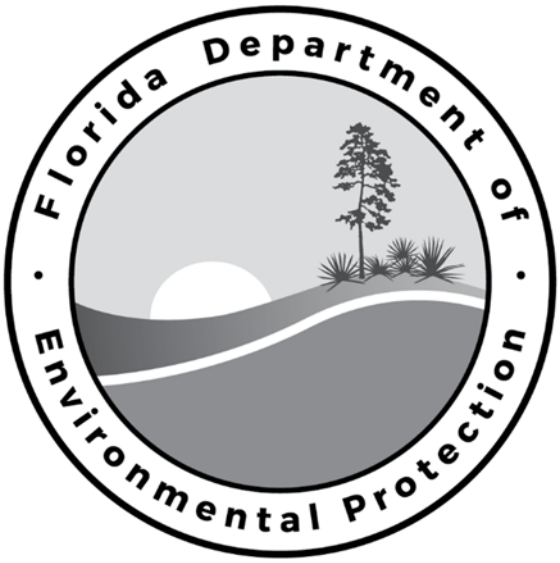


Effluent Quality Assessment of

Rayonier Performance Fibers, LLC

Nassau County

NPDES # FL0000701

Sampled November 16, 2015

December 2016

Biology Program

FDEP Laboratory

Division of Environmental Assessment and Restoration

FDEP Laboratory Quality Manual

NELAC Certification No. E31780

CONTENTS

Facility Overview

Methods

Results

Conclusion

Literature Cited

Tables

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

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

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

Table 4. Effluent limits, Class III Marine Criteria and analytical organic and pesticide data

Table 5. Measured Algal Growth Potential (AGP) 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

Rayonier Performance Fibers, LLC, 10 Gum Street, Fernandina Beach, Nassau County, Florida, 32035. NPDES #FL0000701.

Facility Overview

Rayonier Performance Fibers, LLC is a chemical cellulose pulp mill. See Appendix A for a description of the facility, summary of permit limits and Discharge Monitoring Report (DMR) information.

Methods

Effluent grab samples for toxicity testing and chemical analyses and effluent composite samples for biological and chemical analyses for this facility were collected on November 16, 2015. Samples were collected from the EFF-01 (composite samples were a flow proportional mixture of 88% effluent from EFF-03 and 12% effluent from EFF-02), EFF-02 and EFF-03 NPDES sampling points for Outfall D-001 by Sharon Piltz and Jann Gruentzel (FDEP Northeast Regional Operation Center (ROC)) following DEP-SOP-001/01 FS 2400 Wastewater Sampling (see Appendix B).

The 96-hour acute definitive toxicity tests and algal growth potential test were performed following internal DEP SOPs TA07_03, TA07_04, and TA08_01 through TA08_09 (see Appendix B).

Results

Chemistry Results (See Table 1, Table 2, Table 3, Table 4, and Appendix C)

- Receiving Waters for this facility fall within the Peninsular Nutrient Watershed Region for Numeric Nutrient Criteria (NNC). This FYI event can only provide single sample results, therefore, compliance should be determined with additional sampling events.
- The total ammonia concentration in the grab sample and in the composite sample collected and preserved for chemical analysis was 15 mg N/L and 16 mg N/L, respectively. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentrations were 0.11 mg/L.
- Aluminum, arsenic, cadmium, chromium, copper, fluoride, iron, lead, nickel, silver, zinc, adsorbable organic halides and carbonaceous biochemical oxygen demand (CBOD), were detected in the effluent at levels that comply with Class III Marine Water Quality Criteria (62-302.530, F.A.C.) and/or permitted limits. Due to the lack of a background value, it could not be determined if effluent turbidity was in exceedance of Class III Marine Water Quality Criteria.
- Copper, adsorbable organic halides, 2,3,7,8 – TCDF and 2,3,7,8 - TCDD were detected in the field blank. The adsorbable organic halide results were atypical in that the field blank result was 2400 µg/L and the effluent result was 8.0 I µg/L.

Algal Growth Potential (See Table 5 and Appendix C)

- The effluent Algal Growth Potential (AGP) was 3.00 U mg dry wt/L of the saltwater species *Dunaliella tertiolecta.* The ratio (28.1:1) of total nitrogen to total phosphorus suggests that the effluent is phosphorus limited (Maloney et al. 1974).
- The AGP result is much less than the expected AGP value based on the effluent nutrient concentrations, suggesting that algal growth inhibition may be an issue.
- Possible explanations for the reduced algal growth in the AGP test include the total suspended solids content (234 mg/L) of the effluent sample which could have bound nutrients and resulted in nutrients being removed during the filtration process; and, the addition of salts to the sample for the salinity adjustment AGP test may have caused precipitation of enough orthophosphate to cause the sample to become extremely phosphorus-limited (Manahan 1994). True algal growth inhibition can only be determined through a combination of chemical analyses and the algal growth inhibition test.
- An aliquot of the AGP sample was salinity adjusted from an apparent salinity of approximately 2.92 parts per thousand (ppth) to a salinity of approximately 6.93 ppth by the addition of artificial sea salts to meet the salinity requirements of the test species.

