Effluent Quality Assessment of West Rock-Fernandina Beach Mill Nassau County NPDES # FL0001104 Sampled August 12, 14, & 16, 2019

Division of Environmental Assessment and Restoration
Florida Department of Environmental Protection
November 2019

DEP Laboratory, Biology Program
2600 Blair Stone Road, MS 6515
Tallahassee, FL 32399-2400
www.floridadep.gov

Contents

Contents 2
List of Tables 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 26
Appendix C. Chain of Custody 28
Appendix D. Chemical Analysis of Effluent 31

List of Tables

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

List of Figures

Figure 1. Map of Facility and Sampling Locations 4

Summary of Results

All measured analytes complied with effluent permit limits and Class III Marine Water Quality Criteria (62-302.530, F.A.C.). The salinity-adjusted effluent samples were not toxic to either toxicity test organism during the chronic definitive bioassay. The nitrogen to phosphorus ratio suggests that the effluent is nitrogen limited. The compound 2,4-Dimethylphenol was detected in the effluent grab sample between the MDL and PQL.

Facility Overview

West Rock-Fernandina Beach Mill is an industrial waste facility that produces unbleached kraft linerboard. 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 continuously discharged into Amelia River, a Class III Marine Water (Figure 1).

Receiving waters for this facility fall under the Estuary-Specific Numeric Interpretations of the Narrative Nutrient Criteria for the Lower St. Mary's River region (62-302.532, F.A.C.). The NNC thresholds, expressed as annual geometric means, are 0.181 mg/L total phosphorus, 0.77 mg/L total nitrogen, and 12.9 µg/L chlorophyll *a*. This FYI event only provides single sample results. It should be noted that waterbody impairment assessments are based on longer-term data, and individual exceedances of a criterion do not indicate use impairment. http://ca.dep.state.fl.us/mapdirect/?focus=nutrientcriteria

Methods

Effluent grab and composite samples were taken from monitoring site location EFF-1 for Outfall D-001. Samples were collected by Northeast District staff Paul Duff, Hillary Saunders, Abhi Maturi, and Shannon Taylor.

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.

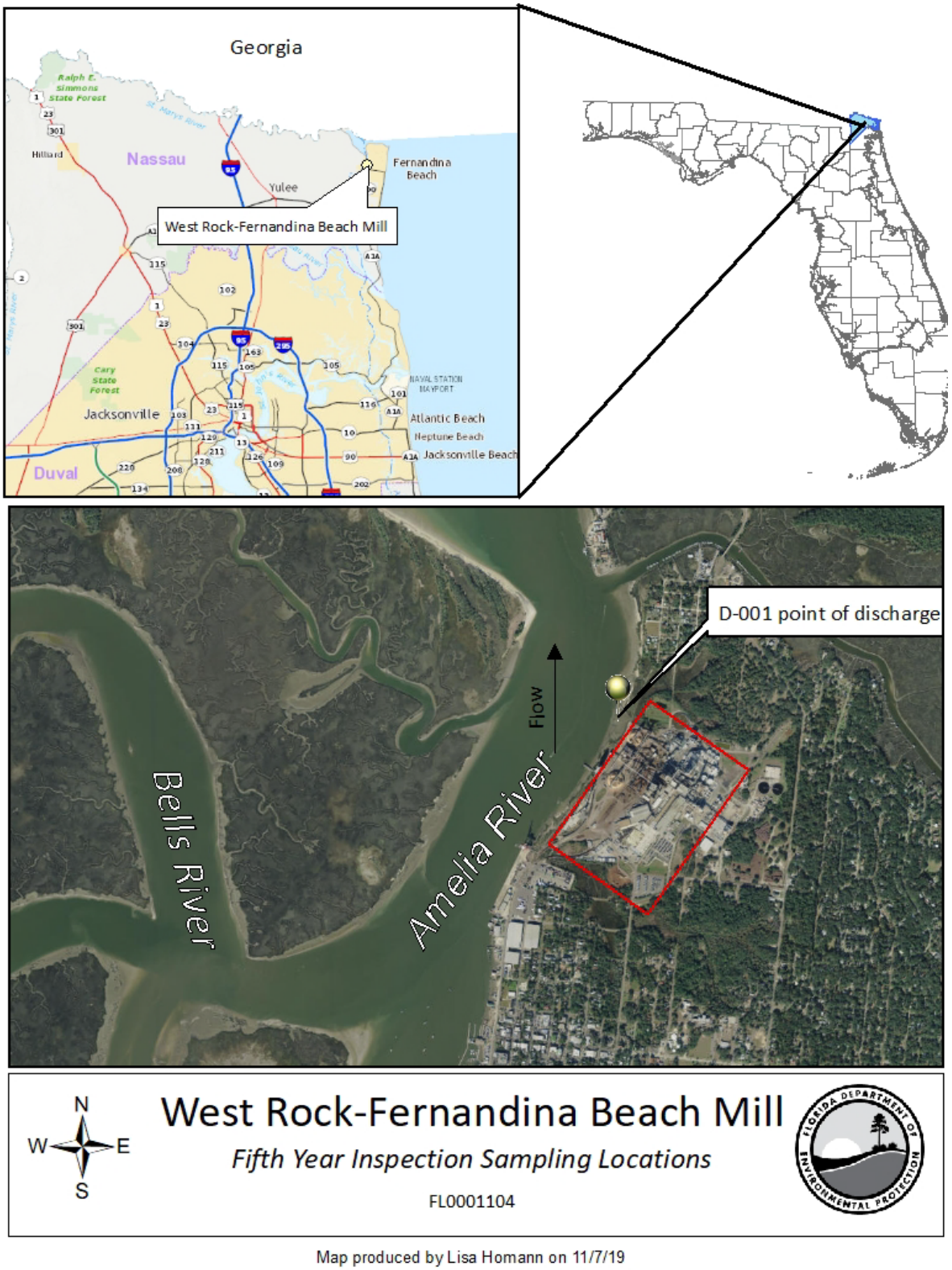


Figure 1. Map of Facility and Sampling Locations

Results

Physical and Chemical Parameters (See Table 1 and Appendices C and D)

- Temperature and pH measurements complied with effluent permit limits.

- Dissolved oxygen levels complied with effluent permit limits and Class III Marine Water Quality Criteria (62-302.533, F.A.C.).

Analytical Water Chemistry (See Table 2 and Appendix D)

- In the facility permit, multiple analytes require reporting but there are no effluent permit limits for analytical water chemistry analytes.

- Fluoride and turbidity levels in the effluent sample complied with Class III Marine Water Quality Criteria (62-302.530, F.A.C.). Insufficient data were collected to determine Class III Marine Water Quality compliance for chloride (62-302.530(17), F.A.C.). A normal background level must be established at the time of sampling to account for daily and seasonal fluctuations.

Toxicity Whole Effluent Test (See Table 2)

- Chronic definitive bioassay tests were performed August 13 through August 20, 2019.

- Aliquots of the bioassay sample were salinity-adjusted according to permit requirements from an apparent salinity of approximately 1.6 parts per thousand (ppth) to a salinity of approximately 19.7 ppth for the *Americamysis bahia* test and to a salinity of approximately 5.1 ppth for the *Menidia beryllina* test. Control mortality, for both the test controls and salt-adjusted control, were within method acceptance criteria.

- During the chronic definitive bioassay, the effluent composite sample IC25 for the mysid, *Americamysis bahia*, and the IC25 for the fish, *Menidia beryllina*, were calculated as being greater than 100% effluent. The effluent samples were not toxic to either test organism and therefore complied with effluent permit limits.

- 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 effluent grab samples were present at levels that complied with effluent permit limits and Class III Marine Water Quality Criteria (62-302.530, F. A. C.).

Algal Growth Potential (See Table 4 and Appendix B)

- The freshwater unicellular green alga, *Pseudokirchneriella subcapitata*, and the marine species *Dunaliella tertiolecta* were used to determine the AGP values in the effluent sample.

- An aliquot of the AGP sample was salinity adjusted from an apparent salinity of approximately 1.373 parts per thousand (ppth) to a salinity of approximately 6.8 ppth by the addition of artificial sea salts to meet the salinity requirements of the test species.

- Nitrate and nitrite was not detected in the effluent sample. Using ½ the method detection limit (MDL) for nitrate and nitrite to calculate a value for total nitrogen to phosphorus ratio, the ratio suggests that the effluent is nitrogen limited (Miller et al. 1978).

