Equipment Blank	Nutrients	O-Phosphate-P	0.004 UQ	mg P/L	0.004	0.01
3/12/2018	Equipment Blank	Nutrients	Total Alkalinity	0.65 UQ	mg CaCO3/L	0.65	2.5
3/12/2018	Equipment Blank	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.1
3/12/2018	Equipment Blank	Nutrients	Organic Carbon	0.50 U	mg C/L	0.5	1
3/12/2018	Equipment Blank	Nutrients	Turbidity	0.10 U	NTU	0.1	0.13
3/12/2018	Equipment Blank	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
3/12/2018	Equipment Blank	Pesticides	Atrazine Desisopropyl	0.0098 U	µg/L	0.0098	0.039
3/12/2018	Equipment Blank	Pesticides	Fonofos	0.0098 U	µg/L	0.0098	0.039
3/12/2018	Equipment Blank	Pesticides	Naled	0.039 U	µg/L	0.039	0.16
3/12/2018	Equipment Blank	Pesticides	Parathion Methyl	0.0098 U	µg/L	0.0098	0.039
3/12/2018	Equipment Blank	Pesticides	Pendimethalin	0.039 U	µg/L	0.039	0.16
3/12/2018	Equipment Blank	Pesticides	Ethion	0.0098 U	µg/L	0.0098	0.039
3/12/2018	Equipment Blank	Pesticides	Azinphos Methyl	0.020 U	µg/L	0.02	0.078
3/12/2018	Equipment Blank	Pesticides	Terbufos	0.0049 U	µg/L	0.0049	0.02
3/12/2018	Equipment Blank	Pesticides	Phorate	0.0049 U	µg/L	0.0049	0.02
3/12/2018	Equipment Blank	Pesticides	Mevinphos	0.0098 U	µg/L	0.0098	0.039
3/12/2018	Equipment Blank	Pesticides	Ametryn	0.0098 U	µg/L	0.0098	0.039
3/12/2018	Equipment Blank	Pesticides	Simazine	0.0098 U	µg/L	0.0098	0.039
3/12/2018	Equipment Blank	Pesticides	Metribuzin	0.020 U	µg/L	0.02	0.078
3/12/2018	Equipment Blank	Pesticides	Malathion	0.0098 U	µg/L	0.0098	0.039
3/12/2018	Equipment Blank	Pesticides	Ethoprop	0.0049 U	µg/L	0.0049	0.02
3/12/2018	Equipment Blank	Pesticides	Chlorpyrifos Ethyl	0.0098 U	µg/L	0.0098	0.039
3/12/2018	Equipment Blank	Pesticides	Bromacil	0.039 U	µg/L	0.039	0.16
3/12/2018	Equipment Blank	Pesticides	Atrazine Desethyl	0.0098 U	µg/L	0.0098	0.039
3/12/2018	Equipment Blank	Pesticides	Atrazine	0.0098 U	µg/L	0.0098	0.039