Toxicity Test Results (See Appendix C)

- Tests were performed November 17-21, 2015. Per the facility's NPDES permit, 60% effluent was the highest concentration tested.

  Menidia beryllina 96-hour acute definitive bioassay – LC_{50} > 60%, 15%* mortality in 60% sample at 96 hours.

  Americamysis bahia 96-hour acute definitive bioassay – LC_{50} > 60%, 35%* mortality in 60% sample at 96 hours.

*NOTE: 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 62-302.500 (1) (a) 4, F.A.C.). Mortality between 20-50% 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.).

- The bioassay samples did not exceed the permitted limit ($LC_{50} \geq 30\%$) for acute toxicity.
- Aliquots of the bioassay sample were salinity-adjusted from an apparent salinity of approximately 3.1 parts per thousand (ppth) to a salinity of approximately 20 ppth for the *Americamysis bahia* test and to a salinity of approximately 15.2 ppth for the *Menidia beryllina* test. Forty Fathoms®marine mix artificial sea salts was used for the salinity adjustments. The salinity adjustments were performed per the salinity requirements in the facility's NPDES permit. The salt control used for each test was prepared by diluting 20 ppth salinity artificial seawater (ASW) with well water to a salinity of approximately 3.1 ppth then salting this solution with artificial sea salts to match the salinity of the appropriate test solution. The purpose of the salt controls was to confirm that there was no effect of adding artificial sea salts to the sample. There was no mortality in the salt controls of the *Americamysis bahia* test and 10% mortality in the salt controls of the *Menidia beryllina* test.

Conclusion

The effluent samples collected on November 15, 2015, from the EFF-02 and EFF-03 NPDES sampling points for this facility were combined (percentage of each based on flow rates) to produce the bioassay sample for this facility. The combined effluent did not exceed the permitted limit ($LC_{50} \geq 30\%$) for acute toxicity to the *Americamysis bahia* or *Menidia beryllina* test organisms during the 96-hour acute definitive bioassays. The AGP result was less than the expected AGP value based on the effluent nutrient concentrations. Effluent water quality samples collected on November 16, 2015, did not exceed any applicable water quality standards or violate any permit conditions.

For additional information concerning this sampling event, including bioassay bench sheets and SRT data, please contact Diane.Power@dep.state.fl.us and/or Joseph.Faircloth@dep.state.fl.us.

Literature Cited

Maloney, T. E., W. E. Miller, and D. T. Specht. 1974. The Marine Algal Assay Procedure: Bottle Test. National Environmental Research Center Office of Research and Development. U. S. EPA, Corvallis, Oregon. 43 p.

Manahan, S. E. 1994. Environmental Chemistry, 6th edition. Lewis Publishers, USA. 811 pp

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.

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

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

Rayonier Performance Fibers, LLC	Units	Class III Criteria	Effluent Permit Limits	EFF-1 COMP	EFF-1 GRAB	EFF-2 GRAB	EFF-3 GRAB
Sample Depth	m	-	-	-	-	0.3	0.3
Temperature	C	-	Report	-	-	25.1	25.5
pH	SU	6.5 - 8.5	6.5 - 8.5	-	-	7.2	7.0
Specific Conductance	µmhos/cm	-	-	-	-	15,784	4,722
Salinity	ppth	-	-	-	-	9.2	2.5
Dissolved Oxygen	% saturation	≥ 42	-	-	-	80.9 c	5.0 c
Dissolved Oxygen	mg/L	-	-	-	-	6.3	0.4
Flow (EFF-1)	MGD	-	≤ 26.31[1]	-	17.70 c	-	-
Flow (EFF-2)	MGD	-	Report	-	N/A	2.15	N/A
Flow (EFF-3)	MGD	-	Report	-	N/A	N/A	15.08

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

N/A – not applicable, limit is for specific monitoring location.

1 – Flow limit is a daily maximum flow.