Organic Constituents (See Appendix D)

- 2,4-Dimethylphenol was detected in the effluent grab sample between the MDL and PQL.

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

Effluent limits, Class III Marine Criteria, and field parameters

Parameter	Units	Class III Criteria	Effluent Permit Limits	Effluent Composite 8/12	Effluent Composite 8/14	Effluent Composite 8/16	Effluent Grab
Sample Depth	m	-	-	-	-	-	0.2
Temperature	C	-	≤ 108	15	2	2	38.3
pH	SU	6.5 - 8.5	6.0 - 8.5	-	-	-	6.1
Specific Conductance	umhos/cm	-	-	-	-	-	3,044
Salinity	ppt	-	-	-	-	-	1.6
Dissolved Oxygen	mg/L	-	≥ 1.7	-	-	-	6.1
Dissolved Oxygen	% saturation	≥ 42	-	-	-	-	93.2

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

Table 2. Analytical water chemistry and toxicological data

Effluent limits, Class III Marine Criteria, and analytical water chemistry and toxicological data

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Composite 8/12	Effluent Composite 8/14	Effluent Grab
Ortho-phosphate	mg P/L	-	-	-	-	0.43
Total Phosphorus	mg P/L	0.181 [1]	Report p	-	0.62	0.58
Total Ammonia	mg N/L	-	Report	-	0.070	0.015
Un-ionized Ammonia (calculated salinity)	mg NH3/L	-	-	-	-	< 0.02 c
Nitrate and Nitrite	mg N/L	-	-	-	0.004 U	0.004 U
Total Kjeldahl Nitrogen	mg N/L	-	Report	-	0.80	0.66
Organic Nitrogen	mg N/L	-	-	-	0.73 c	0.65 c
Total Nitrogen	mg N/L	0.77 [1]	Report p	-	0.8 c	0.66 c
Total Organic Carbon	mg C/L	-	-	-	19	22
Chlorophyll *a* - Corrected	ug/L	12.9 [1]	-	-	-	0.96 U
Phaeophytin	ug/L	-	-	-	-	1.0 U
CBOD, 5 day, N - inhibited	mg/L	-	-	-	2.8	-
BOD, 5 day, N - uninhibited	mg/L	-	Report p	-	-	-
Hardness	mg CaCO3/L	-	-	-	-	260 c
Total Suspended Solids	mg/L	-	Report p	-	5 I	-
Turbidity	NTU	< 29 t	Report	-	-	3.1
Color (true)	PCU	-	-	-	-	49
Alkalinity	mg CaCO3/L	-	-	-	-	186
Chloride	mg Cl/L	< 10% [2]	-	-	-	88
Fluoride	mg F/L	≤ 5.0	-	-	-	0.42
Sulfate	mg SO4/L	-	-	-	-	1200
Bioassay - Mysid *(Americamysis bahia)*, IC25	% effluent	≥ 100	≥ 100 p	> 100	-	-
Bioassay - Fish *(Menidia beryllina)*, IC25	% effluent	≥ 100	≥ 100 p	> 100	-	-

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
c - Value is calculated
p – 24-hour flow proportioned composite
t - Shall not exceed 29 NTUs above background
U - Material analyzed for but not detected; value reported is the method detection limit
1 - Estuary-Specific Numeric Interpretations of the NNC for the Lower St. Mary's River region (62-302.532, F.A.C.). Value expressed as an annual geometric mean.
2 - Shall not exceed 10% mg Cl/L above background

Table 3. Analytical metals data

Effluent limits, Class III Marine Criteria, and analytical metals data

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab
Aluminum	ug/L	≤ 1,500	-	155
Arsenic	ug/L	-	-	0.57
Cadmium	ug/L	≤ 8.8	-	0.025 I
Calcium	mg/L	-	-	56.4
Chromium, Total [3]	ug/L	≤ 50	-	0.40 U
Copper	ug/L	≤ 3.7	≤ 12.8	0.40 U
Iron	ug/L	≤ 300	-	50 I
Lead	ug/L	≤ 8.5	-	0.20 U
Magnesium	mg/L	-	-	29.0
Mercury	ng/L	≤ 25	≤ 25	0.29 I
Nickel	ug/L	≤ 8.3	≤ 40.1	0.63 I
Potassium	mg/L	-	-	21.3
Selenium	ug/L	≤ 71	-	0.20 U
Silver	ug/L	≤ 2.3	-	0.010 U
Sodium	mg/L	-	-	573
Zinc	ug/L	≤ 86	-	14 I

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
U - Material analyzed for but not detected; value reported is the method detection limit
3 - Class III Marine Water Quality Criterion (62-302.530(19)(b), F.A.C.) is for chromium-VI

Table 4. Algal Growth Potential (AGP)

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

Location	Test Species	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (OP) ± 20%	Predicted AGP (TN) ± 20%	Predicted AGP (TP) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent Grab	*Dunaliella tertiolecta*	3.0 U *	not applicable [4]	not applicable [4]	not applicable [4]	not applicable [4]	0.04 [5]	1.14 [5]
Effluent Grab	*Pseudokirchneriella subcapitata*	0.997	0.65 ± 0.13 [5]	184.9 ± 37	25.16 ± 5.03 [5]	249.4 ± 49.9	0.04 [5]	1.14 [5]

* - sample salinity adjusted to 6.8 ppth

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

4 - predictions not applicable to marine matrix

5 - nitrate-nitrite was not detected in the effluent sample; predicted AGP and N:P ratios calculated using 1/2 the method detection limit (MDL) for non-detect

Appendix A. Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event

Prepared By: Shannon Taylor	**Contact Number:** (904) 256-1617
Facility Name (as it appears on permit): West Rock-Fernandina Beach Mill	**Former Names:** Smurfit Stone Container Corp - Fernandina Beach Mill
NPDES Permit Number: FL0001104	**Permit Expiration Date:** November 11, 2020
Physical Address: 600 North 8th Street, Fernandina Beach, Florida 32034	
District: NED	**County:** Nassau
Function of Facility: This facility produces unbleached kraft linerboard with the primary SIC code of 2631, Paperboard Mills. The production consists of the following general steps: wood preparation, pulping, pulp processing and chemical recovery, and paper and paperboard manufacturing that contribute to the wastewater.	
Facility Type: Industrial Waste	**Permitted Capacity (MGD):** 37.5 MGD

Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): 16.83

Date	Monthly Average of Flow in MGD
06/30/2018	**16.46**
07/31/2018	**16.80**
08/31/2018	**16.80**
09/30/2018	**17.20**
10/31/2018	**17.50**
11/30/2018	**17.94**
12/31/2018	**17.50**
01/31/2019	**12.19**
02/28/2019	**17.00**
03/31/2019	**17.08**
04/30/2019	**16.91**
05/31/2019	**18.55**

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	Description of Monitoring Site
EFF-1	Nearest accessible point after final treatment and prior to the point of discharge to the river
SWB-1	Ambient sampling location, approximately 200 m south of outfall near oil dock (STORET # 21FLA19020006)
SWD-1	Ambient sampling location, approximately 1000 m north of outfall near CM 4, north of Eagan's Creek (STORET # 21FLA19020010)
SWD-2	Ambient sample location within the mixing zone

Description of Permitted Outfall(s):

Surface Water Discharge D-001: An existing 30.0 MGD Annual Average Daily Flow permitted discharge to Amelia River, Class III Marine Waters, (WBID# 2124) which is a 36-inch diameter pipe, 37.5 MGD design capacity (28.7 MGD design wastewater flow and 8.8 MGD stormwater flow), discharging to the Amelia River is approximately 250 feet in length, with 20 ports at a spacing of 12.5 feet, 6 inch diameter ports, discharging at a depth of approximately 32 feet. The point of discharge is located approximately at latitude 30□ 41' 9" N and longitude 81□ 27' 30" W.

Mixing zones for dissolved oxygen, copper, nickel, temperature and pH pursuant to Rule 62-4.244 FAC have been established for the discharge, see conditions I.A.9 and I.A.10.