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/12/2018	Equipment Blank	Pesticides	Alachlor	0.059 U	µg/L	0.059	0.23
3/12/2018	Equipment Blank	Pesticides	Hexazinone	0.029 UJ	µg/L	0.029	0.12
3/12/2018	Equipment Blank	Pesticides	Demeton	0.023 U	µg/L	0.023	0.094
3/12/2018	Equipment Blank	Pesticides	Diazinon	0.0098 U	µg/L	0.0098	0.039
3/12/2018	Equipment Blank	Pesticides	Fenamiphos	0.029 UJ	µg/L	0.029	0.12
3/12/2018	Equipment Blank	Pesticides	Disulfoton	0.0049 U	µg/L	0.0049	0.02
3/12/2018	Equipment Blank	Pesticides	Chlorpyrifos Methyl	0.0098 U	µg/L	0.0098	0.039
3/12/2018	Equipment Blank	Pesticides	Prometon	0.020 U	µg/L	0.02	0.078
3/12/2018	Equipment Blank	Pesticides	Metolachlor	0.059 UJ	µg/L	0.059	0.23
3/12/2018	Equipment Blank	Pesticides	Metalaxyl	0.039 UJ	µg/L	0.039	0.16
3/12/2018	Equipment Blank	Pesticides	Parathion Ethyl	0.020 U	µg/L	0.02	0.078
3/12/2018	Equipment Blank	Pesticides	Norflurazon	0.029 U	µg/L	0.029	0.12
3/12/2018	Equipment Blank	Pesticides	Prometryn	0.020 U	µg/L	0.02	0.078
3/12/2018	Equipment Blank	Pesticides	Butylate	0.020 U	µg/L	0.02	0.078
3/12/2018	Equipment Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.026 U	µg/L	0.026	0.1
3/12/2018	Equipment Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	Diethyl phthalate	2.0 U	µg/L	2	8.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	Dimethyl phthalate	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	Hexachloroethane	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	Pentachlorophenol	0.51 U	µg/L	0.51	2
3/12/2018	Equipment Blank	Priority Organic Pollutants	2-Nitrophenol	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	10 U	µg/L	10	41
3/12/2018	Equipment Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.026 U	µg/L	0.026	0.1
3/12/2018	Equipment Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	Phenol	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1 U	µg/L	3.1	12
3/12/2018	Equipment Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.026 U	µg/L	0.026	0.1
3/12/2018	Equipment Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.026 U	µg/L	0.026	0.1
3/12/2018	Equipment Blank	Priority Organic Pollutants	Fluorene	0.026 U	µg/L	0.026	0.1
3/12/2018	Equipment Blank	Priority Organic Pollutants	4-Nitrophenol	10 U	µg/L	10	41

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/12/2018	Equipment Blank	Priority Organic Pollutants	Acenaphthylene	0.026 U	µg/L	0.026	0.1
3/12/2018	Equipment Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.026 U	µg/L	0.026	0.1
3/12/2018	Equipment Blank	Priority Organic Pollutants	Butyl benzyl phthalate	1.0 U	µg/L	1	4.1
3/12/2018	Equipment Blank	Priority Organic Pollutants	Di-n-butyl phthalate	2.0 U	µg/L	2	8.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	Hexachlorobenzene	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	Naphthalene	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	Nitrobenzene	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	2-Chlorophenol	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	Acenaphthene	0.026 U	µg/L	0.026	0.1
3/12/2018	Equipment Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.026 U	µg/L	0.026	0.1
3/12/2018	Equipment Blank	Priority Organic Pollutants	Chrysene	0.026 U	µg/L	0.026	0.1
3/12/2018	Equipment Blank	Priority Organic Pollutants	Phenanthrene	0.026 U	µg/L	0.026	0.1
3/12/2018	Equipment Blank	Priority Organic Pollutants	Pyrene	0.026 U	µg/L	0.026	0.1
3/12/2018	Equipment Blank	Priority Organic Pollutants	1,4-Dioxane	0.020 U	µg/L	0.02	0.08
3/12/2018	Equipment Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	Hexachlorobutadiene	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	2,4-Dimethylphenol	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	2,4-Dinitrophenol	10 U	µg/L	10	41
3/12/2018	Equipment Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	Anthracene	0.026 U	µg/L	0.026	0.1
3/12/2018	Equipment Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	2.0 U	µg/L	2	8.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	Fluoranthene	0.026 U	µg/L	0.026	0.1
3/12/2018	Equipment Blank	Priority Organic Pollutants	Isophorone	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.051 U	µg/L	0.051	0.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	Benzidine	10 U	µg/L	10	41
3/12/2018	Equipment Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.026 U	µg/L	0.026	0.1
3/12/2018	Equipment Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2.0 U	µg/L	2	8.2
3/12/2018	Equipment Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	0.10 U	µg/L	0.1	0.41

EPA End Sheet

The Bioassay of Foley Cellulose effluent sampled on March 12, 2018. NPDES #FL0000876.

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 FL0000876	11 12 180312	18 B	19 S	20 2

Remarks

66

The Priority Pollutants Analysis of Foley Cellulose effluent sampled on March 12, 2018. NPDES #FL0000876.

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 FL0000876	11 12 180312	18 X	19 S	20 2

Remarks

66

Biological Analyses of Foley Cellulose effluent sampled on March 12, 2018. NPDES #FL0000876.

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 FL0000876	11 12 180312	18 S	19 S	20 2

Remarks

66