c - Value is calculated

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

Rayonier Performance Fibers, LLC	Units	Class III Criteria	Effluent Permit Limits	EFF-1 COMP	EFF-1 GRAB
Ortho-phosphate	mg P/L	-	Report	-	0.024
Total Phosphorus	mg P/L	-	Report	1.5	1.4
Total Ammonia	mg N/L	-	Report p	16	15
Un-ionized Ammonia (measured salinity)	mg/L	-	-	-	0.11 c
Nitrate and Nitrite	mg N/L	-	Report	0.014	1.4
Total Kjeldahl Nitrogen	mg N/L	-	Report	42	38
Organic Nitrogen	mg N/L	-	-	26 c	23 c
Total Nitrogen	mg N/L	-	Report	42 c	39 c
Total Organic Carbon	mg C/L	-	-	280	290 A
Chlorophyll *a* - Corrected	µg/L	-	-	-	11 U
Phaeophytin	µg/L	-	-	-	8.0 U
CBOD, 5 day, N - inhibited	mg/L	-	-	110 JQ	-
Total Suspended Solids	mg/L	-	≤ 251	234	-
Turbidity	NTU	< 29 t	-	-	210 A
Color (true)	PCU	-	-	-	600
Alkalinity	mg CaCO3/L	-	-	-	209 A
Chloride	mg Cl/L	-	-	-	700 A
Fluoride	mg F/L	≤ 5.0	-	-	0.68
Sulfate	mg SO4/L	-	-	-	1,800 A
Toxicity (LC50 Acute definitive bioassay % Effluent)					
Bioassay - Mysid (*Americamysis bahia)*	% effluent	≥ 100	≥ 30	-	≥ 60
Bioassay - Fish *(Menidia beryllina)*	% effluent	≥ 100	≥ 30	-	≥ 60

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
c - Value is calculated
e -Value exceeds the Class III Water Quality Criteria or permit limits
p - 24-hour flow proportioned composite
t - Shall not exceed 29 NTUs above background
A - Value reported is the mean of two or more determinations
J - Estimated value
Q - Sample held beyond normal holding time
U - Material analyzed for but not detected; value reported is the method detection limit

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

Rayonier Performance Fibers, LLC	Units	Class III Criteria	Effluent Permit Limits	EFF-1 GRAB	EFF-3 GRAB
Hardness	mg/L	-	-	1010 c	-
Aluminum	mg/L	≤ 1500	≤ 3.0 s	586	-
Arsenic	µg/L	≤ 50	Report	1.14	-
Cadmium	µg/L	≤ 8.8	Report	0.716	-
Calcium	mg/L	-	-	273	-
Chromium, Total[2 h]	µg/L	≤ 50	Report	6.35	0.3 U
Copper[3]	µg/L	≤ 3.7	≤ 11.5 s	9.973	-
Iron	µg/L	≤ 300	≤ 2,400 s	1,140	-
Lead	µg/L	≤ 8.5	≤ 27.2 s	1.55	-
Magnesium	mg/L	-	-	79.7	-
Nickel	µg/L	≤ 8.3	≤ 66.4 s	14.0	-
Potassium	mg/L	-	-	26	-
Selenium	µg/L	≤ 71	-	0.20 U	-
Silver	µg/L	≤ 2.3	≤ 2.3 s	0.187	-
Sodium	mg/L	-	-	1010	-
Zinc	µg/L	≤ 86	≤ 410.0 s	131	-

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

2 – Analysis performed by Test America Laboratories, Savannah, GA, following SW846 Method 7196A.

3 – Copper (1.74 µg/L) was detected in the field blank.

c - Value is calculated

h - Class III Marine Water Quality Criterion (62-302.530(19)(b), F.A.C.) is for chromium-VI

s - Single sample

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

Table 4. Effluent limits, Class III Marine Criteria and analytical organic and pesticide data

Rayonier Performance Fibers, LLC	Units	Class III Criteria	Effluent Permit Limits	EFF-1 COMP	EFF-1 GRAB	EFF-3 Grab	EFF-2 Grab	Field Blank
Chloroform	µg/L	-	Report	-	-	4.6	0.20 U	0.20 U
2,3,7,8-TCDF [4]	pg/L	-	Report p	1.95 U	-	-	-	2.89 I
2,3,7,8-TCDD [4]	pg/L	-	0.014 p	2.14 U	-	-	-	2.59 IJ
Adsorbable Organic Halides [5]	µg/L	-	Report	-	8.0 I[6]	-	-	2400 A[6]

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

4 - Sample analysis performed by ALS Environmental, Jacksonville, FL, following Method 1613B.

5 - Sample analysis performed by Test America Laboratories, Savannah, GA, following EPA Method 1650 Rev. C.

6 – Results are atypical

p - 24-hour flow proportioned composite

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

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

J - Estimated value

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

Table 5. Measured algal growth potential (AGP; mg dry weight/L) and ratios of nitrogen to phosphorus

Rayonier Performance Fibers, LLC				
Location	**Test Species**	**AGP (measured)**	**Inorganic N:P ratio**	**Total N:P ratio**
EFF-1 GRAB	*Dunaliella tertiolecta*	3.00 U [6]	683.3	28.1