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

This facility is an existing 37.5 million gallons per day (MGD) design flow discharge of treated process wastewater and stormwater (28.7 MGD design wastewater flow and 8.8 MGD stormwater flow) to surface water. Treatment system consists of a grit chamber, bar screen, primary clarifier, heat exchanger, cooling tower (for the non-contact cooling water), UNOX pure oxygen activated sludge treatment system, and dual secondary clarifiers, with discharge to outfall D-001. Emergency spill collection and control systems include a lined, temporary wastewater holding pond to provide influent loading control.

Primary and secondary wastewater solids are handled by dewatering screw presses and belt presses or are conveyed to temporary storage area. Primary and secondary solids blending takes place in tank systems.

This facility

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**	**Limit**	**Statistical Basis**	**Frequency of Analysis**	**Sample Type**	**Monitoring Site**	**Notes**
Flow	**MGD**	**Max**	**Report**	**Daily Maximum Monthly Average**	**Continuous**	**Meter**	**EFF-1**	**See I.A.3**
BOD, 5-day, 20ºC	**mg/L**	**Max**	**Report**	**Monthly Average Daily Maximum**	**3 Days/Week**	**24-hr FPC**	**EFF-1**	**See I.A.7**
BOD, 5-day, 20ºC	**Lbs/day**	**Max**	**11,560 28,200**	**Monthly Average Daily Maximum**	**3 Days/Week**	**Calculated**	**CAL-1**	**See I.A.7**
Solids, Total Suspended	**mg/L**	**Max**	**Report**	**Monthly Average Daily Maximum**	**3 Days/Week**	**24-hr FPC**	**EFF-1**	**See I.A.7**
Solids, Total Suspended	**Lbs/day**	**Max**	**21,250 45,500**	**Monthly Average Daily Maximum**	**3 Days/Week**	**Calculated**	**CAL-1**	**See I.A.7**
Turbidity	**NTU**	**Max**	**Report**	**Daily Maximum**	**Weekly**	**Grab**	**EFF-1**	
pH *(Mixing Zone)*	**S.U.**	**Min Max**	**6.0 8.5**	**Daily Minimum Daily Maximum**	**3 Days/Week**	**Grab**	**EFF-1**	**See I.A.10**
Oxygen, Dissolved (DO) *(Mixing Zone)*	**mg/L**	** Min**	**Report 1.7**	**Monthly Average Daily Minimum**	**3 Days/Week**	**Grab**	**EFF-1**	**See I.A.10 & I.A.11**
Oxygen, Dissolved (DO) *(Percent in Compliance)*	**Percent**	**Min**	**92**	**Annually**	**Monthly**	**Calculation**	**CAL-1**	**See I.A.11**
Temperature (ºF), Water *(Mixing Zone)*	**Deg F**	**Max**	**108.0**	**Daily Maximum**	**3 Days/Week**	**Grab**	**EFF-1**	**See I.A.10**
Nickel, Total Recoverable *(Mixing Zone)*	**µg/L**	**Max**	**40.1**	**Daily Maximum**	**Monthly**	**Grab**	**EFF-1**	**See I.A.10**

Copper, Total Recoverable *(Mixing Zone)*	**µg/L**	**Max**	**12.8**	**Daily Maximum**	**Monthly**	**Grab**	**EFF-1**	**See I.A.10**

			Effluent Limitations		Monitoring Requirements			
Parameter	**Units**	**Max/Min**	**Limit**	**Statistical Basis**	**Frequency of Analysis**	**Sample Type**	**Monitoring Site**	**Notes**
Nitrogen, Total (as N)	**mg/L**	**Max**	**Report**	**Monthly Average Single Sample**	**Monthly**	**24-hr FPC**	**EFF-1**	**See I.A.9**
Nitrogen, Total (as N), Load	**Lbs/year**	**Max**	**266,006 Report**	**Annual Total Monthly Total**	**Monthly**	**Calculated**	**CAL-1**	**See I.A.9**
Phosphorus, Total (as P)	**mg/L**	**Max**	**Report**	**Monthly Average Single Sample**	**Monthly**	**24-hr FPC**	**EFF-1**	**See I.A.9**
Phosphorus, Total (as P), Load	**Lbs/year**	**Max**	**53,248 Report**	**Annual Total Monthly Total**	**Monthly**	**Calculated**	**CAL-1**	**See I.A.9**
Nitrogen, Kjeldahl, Total (as N)	**Mg/L**	**Max**	**Report**	**Daily Maximum**	**Quarterly**	**Grab**	**EFF-1**	
Nitrogen, Ammonia, Total (as N)	**Mg/L**	**Max**	**Report**	**Daily Maximum**	**Quarterly**	**Grab**	**EFF-1**	
Chronic Whole Effluent Toxicity, 7-Day IC_{25} (*Americamysis bahia*)	**percent**	**Min**	**100**	**Single Sample**	**Semi-Annually; twice per year**	**24-hr FPC**	**EFF-1**	**See I.A.12**
Chronic Whole Effluent Toxicity, 7-Day IC_{25} (*Menidia beryllina*)	**percent**	**Min**	**100**	**Single Sample**	**Semi-Annually; twice per year**	**24-hr FPC**	**EFF-1**	**See I.A.12**
Mercury, Total Recoverable	**µg/L**	**Max**	**0.025**	**Daily Maximum**	**Annually**	**Grab**	**EFF-1**	**See I.A.8**
Tide Stage	**ft**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Calculated**	**SWB-1 SWD-1 SWD-2**	**See I.A.13**
Oxygen, Dissolved (DO)	**mg/L**	**Min**	**Report**	**Single Sample**	**Quarterly**	**Meter**	**SWB-1 SWD-1 SWD-2**	**See I.A.13**

Oxygen, Dissolved Percent Saturation	**Percent**	**Min**	**Report**	**Single Sample**	**Quarterly**	**Meter**	**SWB-1 SWD-1 SWD-2**	**See I.A.13**
pH	**s.u.**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Meter**	**SWB-1 SWD-1 SWD-2**	**See I.A.13**

			Effluent Limitations		Monitoring Requirements			
Parameter	**Units**	**Max/Min**	**Limit**	**Statistical Basis**	**Frequency of Analysis**	**Sample Type**	**Monitoring Site**	**Notes**
BOD, Carbonaceous 5 day, 20C	**mg/L**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Grab**	**SWB-1 SWD-1**	**See I.A.13**
Solids, Total Suspended	**mg/L**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Grab**	**SWB-1 SWD-1**	**See I.A.13**
Chlorophyll a	**µg/L**	**Max**	**Report**	**Single Sample Annual Geometric Mean**	**Quarterly**	**Grab**	**SWB-1 SWD-1**	**See I.A.13**
Nitrogen, Total, as N	**mg/L**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Grab**	**SWB-1 SWD-1**	**See I.A.13**
Phosphorus, Total (as P)	**mg/L**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Grab**	**SWB-1 SWD-1**	**See I.A.13**
Nitrogen, Kjeldahl, Total (as N)	**mg/L**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Grab**	**SWB-1 SWD-1**	**See I.A.13**
Nitrogen, Ammonia, Total (as N)	**mg/L**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Grab**	**SWB-1 SWD-1**	**See I.A.13**
Nitrogen, Organic, Total (as N)	**mg/L**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Grab**	**SWB-1 SWD-1**	**See I.A.13**
Nitrite plus Nitrate, Total 1 det. (as N)	**mg/L**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Grab**	**SWB-1 SWD-1**	**See I.A.13**
Phosphate, Ortho (as P)	**mg/L**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Grab**	**SWB-1 SWD-1**	**See I.A.13**
Copper, Total Recoverable	**µg/L**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Grab**	**SWB-1 SWD-1**	**See I.A.13**
Nickel, Total Recoverable	**µg/L**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Grab**	**SWB-1 SWD-1**	**See I.A.13**
Silver, Total Recoverable	**µg/L**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Grab**	**SWB-1 SWD-1**	**See I.A.13**
Aluminum, Total Recoverable	**µg/L**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Grab**	**SWB-1 SWD-1**	**See I.A.13**
Iron, Total Recoverable	**µg/L**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Grab**	**SWB-1 SWD-1**	**See I.A.13**
Lead, Total Recoverable	**µg/L**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Grab**	**SWB-1 SWD-1**	**See I.A.13**
Zinc, Total Recoverable	**µg/L**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Grab**	**SWB-1 SWD-1**	**See I.A.13**
Arsenic, Total Recoverable	**µg/L**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Grab**	**SWB-1 SWD-1**	**See I.A.13**
Cadmium, Total Recoverable	**µg/L**	**Max**	**Report**	**Single Sample**	**Quarterly**	**Grab**	**SWB-1 SWD-1**	**See I.A.13**

PART I: Continued	
Receiving Waters: Amelia River, (WBID# 2124)	**Classification (indicate whether fresh or marine):** 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 chronic whole effluent toxicity of the discharge from outfall D-001.

a. Effluent Limitation

(1) In any routine or additional follow-up test for chronic whole effluent toxicity, the 25 percent inhibition concentration (IC_{25}) shall not be less than 100% effluent. [Rules 62-302.530(61) and 62-4.241(1)(b), F.A.C.]