6 - sample salinity adjusted to 6.93 ppth

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

Appendix A
Facility Summary

State of Florida

Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Herndon Sims	**Contact Number:** 904-256-1612
Facility Name (as it appears on permit): Rayonier Performance Fibers, LLC	**Former Names:** N/A
NPDES Permit Number: FL0000701	**Permit Expiration Date:** August 25, 2016
Physical Address: 10 Gum Street, Fernandina Beach, FL 32035	
District: Northeast	**County:** Nassau
Function of Facility: Chemical cellulose pulp mill	
Facility Type: Industrial	**Permitted Capacity (MGD):** 26.31
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): September 2014 through August 2015 – 17.70 MGD mean flow	
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** The effluent discharge from Outfall D-001 is allowed on the ebb tide only (outgoing) with the exception of discharges associated with the clear sewer discharge. In order to ensure adequate dilution, the discharge shall commence not earlier than 1.5 hours after predicted high tide, based on tide tables published by NOAA, and must cease no later than 6 hours after high tide begins. The time discharge begins, the time discharge ends, and the corresponding tide heights must be recorded and retained.	
Description of Sampling Location(s) - actual permit designation of permitted sampling point(s): EFF-1 - Combined discharge (EFF-2 plus EFF-3) of treated process wastewater, treated storm water, rinse water and regenerate water EFF-2 - Sampling station for the clear sewer discharge (rinse water and regenerate water from the water treatment plant zeolite softening units) EFF-3 - Treated process wastewater and treated storm water discharge from the secondary treatment system	
Description of Permitted Outfall(s): Outfall D-001 discharges to the Amelia River, a Class III marine water. Outfall D-001 discharges through a 48 inch diameter pipe, which projects 800 ft. and equipped with a diffuser.	
Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility): Grit removal, neutralization, clarification, and aeration, with effluent discharge through D-001 only on outgoing tides.	

Part I

1. **During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge process wastewater, non-process wastewater, and stormwater from Outfall D-001 to Amelia River. Such discharge shall be limited and monitored by the permittee as specified below and reported in accordance with Permit Condition I.**Error! Reference source not found.**3:**

		Effluent Limitations			Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
Flow, Total (clear sewer and treated process wastewater and treated stormwater)	MGD	Max Max	26.31 Report	Daily Maximum Daily Average	Continuous	Calculated	EFF-1	See note 5
Flow, clear sewer (clear sewer (rinse water and regenerate water) from the water treatment plant)	MGD	Max Max	Report Report	Daily Maximum Daily Average	Continuous	Recording Flow Meter with Totalizer	EFF-2	See note 5
Flow, treated process wastewater and treated stormwater	MGD	Max Max	Report Report	Daily Maximum Daily Average	Continuous	Recording Flow Meter with Totalizer	EFF-3	See note 5
pH	s.u.	Min Max	6.0 8.5	Daily Minimum Daily Maximum	Continuous	Meter	EFF-1	
Temperature (F), Water	Deg F	Max	Report	Daily Maximum	Continuous	Meter	EFF-1	
Biochemical Oxygen Demand-5	lb/day	Max Max	47,250 27,000	Daily Maximum Daily Average	Daily, when discharging	24-hr FPC	EFF-1	See note 3
Solids, Total Suspended	lb/day	Max Max	55,000 38,249	Daily Maximum Daily Average	Daily, when discharging	24-hr FPC	EFF-1	See note 3
Nitrogen, Ammonia, Total (as N)	mg/L	Max Max Max	11.0 20.0 Report	Annual Average Monthly Average Daily Maximum	Weekly	24-hr FPC	EFF-1	See note 3 and note 11
Silver, Total Recoverable	µg/L	Max	2.3	Daily Maximum	Monthly	Grab	EFF-1	See note 4
Nickel, Total Recoverable	µg/L	Max	66.4	Daily Maximum	Monthly	Grab	EFF-1	See note 4 and note 9
Aluminum, Total Recoverable	mg/L	Max	3.0	Daily Maximum	Monthly	Grab	EFF-1	See note 4 and note 9
Copper, Total Recoverable	µg/L	Max	11.5	Daily Maximum	Monthly	Grab	EFF-1	See note 4 and note 9
Iron, Total Recoverable	mg/L	Max	2.4	Daily Maximum	Monthly	Grab	EFF-1	See note 4 and note 9
Lead, Total Recoverable	µg/L	Max	27.2	Daily Maximum	Monthly	Grab	EFF-1	See note 4 and note 9
Zinc, Total Recoverable	µg/L	Max	410.0	Daily Maximum	Monthly	Grab	EFF-1	See note.4 and note 9
Polycyclic Aromatic Hydrocarbons, Total	µg/L	Max	Report	Annual Average	Monthly	Grab	EFF-3	See note 7