(2) For acute whole effluent toxicity, the 96-hour LC_{50} shall not be less than 100% effluent in any test. [Rules 62-302.500(1)(a)4. and 62-4.241(1)(a), F.A.C.]

b. Monitoring Frequency

(1) Routine toxicity tests shall be conducted **once every six months**, the first starting within 6months of the most recent tests 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***, Survival, Growth and Fecundity Test, and an inland silverside, ***Menidia beryllina***, Larval Survival and Growth Test, concurrently.

(3) All test species, procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, 3rd ed., 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 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, the effluent shall be adjusted to 5 ppt with artificial sea salts. The salinity of the control/dilution water 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 prior to the end of any test and the control mortality is less than 20% at that time, the test (including the control) shall be terminated with the conclusion that the test fails and constitutes non-compliance.

(4) 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 IC_{25} 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 **e-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-02-014, Section 10, and mailed or **e-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 mailed or **e-mailed** within 30 days to Jacksonville ***only***:

g. Test Failures

(1) A test fails when the test results do not meet the limits in 12.a.(1).

(2) Additional Follow-up Tests:

(a) If a routine test does not meet the chronic toxicity limitation in 12.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 12.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 are run. All test results shall be statistically analyzed according to the Appendices 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 12.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 12.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, valid routine tests that demonstrate compliance with the effluent limitation in 12.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 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 valid tests for the purpose of terminating the plan.

(4) If chronic toxicity test results indicate a 96-hour LC50 < 100% effluent, as derived from the chronic test survival data, then 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 test failures. *[62-4.241, 62-620.620(3)]*

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.): There are no active consent orders or administrative orders attached to this permit.

Facility Mixing Zone Details (if applicable):
The previous permit had mixing zones established for dissolved oxygen, temperature, copper, nickel, and pH. The mixing zones were granted pursuant to FAC Rule 62-4.244.
The mixing zones have polygon shape which was delineated based on a longitudinal distance of 40 m (upstream and downstream) and a total width of 10 m. The total mixing zone area shall be 800 m^2 and includes the entire water column from the surface to the bottom centered over the end-of-pipe/diffuser structure of the Outfall D-001 paralell to the shore. Within the mixing zone, a minimum dilution ratio of 1:36 is achieved at critical/worse care hydrologic scenarios. The maximum concentration limits at the end-of-pipe and at the mixing zone boundary for total recoverable copper, total recoverable nickel, dissolved oxygen, pH and temperature are listed in Table 1. The coordinates of the vertices of the mixing zone area are listed in the Table 2.

Table 1.: Mixing Zone Parameters and Limitations

Parameters	Min/Max	Limitations	
At the End-of-pipe		At the Mixing Zone Boundary	
Copper, Total Recoverable (µg/L)	Max	12.8	3.7
Nickle, Total Recoverable (µg/L)	Max	40.1	8.3
pH (S.U.)	Min	6.0	6.5
Dissolved Oxygen (mg/L)	Min	1.7	See Cond. I.A.10
Temperature, Water (°F)	Max	108.0	Ambient Temperature

Table 2.: Coordinates of the Vertices of Mixing Zone Polygon

Coordinate Label	**Latitude**	**Longitude**
NW	30º 41’ 10.795” N	81º 27’ 31.712” W
NE	30º 41’ 10.766” N	81º 27’ 31.337” W
SE	30º 41’ 8.178” N	81º 27’ 31.612” W
SW	30º 41’ 8.207” N	81º 27’ 31.986” W

Complied with requirements of Rule FAC 62-302.500(1) which states that the discharge at all the times will be free from: (1) settle to form putrescent deposits or otherwise create a nuisance; (2) Float as debris, scum, oil, or other matter in such amounts as to form nuisances; (3) produce color, odor, taste, turbidity, or other conditions in such degree as to create a nuisance; (4) are acutely toxic; (5) are present in concentrations which are carcinogenic, mutagenic, or teratogenic to human beings or to significant, locally occurring, wildlife or aquatic species; and (6) Pose a serious danger to the public health, safety.

Complied with requirements of Rule FAC 62-4.244(1)(d) to (i), which is (1) not include an existing drinking water supply intake or any other existing water supply intake; (2) not include a nursery area of indigenous aquatic life or any area approved by the Department for shellfish harvesting; (3) the mixing zone is not larger than is necessary for the discharge to completely mix with the receiving water to meet water quality standards and less than 800 meters, not significantly impair the designated use of the water body other than within the boundaries of the mixing zone.

(iii) Additional Discussions on the Mixing Zones:
1) pH
The technology based effluent limits for pH are 6.0 -9.0 standard units. The Florida Water Quality Standards (62-302.530(51)(c), FAC) require surface waters of the State to have a pH value within the range of 6.5 – 8.5 standard units. To ensure that both water quality-based requirements and technology-based requirements are met, the permit incorporates the more stringent limits of the water quality standards (6.5 and 8.5 standard units. However, the existing mixing zone for the pH lower range of 6.0 versus the water quality lower standard of 6.5 s.u. is needed as

this treatment system has an occasional lower pH value in the 6.2 to 6.4 s.u., range.
The facility achieved these levels of control over the last five years.

2) Temperature:

The existing mixing zone for temperature that has been granted from the previous permit included the mixing zone limited to a maximum of 108°F (42.22 °C) at the end-of-pipe. (The high temperature is due to BOD removal by aerobic bacteria that generates energy in the form of heat as one by-product.)
A review of the effluent temperature data from the earlier permit cycle (2005 through 2009) indicates a maximum of 105.7 o F, a low of 96.5oF, and an average T of 100.89 o F. The effluent temperature data from the current past permit cycle (November 2010 through June 2015) indicates a maximum of 106.4 o F, a low of 97.2°F, and an average of 102.3° F (with a standard deviation of 2.0), mode of 104.8°F. Thus, the trend is slightly upward due to the change required in operation.

3) Copper and Nickel

The existing mixing zones for copper and nickel have granted from the previous permit. The mixing zones were limited to a maximum of 12.8 µg/L and 40.1 µg/L at the end-of-pipe for copper and nickel, respectively.
An evaluation of the Copper and Nickel effluent quality was conducted over the effective period of the current permit (January 2010 through June 2015). The mixing zone limitations for copper and nickel are proposed to remain the same.

4) Dissolved Oxygen

The submerged discharge offers more flexibility in meeting the design goal. Submerged discharges allow the effluent to be directed at different angles to the ambient flow to maximize the initial dilution. Diffusers are effective in counteracting the buoyancy of the effluent and provide more dilution than single outlets. This preferred arrangement, directs the outlet into the current flow direction and/or vertically upward. To deal with the reversing currents of the receiving water, this preferred arrangement is a parallel diffuser alignment (tee diffuser). Strong jet mixing predominates over ambient mixing. Beyond this point, the mixing is controlled by ambient turbulence as the depth of the outfall is 32 feet and the river width is 1945 feet (593 m). The mixing zone width ratio is 59/1 or 1.7% of width (10 m width to river width 593 m).
Minimum dissolved oxygen level of the effluent at the end-of-pipe before discharging to the river shall be maintained such that: (1) the daily average, the seven-day average and the 30-days average percent DO saturation at the mixing zone boundary and entire segment waterbody (ambient) shall not be below 42 percent saturation in more than 10 percent of the values; not be below 51 percent more than once in any twelve week period; and not be below 56 percent more than once per year, respectively; and (2) DO concentration of the receiving water at the mixing zone boundary shall not below the limits set for in the Site Specific Alternative Criteria (SSACs) for Dissolved Oxygen established for Amelia River segment between the northern mouth of the river and the A1A crossing. Pursuant to the SSAC, Dissolved Oxygen at the mixing zone boundary shall not be less than 3.2 mg/L during low tide from July 1st through September 30th, and not below 4.0 mg/L during all other conditions. The 24-hr average shall be greater than or equal to 5.0 mg/L.

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

Monitoring Group	Date	Description	Result	Limit	Units	Statistical Base
D-001	2/28/2019	Biochemical Oxygen Demand-5	28254.8	28200.0	lb/day	DD - Daily Maximum
D-001	1/31/2019	Biochemical Oxygen Demand-5	29178.7	28200.0	lb/day	DD - Daily Maximum
D-001	12/31/2016	Copper, Total Recoverable	15	12.8	ug/L	DD - Daily Maximum

Describe previous FYI and WQBEL study: The previous Third Year Sampling Inspection conducted on 8/16/2012 was considered 'In Compliance' with no sampling results exceeding respective water quality standards.
Describe previous or current Enforcement Actions (including WLs): No open enforcement
Describe any violations or problems noted in previous inspection: No issues noted.
Discuss whether DMR trends within previous five years are improving or declining: Levels have increased over the last five years.
Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse):

PART II: Sampling Event Information	
Date(s) sample collected:	**Sampler(s):**
Temperature (Deg C):	**pH (SU):**
Dissolved Oxygen (mg/L):	**Conductivity (umhos/cm):**
Total Residual Chlorine (mg/L):	**Total Residual Chlorine - after Disinfection (mg/L):**
Method of Chlorination:	**Method of De-chlorination:**
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. Explanations of Measurements

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

- **Chemical Analyses of the Effluent**

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

- **Toxicity Bioassays**

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

- **Bacteriological Testing**

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

- **Chlorophyll *a* Content**

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

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

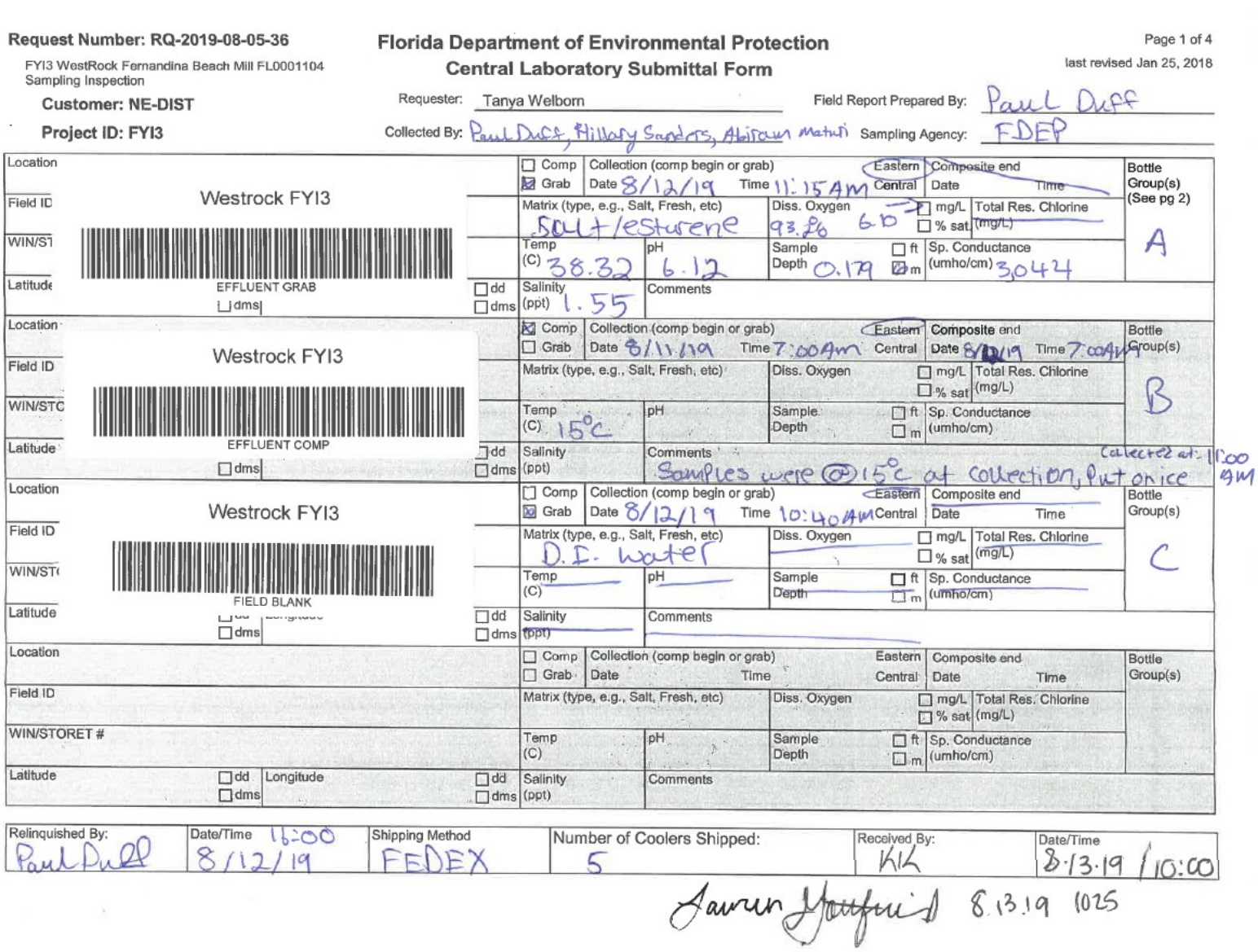
  The concentration of nutrients in a water sample may be used to calculate the expected yield of AGP under the assumption that other required nutrients (e.g. silicon, micronutrients) are present in excess (Miller *et al*. 1978). The expected amount of production is calculated as 38

times the total soluble inorganic nitrogen (nitrate and nitrite plus ammonia) under nitrogen limitation or 430 times the ortho-phosphate (OP) concentration under phosphorus limitation with an error of ± 20%. When the ratio of nitrogen to phosphorus (N: P) is less than 10:1, nitrogen limitation of algal production is likely. When the N: P ratio is 20:1 or greater, phosphorus limitation is likely (USEPA 2000). For ratios in-between, co-limitation may occur. Production of lower biomass than expected may be evidence of growth inhibition related to toxic compounds present in the water sample tested and may constitute an exceedance of 62-302.530(62), 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



Request Number: RQ-2019-08-05-36

FYI3 WestRock Fernandina Beach Mill FL0001104 Sampling Inspection

Customer: NE-DIST

Project ID: FYI3

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: Paul Duff

Collected By: Paul Duff, Hillary Sanders, Abiraun Maturi

Sampling Agency: FDEP

Location: Westrock FYI3 — EFFLUENT GRAB

Field ID / WIN/ST / Latitude ☐dd ☐dms

☐ Comp ☒ Grab — Collection (comp begin or grab) Date 8/12/19 Time 11:15AM Eastern/Central — Composite end Date Time

Matrix (type, e.g., Salt, Fresh, etc): Salt/estuarine

Diss. Oxygen: 93.8 % sat / 6.0 mg/L — Total Res. Chlorine (mg/L)

Temp (C): 38.32 — pH: 6.12 — Sample Depth: 0.179 ☐ft ☒m — Sp. Conductance (umho/cm): 30424

Salinity (ppt): 1.55 — Comments

Bottle Group(s) (See pg 2): A

Location: Westrock FYI3 — EFFLUENT COMP

Field ID / WIN/STC / Latitude ☐dd ☐dms

☒ Comp ☐ Grab — Collection (comp begin or grab) Date 8/11/19 Time 7:00AM Eastern/Central — Composite end Date 8/12/19 Time 7:00AM

Matrix (type, e.g., Salt, Fresh, etc):

Diss. Oxygen: ☐ mg/L ☐ % sat — Total Res. Chlorine (mg/L)

Temp (C): 15°C — pH — Sample Depth: ☐ft ☐m — Sp. Conductance (umho/cm)

Salinity (ppt) — Comments: Samples were @ 15°C at collection, Put on ice

Bottle Group(s): B

Collected at: 11:00 PM

Location: Westrock FYI3 — FIELD BLANK

Field ID / WIN/ST / Latitude ☐dd ☐dms

☐ Comp ☒ Grab — Collection (comp begin or grab) Date 8/12/19 Time 10:40AM Eastern/Central — Composite end Date Time