		Effluent Limitations			Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
2,3,7,8-tetrachlorodibenzo-p-dioxin	pg/L	Max	0.014	Daily Maximum	Monthly	24-hr FPC	EFF-1	See note 3
2,3,7,8- tetrachlorodibenzo-furan	pg/L	Max	Report	Daily Maximum	Monthly	24-hr FPC	EFF-1	See note 3
Trichlorosyringol	µg/L	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	See note 4
3,4,5-Trichlorocatechol	µg/L	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	See note 4
3,4,6-Trichlorocatechol	µg/L	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	See note 4
3,4,5-Trichloroguaiacol	µg/L	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	See note 4
3,4,6-Trichloroguaiacol	µg/L	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	See note 4
4,5,6-Trichloroguaiacol	µg/L	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	See note 4
2,4,5-Trichlorophenol	µg/L	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	See note 4
2,4,6-Trichlorophenol	µg/L	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	See note 4
Tetrachlorocatechol	µg/L	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	See note 4
Tetrachloroguaiacol	µg/L	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	See note 4
2,3,4,6-Tetrachlorophenol	µg/L	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	See note 4
Pentachlorophenol	µg/L	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	See note 4
Chloroform (CHCl3)	lb/day	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	See note 4
Adsorbable Organic Halides (AOX)	lb/day	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	See note 4
Phosphorus, Total (as P)	mg/L	Max	Report	Daily Maximum	Quarterly	Grab	EFF-1	See note 4 and note 10.d
Phosphate, Ortho (as P)	mg/L	Max	Report	Daily Maximum	Quarterly	Grab and filtered immediately	EFF-1	See note 4 and note 10.d
Nitrogen, Total (as N)	mg/L	Max	Report	Daily Maximum	Quarterly	Grab	EFF-1	See note 10.d
Nitrite plus Nitrate, Total 1 det. (as N)	mg/L	Max	Report	Daily Maximum	Quarterly	Grab	EFF-1	See note 4 and note 10.d
Nitrogen, Kjeldahl, Total (as N)	mg/L	Max	Report	Daily Maximum	Quarterly	Grab	EFF-1	See note 4 and note 10.d
Benzene	µg/L	Max	Report	Daily Maximum	Semi-Annually; twice per year	Grab	EFF-3	See note 8
Toluene	µg/L	Max	Report	Daily Maximum	Semi-Annually; twice per year	Grab	EFF-3	See note 8
Ethylbenzene	µg/L	Max	Report	Daily Maximum	Semi-Annually; twice per year	Grab	EFF-3	See note 8

		Effluent Limitations			Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
Xylene	µg/L	Max	Report	Daily Maximum	Semi-Annually; twice per year	Grab	EFF-3	See note 8
Arsenic, Total Recoverable	µg/L	Max	Report	Daily Maximum	Semi-Annually; twice per year	Grab	EFF-3	See note 8
Cadmium, Total Recoverable	µg/L	Max	Report	Daily Maximum	Semi-Annually; twice per year	Grab	EFF-3	See note 8
Chromium, Hexavalent Total Recoverable	µg/L	Max	Report	Daily Maximum	Semi-Annually; twice per year	Grab	EFF-3	See note 8
Acute Whole Effluent Toxicity, 96-hour LC_{50} (*Americamysis bahia*)	percent	Min	30	Single Sample	Semi-Annually; twice per year	Grab	EFF-1	See note 4 and note 6
Acute Whole Effluent Toxicity, 96-hour LC_{50} (*Menidia beryllina*)	percent	Min	30	Single Sample	Semi-Annually; twice per year	Grab	EFF-1	See note 4 and note 6

Notes:

3. Flow-proportional composite samples shall be collected at EFF-2 and EFF-3 and combined prior to analysis to represent the EFF-1 flow-proportional composite sample. The flow-proportional composite samples shall be collected over a 24-hour time span during periods of discharge. Permittee may submit an alternative sampling plan or method to demonstrate that a time proportioned composite is equivalent or appropriate versus a flow proportioned composite.

4. Grab samples shall be collected at EFF-2 and EFF-3 and combined prior to analysis to represent the EFF-1 grab sample. This combination shall be based on the daily flow rate averages at each monitoring location. For example, if the daily flow rate average from EFF-3 is 10 MGD and the daily flow rate average from EFF-2 is 2 MGD, then the samples shall be mixed at the ratio of 10:2. The grab samples shall be collected concurrently during periods of discharge.

5. The effluent discharge from Outfall D-001 is allowed on the ebb tide only (outgoing) with the exception of discharges associated with the clear sewer discharge. In order to ensure adequate dilution, the discharge shall commence not earlier than 1.5 hours after predicted high tide, based on tide tables published by NOAA, and must cease no later than 6 hours after high tide begins. The time discharge begins, the time discharge ends, and the corresponding tide heights must be recorded and retained.