Matrix (type, e.g., Salt, Fresh, etc): D.I. water

Diss. Oxygen: ☐ mg/L ☐ % sat — Total Res. Chlorine (mg/L)

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

Salinity (ppt) — Comments

Bottle Group(s): C

Location

Field ID

WIN/STORET #

Latitude ☐dd ☐dms — Longitude ☐dd ☐dms

☐ Comp ☐ Grab — Collection (comp begin or grab) Date Time Eastern/Central — Composite end Date Time

Matrix (type, e.g., Salt, Fresh, etc)

Diss. Oxygen: ☐ mg/L ☐ % sat — Total Res. Chlorine (mg/L)

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

Salinity (ppt) — Comments

Bottle Group(s)

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
Paul Duff	8/12/19 16:00	FEDEX	5	KK	8.13.19 10:00

Lauren Yourfirst 8.13.19 1025

Request Number: RQ-2019-08-05-36

FYI3 WestRock Fernandina Beach Mill FL0001104
Sampling Inspection

Customer: NE-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: Paul Duff

Collected By: Paul Duff/Shannon Taylor

Sampling Agency: FDEP

Location: Westrock FYI3	☒ Comp ☐ Grab	Collection (comp begin or grab) Date 8/13/19 Time 10:00 AM	Eastern Central	Composite end Date 8/14/19 Time 10:00 AM	Bottle Group(s) (See pg 2): B		
Field: EFFLUENT COMP	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen ☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)			
WIN/	Temp (C) 2°	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)			
Latitu ☐ dd ☐ dms	Salinity (ppt)	Comments: Samples collected @ 10:05AM 8/14/19					
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time	Bottle Group(s)		
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen ☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)			
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)			
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments				
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time	Bottle Group(s)		
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen ☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)			
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)			
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments				
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time	Bottle Group(s)		
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen ☐ mg/L ☑ % sat	Total Res. Chlorine (mg/L)			
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)			
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments				

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
Paul Duff	8/14/19 16:00	FEDEX	2	Tyler R.	08/15/19 @ 9:30

Lauren Dunbar 8.15.19 1127

Request Number: RQ-2019-08-05-36

FYI3 WestRock Fernandina Beach Mill FL0001104
Sampling Inspection

Customer: NE-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: Paul Duff
Collected By: Paul Duff / Shannon Taylor
Sampling Agency: FDEP

Location: Westrock FYI3	☒ Comp ☐ Grab	Collection (comp begin or grab) Date 8/15/19 Time 9:30AM	Eastern Central	Composite end Date 8/16/19 Time 9:30AM	Bottle Group(s) (See pg 2): B			
Field ID	Matrix (type, e.g., Salt, Fresh, etc): Effluent		Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)			
WIN/STC	Temp (C): 2°	pH	Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)			
Latitude ☐ dd ☐ dms: EFFLUENT COMP	Salinity (ppt)	Comments: Samples taken @ 8/16/19, 9:50AM						
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time	Bottle Group(s)			
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)			
WIN/STORET #	Temp (C)	pH	Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)			
Latitude ☐ dd ☐ dms / Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments						
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time	Bottle Group(s)			
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)			
WIN/STORET #	Temp (C)	pH	Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)			
Latitude ☐ dd ☐ dms / Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments						
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time	Bottle Group(s)			
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)			
WIN/STORET #	Temp (C)	pH	Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)			
Latitude ☐ dd ☐ dms / Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments						

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
Paul Duff	8/16/19 1500 pm	FEDEX	3		

Appendix D. Chemical Analysis of Effluent

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/12/2019 7:00	Effluent Composite	Toxicology	Bioassay-Chron-Def-SW-Fish, IC25	100 L	IC25		
8/12/2019 7:00	Effluent Composite	Toxicology	Bioassay-Chron-Def-SW-Mysid, IC25	100 L	IC25		
8/12/2019 7:00	Effluent Composite	Toxicology	Bioassay-Chron-Def-SW-Mysid, NOEC	100	NOEC		
8/12/2019 7:00	Effluent Composite	Toxicology	Bioassay-Chron-Def-SW-Fish, NOEC	100	NOEC		
8/12/2019 7:00	Effluent Composite	Nutrients	Temperature	15	C		
8/14/2019 10:00	Effluent Composite	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	2.8	mg/L	0.2	2
8/14/2019 10:00	Effluent Composite	Nutrients	Kjeldahl Nitrogen	0.80	mg N/L	0.08	0.2
8/14/2019 10:00	Effluent Composite	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
8/14/2019 10:00	Effluent Composite	Nutrients	TSS	5 I	mg/L	2	10
8/14/2019 10:00	Effluent Composite	Nutrients	Total-P	0.62	mg P/L	0.005	0.05
8/14/2019 10:00	Effluent Composite	Nutrients	Ammonia-N	0.070	mg N/L	0.01	0.025
8/14/2019 10:00	Effluent Composite	Nutrients	Organic Carbon	19	mg C/L	0.5	1
8/14/2019 10:00	Effluent Composite	Nutrients	Temperature	2	C		
8/16/2019 9:30	Effluent Composite	Nutrients	Temperature	2	C		
8/12/2019 11:15	Effluent Grab	AGP/LN	Algal Growth Potential	0.997	mg DryWt/L	0.3	0.9
8/12/2019 11:15	Effluent Grab	AGP/LN	Algal Growth Potential-Salinity Adjusted	3.0 U	mg DryWt/L	3	3
8/12/2019 11:15	Effluent Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.96 U	ug/L	0.96	2.9
8/12/2019 11:15	Effluent Grab	Chlorophyll/Grain Size/BOD	Phaeophytin-a	1.0 U	ug/L	1	3.2
8/12/2019 11:15	Effluent Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	0.70 U	ug/L	0.7	2.1
8/12/2019 11:15	Effluent Grab	Metals	Nickel	0.63 I	ug/L	0.5	2
8/12/2019 11:15	Effluent Grab	Metals	Silver	0.010 U	ug/L	0.01	0.04
8/12/2019 11:15	Effluent Grab	Metals	Potassium	21.3	mg/L	1.5	6
8/12/2019 11:15	Effluent Grab	Metals	Mercury	0.29 I	ng/L	0.1	0.3
8/12/2019 11:15	Effluent Grab	Metals	Chromium	0.40 U	ug/L	0.4	1.6
8/12/2019 11:15	Effluent Grab	Metals	Calcium	56.4	mg/L	0.075	0.3
8/12/2019 11:15	Effluent Grab	Metals	Iron	50 I	ug/L	30	120
8/12/2019 11:15	Effluent Grab	Metals	Arsenic	0.57	ug/L	0.05	0.2
8/12/2019 11:15	Effluent Grab	Metals	Lead	0.20 U	ug/L	0.2	0.4
8/12/2019 11:15	Effluent Grab	Metals	Selenium	0.20 U	ug/L	0.2	0.8
8/12/2019 11:15	Effluent Grab	Metals	Magnesium	29.0	mg/L	0.04	0.16
8/12/2019 11:15	Effluent Grab	Metals	Cadmium	0.025 I	ug/L	0.02	0.08
8/12/2019 11:15	Effluent Grab	Metals	Aluminum	155	ug/L	5	20

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/12/2019 11:15	Effluent Grab	Metals	Copper	0.40 U	ug/L	0.4	0.8
8/12/2019 11:15	Effluent Grab	Metals	Sodium	573	mg/L	2.5	10
8/12/2019 11:15	Effluent Grab	Metals	Zinc	14 I	ug/L	5	20
8/12/2019 11:15	Effluent Grab	Nutrients	Color (true)	49	PCU	2.5	6
8/12/2019 11:15	Effluent Grab	Nutrients	Sulfate	1.2E+03	mg SO4/L	4	12
8/12/2019 11:15	Effluent Grab	Nutrients	Total-P	0.58	mg P/L	0.005	0.05
8/12/2019 11:15	Effluent Grab	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
8/12/2019 11:15	Effluent Grab	Nutrients	Organic Carbon	22	mg C/L	0.5	1
8/12/2019 11:15	Effluent Grab	Nutrients	Ammonia-N	0.015	mg N/L	0.002	0.005
8/12/2019 11:15	Effluent Grab	Nutrients	Fluoride	0.42	mg F/L	0.035	0.1
8/12/2019 11:15	Effluent Grab	Nutrients	O-Phosphate-P	0.43	mg P/L	0.04	0.1
8/12/2019 11:15	Effluent Grab	Nutrients	Chloride	88	mg Cl/L	4	12
8/12/2019 11:15	Effluent Grab	Nutrients	Kjeldahl Nitrogen	0.66	mg N/L	0.08	0.2
8/12/2019 11:15	Effluent Grab	Nutrients	Total Alkalinity	186	mg CaCO3/L	0.65	2.5
8/12/2019 11:15	Effluent Grab	Nutrients	Turbidity	3.1	NTU	0.1	0.13
8/12/2019 11:15	Effluent Grab	Pesticides	Chlorpyrifos Methyl	0.010 U	ug/L	0.01	0.042
8/12/2019 11:15	Effluent Grab	Pesticides	Malathion	0.010 U	ug/L	0.01	0.042
8/12/2019 11:15	Effluent Grab	Pesticides	Metalaxyl	0.19 U	ug/L	0.19	0.75
8/12/2019 11:15	Effluent Grab	Pesticides	Metribuzin	0.052 U	ug/L	0.052	0.21
8/12/2019 11:15	Effluent Grab	Pesticides	Phorate	0.0052 U	ug/L	0.0052	0.021
8/12/2019 11:15	Effluent Grab	Pesticides	Atrazine Desethyl	0.010 U	ug/L	0.01	0.042
8/12/2019 11:15	Effluent Grab	Pesticides	Azinphos Methyl	0.094 U	ug/L	0.094	0.38
8/12/2019 11:15	Effluent Grab	Pesticides	Metolachlor	0.13 U	ug/L	0.13	0.5
8/12/2019 11:15	Effluent Grab	Pesticides	Norflurazon	0.052 U	ug/L	0.052	0.21
8/12/2019 11:15	Effluent Grab	Pesticides	Simazine	0.010 U	ug/L	0.01	0.042
8/12/2019 11:15	Effluent Grab	Pesticides	Diazinon	0.010 U	ug/L	0.01	0.042
8/12/2019 11:15	Effluent Grab	Pesticides	Ametryn	0.010 U	ug/L	0.01	0.042
8/12/2019 11:15	Effluent Grab	Pesticides	Ethion	0.010 U	ug/L	0.01	0.042
8/12/2019 11:15	Effluent Grab	Pesticides	Parathion Methyl	0.010 U	ug/L	0.01	0.042
8/12/2019 11:15	Effluent Grab	Pesticides	Ethoprop	0.0052 U	ug/L	0.0052	0.021
8/12/2019 11:15	Effluent Grab	Pesticides	Naled	0.084 UJ	ug/L	0.084	0.33
8/12/2019 11:15	Effluent Grab	Pesticides	Prometryn	0.021 U	ug/L	0.021	0.084
8/12/2019 11:15	Effluent Grab	Pesticides	Atrazine Desisopropyl	0.010 U	ug/L	0.01	0.042
8/12/2019 11:15	Effluent Grab	Pesticides	Fonofos	0.010 U	ug/L	0.01	0.042

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/12/2019 11:15	Effluent Grab	Pesticides	Bromacil	0.042 U	ug/L	0.042	0.17
8/12/2019 11:15	Effluent Grab	Pesticides	Demeton	0.025 U	ug/L	0.025	0.1
8/12/2019 11:15	Effluent Grab	Pesticides	Fenamiphos	0.031 UJ	ug/L	0.031	0.13
8/12/2019 11:15	Effluent Grab	Pesticides	Mevinphos	0.010 U	ug/L	0.01	0.042
8/12/2019 11:15	Effluent Grab	Pesticides	Parathion Ethyl	0.021 U	ug/L	0.021	0.084
8/12/2019 11:15	Effluent Grab	Pesticides	Prometon	0.021 U	ug/L	0.021	0.084
8/12/2019 11:15	Effluent Grab	Pesticides	Butylate	0.052 U	ug/L	0.052	0.21
8/12/2019 11:15	Effluent Grab	Pesticides	Chlorpyrifos Ethyl	0.010 U	ug/L	0.01	0.042
8/12/2019 11:15	Effluent Grab	Pesticides	Disulfoton	0.0052 U	ug/L	0.0052	0.021
8/12/2019 11:15	Effluent Grab	Pesticides	Hexazinone	0.073 U	ug/L	0.073	0.29
8/12/2019 11:15	Effluent Grab	Pesticides	Alachlor	0.063 U	ug/L	0.063	0.25
8/12/2019 11:15	Effluent Grab	Pesticides	Atrazine	0.010 U	ug/L	0.01	0.042
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	2,6-Dinitrotoluene	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Phenanthrene	0.10 U	ug/L	0.1	0.41
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	3,3'-Dichlorobenzidine	10 UJ	ug/L	10	41
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Benzo(k)fluoranthene	0.026 U	ug/L	0.026	0.1
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	2-Nitrophenol	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Benzo(a)pyrene	0.026 U	ug/L	0.026	0.1
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Hexachlorobenzene	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	2,4-Dichlorophenol	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	4-Nitrophenol	10 U	ug/L	10	41
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Acenaphthylene	0.026 U	ug/L	0.026	0.1
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Di-n-octyl phthalate	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Hexachloroethane	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Isophorone	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1 U	ug/L	2.1	8.2
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Nitrobenzene	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	0.10 U	ug/L	0.1	0.41
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Anthracene	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.051 U	ug/L	0.051	0.21

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	5.1 U	ug/L	5.1	21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Butyl benzyl phthalate	1.0 U	ug/L	1	4.1
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Chrysene	0.026 U	ug/L	0.026	0.1
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Hexachlorobutadiene	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Pentachlorophenol	0.51 U	ug/L	0.51	2.1
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Phenol	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	2,4-Dinitrotoluene	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.026 U	ug/L	0.026	0.1
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Fluoranthene	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Pyrene	0.10 U	ug/L	0.1	0.41
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Acenaphthene	0.026 U	ug/L	0.026	0.1
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Benzidine	10 UJ	ug/L	10	41
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Benzo(b)fluoranthene	0.026 U	ug/L	0.026	0.1
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Diethyl phthalate	2.1 U	ug/L	2.1	8.2
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.051 UJ	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.026 U	ug/L	0.026	0.1
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	2,4-Dimethylphenol	0.098 I	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	2,4-Dinitrophenol	10 U	ug/L	10	41
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	2-Chloronaphthalene	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Di-n-butyl phthalate	2.1 U	ug/L	2.1	8.2
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Dimethyl phthalate	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Fluorene	0.026 U	ug/L	0.026	0.1
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1 U	ug/L	3.1	12
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Benzo(a)anthracene	0.026 U	ug/L	0.026	0.1
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.026 U	ug/L	0.026	0.1
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	Naphthalene	0.10 U	ug/L	0.1	0.41
8/12/2019 11:15	Effluent Grab	Priority Organic Pollutants	2-Chlorophenol	0.051 U	ug/L	0.051	0.21
8/12/2019 11:15	Effluent Grab	Nutrients	Dissolved Oxygen	93.2	%Sat		
8/12/2019 11:15	Effluent Grab	Nutrients	Temperature	38.32	C		
8/12/2019 11:15	Effluent Grab	Nutrients	Specific Conductance	3044	umhos/cm		