6. The permittee shall comply with the following requirements to evaluate acute whole effluent toxicity of the discharge from outfall D-001.
   a. Effluent Limitation
      i. In any routine or additional follow-up test for acute whole effluent toxicity, the 96-hour LC50 shall not be less than 30% effluent. *[62-302.200(1), 62-302.500(1)(a)4., 62-4.244(3)(b), and 62-4.241(3)(b), F.A.C.]*
   b. Monitoring Frequency
      i. Routine toxicity tests shall be conducted once every six months, the first starting within 6 months of the most recent tests and lasting for the duration of this permit.

c. Sampling Requirements

i. All tests shall be conducted on a single lab-composited sample of final effluent.

ii. The samples tested shall be a mixture composited in the laboratory to represent the flow-proportioned discharge from EFF-1 as described in I.A.6 below.

d. Test Requirements

i. Routine Test: All routine tests shall be conducted using a control (0% effluent) and a minimum of five dilutions: 60%, 30%, 15%, 7.5% and 3.75% final effluent.

ii. The permittee shall conduct 96-hour acute, static-renewal, multi-concentration toxicity tests using the mysid, *Americamysis bahia*, and the inland silverside, *Menidia beryllina*, concurrently.

iii. All test species, procedures and quality assurance criteria used shall be in accordance with Methods for Measuring Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, 5th Edition, EPA-821-R-02-012. Any deviation of the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use. In the event the above method is revised, the permittee shall conduct acute toxicity testing in accordance with the revised method.

iv. The control water and dilution water shall be artificial seawater, or hypersaline brine, diluted to the test salinity as described in EPA-821-R-02-012, Sections 7.2.4. and 7.3.7, respectively. The control/dilution water shall be prepared to 20 parts per thousand (ppth) with the same artificial sea salts or hypersaline brine that is used to adjust the salinity of the effluent. The test salinity shall be determined as follows:

1. The test salinity for *Americamysis bahia* shall be 20 ppth. In addition to the 20 ppth diluent control, a sea salt / brine control shall be prepared by diluting the 20 ppth diluent with de-ionized water, distilled water, or well water to the salinity of the original effluent, then adjusting the salinity of the diluted diluent to the test salinity (20 ppth) with artificial sea salts or hypersaline brine, as was used to adjust the effluent salinity.
2. The effluent salinity for the *Menidia beryllina* bioassay shall be the salinity resulting from the mixture of 30% effluent with 70% diluent at 20 ppth salinity. This salinity can either be calculated or measured. The effluent salinity for the *Menidia beryllina* bioassay shall be adjusted to match this measured/calculated salinity by adding artificial sea salts or hypersaline brine. The salinity of the control/dilution water (initially 20 ppth) shall be adjusted by dilution to match the salinity of the adjusted effluent. In addition to the diluent control, a sea salt / brine control shall be prepared by diluting the salinity adjusted diluent with de-ionized water, distilled water, or well water to the salinity of the original effluent, then adjusting the salinity of the diluted diluent to the test salinity with artificial sea salts or hypersaline brine, as was used to adjust the effluent salinity.
3. If hypersaline brine is used to prepare the control/dilution water and to adjust the salinity of the effluent, the volume of hypersaline brine added to the effluent must be taken into account when preparing the effluent dilutions.

e. Quality Assurance Requirements

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

ii. If the mortality in the control (0% effluent) exceeds 10% for either species in any test, the test for that species (including the control) shall be invalidated and the test repeated. The repeat test shall begin within 14 days after the last day of the invalid test.

iii. If 100% mortality occurs in all effluent concentrations prior to the end of any test and the control mortality is less than 10% at that time, the test (including

the control) shall be terminated with the conclusion that the test fails and constitutes non-compliance.

iv. Additional follow-up tests shall be evaluated for acceptability based on the concentration-response relationship, as required by EPA-821-R-02-012, Section 12.2.6.2., and included with the bioassay laboratory reports.

f. Reporting Requirements

i. Results from all required routine and additional tests shall be reported as the calculated LC50 effluent concentration for that test species on the Discharge Monitoring Report (DMR).

ii. A bioassay laboratory report for the routine test shall be prepared according to EPA-821-R-02-012, Section 12, Report Preparation and Test Review, and mailed or e-mailed to the Department at the address below within 30 days after the last day of the test.

iii. For additional follow-up tests, a single bioassay laboratory report shall be prepared according to EPA-821-R-02-012, Section 12, and mailed or e-mailed within 30 days after the last day of the second valid additional follow-up test.

iv. Data for invalid tests shall be included in the bioassay laboratory report for the repeat test.

v. The same bioassay data shall not be reported as the results of more than one test.

vi. All bioassay laboratory reports shall be mailed or e-mailed to Jacksonville *only*:

Florida Department of Environmental Protection
Northeast District – Wastewater Compliance
7825 Baymeadows Way, Suite B-200
Jacksonville, Florida 32256

g. Test Failures

i. A test fails when the test results do not meet the limits in 6.a.(1).

ii. Additional Follow-up Tests:

1. If a routine test does not meet the acute toxicity limitation in 6.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 6.d.
2. 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.
3. The additional follow-up tests shall be conducted using a control and a minimum of five dilutions: 60%, 30%, 15%, 7.5% and 3.75% effluent. However, 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-02-012.

iii. 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.

1. The permittee shall submit a plan for correction of the effluent toxicity within 60 days after the last day of the third test failure.
2. The Department shall review and approve the plan before initiation.
3. The plan shall be initiated within 30 days following the Department's written approval of the plan.
4. Progress reports shall be submitted quarterly to the Department at the address above.