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/12/2019 11:15	Effluent Grab	Nutrients	Sample Depth	0.179	m		
8/12/2019 11:15	Effluent Grab	Nutrients	pH	6.12			
8/12/2019 10:40	Blank	Metals	Magnesium	0.040 U	mg/L	0.04	0.16
8/12/2019 10:40	Blank	Metals	Lead	0.20 U	ug/L	0.2	0.4
8/12/2019 10:40	Blank	Metals	Chromium	0.40 U	ug/L	0.4	1.6
8/12/2019 10:40	Blank	Metals	Arsenic	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Metals	Cadmium	0.020 U	ug/L	0.02	0.08
8/12/2019 10:40	Blank	Metals	Sodium	0.50 U	mg/L	0.5	2
8/12/2019 10:40	Blank	Metals	Potassium	0.30 U	mg/L	0.3	1.2
8/12/2019 10:40	Blank	Metals	Iron	30 U	ug/L	30	120
8/12/2019 10:40	Blank	Metals	Nickel	0.50 U	ug/L	0.5	2
8/12/2019 10:40	Blank	Metals	Copper	0.40 U	ug/L	0.4	0.8
8/12/2019 10:40	Blank	Metals	Aluminum	5.0 U	ug/L	5	20
8/12/2019 10:40	Blank	Metals	Selenium	0.20 U	ug/L	0.2	0.8
8/12/2019 10:40	Blank	Metals	Calcium	0.075 U	mg/L	0.075	0.3
8/12/2019 10:40	Blank	Metals	Mercury	0.10 U	ng/L	0.1	0.3
8/12/2019 10:40	Blank	Metals	Silver	0.010 U	ug/L	0.01	0.04
8/12/2019 10:40	Blank	Metals	Zinc	5.0 U	ug/L	5	20
8/12/2019 10:40	Blank	Nutrients	Chloride	0.20 U	mg Cl/L	0.2	0.6
8/12/2019 10:40	Blank	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.1
8/12/2019 10:40	Blank	Nutrients	Total-P	0.002 U	mg P/L	0.002	0.005
8/12/2019 10:40	Blank	Nutrients	Turbidity	0.10 U	NTU	0.1	0.13
8/12/2019 10:40	Blank	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.08	0.2
8/12/2019 10:40	Blank	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
8/12/2019 10:40	Blank	Nutrients	Sulfate	0.20 U	mg SO4/L	0.2	0.6
8/12/2019 10:40	Blank	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.004	0.01
8/12/2019 10:40	Blank	Nutrients	Ammonia-N	0.002 U	mg N/L	0.002	0.005
8/12/2019 10:40	Blank	Nutrients	Color (true)	2.5 U	PCU	2.5	6
8/12/2019 10:40	Blank	Nutrients	Total Alkalinity	0.65 U	mg CaCO3/L	0.65	2.5
8/12/2019 10:40	Blank	Nutrients	Organic Carbon	0.50 U	mg C/L	0.5	1
8/12/2019 10:40	Blank	Pesticides	Hexazinone	0.070 U	ug/L	0.07	0.28
8/12/2019 10:40	Blank	Pesticides	Prometryn	0.020 U	ug/L	0.02	0.08
8/12/2019 10:40	Blank	Pesticides	Fenamiphos	0.030 U	ug/L	0.03	0.12
8/12/2019 10:40	Blank	Pesticides	Demeton	0.024 U	ug/L	0.024	0.096

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/12/2019 10:40	Blank	Pesticides	Metolachlor	0.12 U	ug/L	0.12	0.48
8/12/2019 10:40	Blank	Pesticides	Naled	0.080 UJ	ug/L	0.08	0.32
8/12/2019 10:40	Blank	Pesticides	Atrazine Desisopropyl	0.010 U	ug/L	0.01	0.04
8/12/2019 10:40	Blank	Pesticides	Chlorpyrifos Ethyl	0.010 U	ug/L	0.01	0.04
8/12/2019 10:40	Blank	Pesticides	Ethoprop	0.0050 U	ug/L	0.005	0.02
8/12/2019 10:40	Blank	Pesticides	Metalaxyl	0.18 U	ug/L	0.18	0.72
8/12/2019 10:40	Blank	Pesticides	Prometon	0.020 U	ug/L	0.02	0.08
8/12/2019 10:40	Blank	Pesticides	Parathion Ethyl	0.020 U	ug/L	0.02	0.08
8/12/2019 10:40	Blank	Pesticides	Diazinon	0.010 U	ug/L	0.01	0.04
8/12/2019 10:40	Blank	Pesticides	Atrazine	0.010 U	ug/L	0.01	0.04
8/12/2019 10:40	Blank	Pesticides	Atrazine Desethyl	0.010 U	ug/L	0.01	0.04
8/12/2019 10:40	Blank	Pesticides	Alachlor	0.060 U	ug/L	0.06	0.24
8/12/2019 10:40	Blank	Pesticides	Ametryn	0.010 U	ug/L	0.01	0.04
8/12/2019 10:40	Blank	Pesticides	Azinphos Methyl	0.090 U	ug/L	0.09	0.36
8/12/2019 10:40	Blank	Pesticides	Butylate	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Pesticides	Disulfoton	0.0050 U	ug/L	0.005	0.02
8/12/2019 10:40	Blank	Pesticides	Phorate	0.0050 U	ug/L	0.005	0.02
8/12/2019 10:40	Blank	Pesticides	Simazine	0.010 U	ug/L	0.01	0.04
8/12/2019 10:40	Blank	Pesticides	Metribuzin	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Pesticides	Mevinphos	0.010 U	ug/L	0.01	0.04
8/12/2019 10:40	Blank	Pesticides	Malathion	0.010 U	ug/L	0.01	0.04
8/12/2019 10:40	Blank	Pesticides	Norflurazon	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Pesticides	Bromacil	0.040 U	ug/L	0.04	0.16
8/12/2019 10:40	Blank	Pesticides	Ethion	0.010 U	ug/L	0.01	0.04
8/12/2019 10:40	Blank	Pesticides	Fonofos	0.010 U	ug/L	0.01	0.04
8/12/2019 10:40	Blank	Pesticides	Parathion Methyl	0.010 U	ug/L	0.01	0.04
8/12/2019 10:40	Blank	Pesticides	Chlorpyrifos Methyl	0.010 U	ug/L	0.01	0.04
8/12/2019 10:40	Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.025 U	ug/L	0.025	0.1
8/12/2019 10:40	Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	Isophorone	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.025 U	ug/L	0.025	0.1
8/12/2019 10:40	Blank	Priority Organic Pollutants	2-Nitrophenol	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	Nitrobenzene	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	Butyl benzyl phthalate	1.0 U	ug/L	1	4

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/12/2019 10:40	Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	Hexachlorobutadiene	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	Pyrene	0.10 U	ug/L	0.1	0.4
8/12/2019 10:40	Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	2-Chlorophenol	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	Benzidine	10 UJ	ug/L	10	40
8/12/2019 10:40	Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	5.0 U	ug/L	5	20
8/12/2019 10:40	Blank	Priority Organic Pollutants	Di-n-butyl phthalate	2.0 U	ug/L	2	8
8/12/2019 10:40	Blank	Priority Organic Pollutants	Fluorene	0.025 U	ug/L	0.025	0.1
8/12/2019 10:40	Blank	Priority Organic Pollutants	Pentachlorophenol	0.50 U	ug/L	0.5	2
8/12/2019 10:40	Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	4-Nitrophenol	10 U	ug/L	10	40
8/12/2019 10:40	Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.025 U	ug/L	0.025	0.1
8/12/2019 10:40	Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.025 U	ug/L	0.025	0.1
8/12/2019 10:40	Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.025 U	ug/L	0.025	0.1
8/12/2019 10:40	Blank	Priority Organic Pollutants	Dimethyl phthalate	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	Fluoranthene	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	2,4-Dinitrophenol	10 U	ug/L	10	40
8/12/2019 10:40	Blank	Priority Organic Pollutants	Acenaphthylene	0.025 U	ug/L	0.025	0.1
8/12/2019 10:40	Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	Hexachloroethane	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	Phenanthrene	0.10 U	ug/L	0.1	0.4
8/12/2019 10:40	Blank	Priority Organic Pollutants	Phenol	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	10 U	ug/L	10	40
8/12/2019 10:40	Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.025 U	ug/L	0.025	0.1
8/12/2019 10:40	Blank	Priority Organic Pollutants	Chrysene	0.025 U	ug/L	0.025	0.1
8/12/2019 10:40	Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.025 U	ug/L	0.025	0.1

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
8/12/2019 10:40	Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2.0 U	ug/L	2	8
8/12/2019 10:40	Blank	Priority Organic Pollutants	Naphthalene	0.10 U	ug/L	0.1	0.4
8/12/2019 10:40	Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	2,4-Dimethylphenol	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.0 U	ug/L	3	12
8/12/2019 10:40	Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	Acenaphthene	0.025 U	ug/L	0.025	0.1
8/12/2019 10:40	Blank	Priority Organic Pollutants	Anthracene	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	Diethyl phthalate	2.0 U	ug/L	2	8
8/12/2019 10:40	Blank	Priority Organic Pollutants	Hexachlorobenzene	0.050 U	ug/L	0.05	0.2
8/12/2019 10:40	Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	0.10 U	ug/L	0.1	0.4