5. During the implementation of the plan, the permittee shall conduct quarterly routine whole effluent toxicity tests in accordance with 6.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 6.b.(1). If a routine test is invalid according to the acceptance criteria in EPA-821-R-02-012, a repeat test shall be initiated within 14 days after the last day of the invalid routine test.
6. Upon completion of four consecutive, valid routine tests that demonstrate compliance with the effluent limitation in 6.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.
7. If a test within the sequence of the four is deemed invalid, but is replaced by a repeat valid test initiated within 14 days after the last day of the invalid test, the invalid test will not be counted against the requirement for four consecutive valid tests for the purpose of terminating the plan.

iv. The additional follow-up testing and the plan do not preclude the Department taking enforcement action for whole effluent toxicity permit limit violations. *[62-4.241, 62-620.620(3)]*

7. The limit for PAHs is on an annual basis; therefore, at least 12 months of valid samples must be taken. Upon completion of 12 consecutive months of sampling, if the results show that the concentration of total PAHs in the effluent is in compliance with the surface water quality standard, the permittee may submit a written request to the Department for a reduction in the monitoring frequency or removal of the monitoring requirement. The written request shall include information on the new recovery well remediation system including when the system was placed into operation and the maximum daily groundwater extraction rate. Each parameter should be graphed as a function of time, and a copy of each graph included with the request. A statement should be made about whether the trend for each parameter evaluated is increasing, decreasing, or neither increasing or decreasing, and whether the trend is expected to continue. *[62-302.530(56)(a)]*

8. Monitoring of benzene, toluene, ethylbenzene, xylene, total recoverable arsenic, total recoverable cadmium, and total recoverable chromium (hexavalent) is required on a semi-annual basis. Should the concentrations show non-detect after two years of monitoring, the permittee may submit a written request to the Department for a reduction in monitoring frequency or removal of the monitoring requirement. The written request shall include information on the new recovery well remediation system including when the system was placed into operation and the maximum daily groundwater extraction rate. Each parameter should be graphed as a function of time, and a copy of each graph included with the request. A statement should be made about whether the trend for each parameter evaluated is increasing, decreasing, or neither increasing or decreasing, and whether the trend is expected to continue.

9. Mixing Zones:

a. Pursuant to Chapter 62-4.244, FAC, the Permittee is hereby granted a mixing zone for dissolved oxygen and acute toxicity at D-001 into the Amelia River. The Permittee's discharge shall not cause a violation of Chapter 62-302, FAC, Class III Water Quality Standards outside the boundaries of the mixing zone described below:

The mixing zone extends 175 meters in width southeasterly from the Northwest bank of the Intracoastal Waterway; with the centerline starting 100 meters southerly from the outer end of Rayonier outfall diffuser and extending 615 meters northerly from the outfall for a total centerline length of 715 meters. This mixing zone contains 125,125 square meters and otherwise complies with the physical requirements of Chapter 62-4.244, FAC.

The dissolved oxygen standard set forth in FAC Rule 62-4.244(3)(a) shall apply within the mixing zone. In addition, outside the boundaries of the established mixing zone, all Chapter 62-302, FAC, Class III Water Quality standards, as modified by the SSAC granted on June 22, 1985, shall apply.

b. The Permittee is granted mixing zones for Iron, Aluminum, Nickel, Copper, Lead, pH, and Zinc pursuant to FAC Rule 62-4.244 for the effluent discharge from D-001 into Amelia River. The Permittee's discharge shall not cause a violation of Chapter 62-302, FAC, Class III Water Quality Standards for Marine waters outside the boundaries of the mixing zoned described below.

The mixing zone for Iron, Aluminum, Nickel, Copper, Lead, and Zinc shall be the area that is bounded on one side by the length of the diffuser (67 meters) and on the other side by the length in meters (m) immediately downstream from the diffuser which is listed as follows:

Parameter	Mixing Zone Downstream Length (m)	Mixing Zone Area (sq. m.)
Total Recoverable Iron	2.5	167.5
Total Recoverable Aluminum	1.0	67
Total Recoverable Copper	6.0	402
Total Recoverable Nickel	2.5	167.5
Total Recoverable Lead	2.0	134
Total Recoverable Zinc	1.5	100.5
pH	1.5	100.5

10. Ambient Monitoring:

a. The permittee shall conduct monitoring of the segment of the Amelia River near the outfall for maintaining data on the effect of the discharge to the water quality of the surface water body. Metered parameters (dissolved oxygen, pH, temperature, and conductivity) shall be analyzed at mid-depth levels of the river. The sample collection point for chlorophyll A shall be at mid-secchi depth. Samples for chemical analysis shall be grab samples and collected at mid-depth. Ortho-phosphorous samples shall be filtered immediately after collection. The date and time of sample collection and test procedures shall also be submitted with the results of the analysis.

b. The parameters to be measured / sampled shall include the following:

i) Dissolved oxygen, pH, temperature, specific conductivity, tide stage

ii) Biochemical Oxygen Demand-5, total suspended solids, total nitrogen, total kjeldahl nitrogen (as N), total ammonia (as N), total organic nitrogen (as N), nitrite plus nitrate (as N), total phosphorous, ortho-phosphorous, chlorophyll-a

iii) Total recoverable copper, total recoverable silver, total recoverable nickel, total recoverable aluminum, total recoverable iron, total recoverable lead, total recoverable zinc

c. Ambient samples shall be taken at the monitoring site locations described below:

Monitoring Site No.	Description of Monitoring Sites
SWB-1	Background ambient sampling location, upstream of the outfall at the crossing of the A1A Highway (STORET # 19020004)
SWU-1	Upstream ambient sampling location, approximately 600 meters upstream of the outfall
SWD-1	Ambient sampling location, approximately 6.0 meters downstream of the outfall (edge of the copper mixing zone – largest metals mixing zone)
SWD-2	Downstream ambient sampling location, approximately 600 meters downstream of the outfall (STORET # 19020012)
SWD-3	Downstream ambient sampling location, approximately 2,400 meters downstream of the outfall (STORET # 19020007)

d. Sampling shall occur quarterly at each sample location, during daylight hours, for a 24-hour period, as follows: 1 hour prior to low tide and 1 hour prior to high tide. The quarterly effluent-nutrients sample event collected at EFF-1 as described in Condition I.A.1 shall be conducted during the week of the ambient stream monitoring event.

e. Rayonier shall submit to the Department's Northeast District (NED) office a report with the ambient sample data results and graphical analyses for each sample location. Data qualifiers and any important comments concerning the sample event and sample results shall be included. The annual report (calendar year monitoring period) shall be submitted to the Northeast District wastewater permitting section by March 1, of the following year.

11. Compliance with the annual average limit shall be based on a 12-month rolling average concentration using the monthly average results for total ammonia as N. The Permittee shall report the calculated 12-month rolling average (using all samples collected for the limited parameter) on the DMR.

PART I: Continued	
Receiving Waters: Amelia River	**Classification (indicate whether fresh or marine):** Class III Marine
Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.): See notes in Part I above, item 6	
Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.): N/A	
Facility Mixing Zone Details (if applicable): See notes in Part I above, item 9	

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

Date	Parameter and Units	Limit	Result
September 2014	Aluminum (µg/L)	11.5	13
February 2015	Copper (mg/L)	3.0	3.4

Describe previous FYI and WQBEL study:
An FYI3 was conducted April 2012. The chemical and biological effluent results did not exceed the water quality standards or violated the permit requirements. No toxicity data was found in the facility files. Non-Conformance reports were included in the laboratory reports due to sample labeling and shipping errors.

Based on the fact sheet, a Level 1 WQBEL was completed for nitrogen, ammonia total. The WQBEL report was not found in the facility files.

Describe previous or current Enforcement Actions (including WLs):
CO 07-0027 was issued in 2007 for two unauthorized discharges.

Describe any violations or problems noted in previous inspection:
None – The last compliance evaluation inspection was conducted October 2014. The facility was in-compliance.

Discuss whether DMR trends within previous five years are improving or declining:
During the past 5 years, facility had CBOD (one-2013), copper (one-2015) and aluminum (two-2013/2014) exceedances. Beside these exceedances, facility has been meeting its permit limits.

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

PART II: Sampling Event Information

Date(s) sample collected:	**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

Explanation of Measurements

(1) Quality Assurance and Quality Control

FDEP's quality assurance requirements for analytical laboratories and field activities are codified in Chapter 62-160, F.A.C., Quality Assurance (QA Rule) and in internal Standard Operating Procedures (FDEP SOPs). Methods for all analyses are on file at the FDEP Central Laboratory in Tallahassee and may be viewed on the web at http://www.dep.state.fl.us/labs/library/lab_sops.htm and/or http://www.dep.state.fl.us/water/sas/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 FDEP SOPs. The results from these analyses were compared with Water Quality Criteria (62-302, F.A.C.) and facility permit limits.

(3) Toxicity Bioassays

Greater than 50% mortality in an acute toxicity test may constitute an exceedance of 62-302.500(1)a and/or facility permit limits. A 25% inhibition concentration (IC25) is the effluent concentration causing a 25% reduction in a biological response such as biomass or reproduction when compared to a control population. An IC25 of less than 100% in a chronic test may constitute exceedances of 62-302.530(20), 62-302.530(61) and/or facility permit limits. A no observed effect concentration (NOEC) less than 100% effluent in a chronic test may constitute an exceedance of 62-302.530(61) and/or facility permit limits. Standard reference toxicant (SRT) tests are conducted monthly to ensure quality in toxicity testing.

(4) Bacteriological Testing

High levels of fecal coliform bacteria may constitute an exceedance of 62-302.530(6) and/or facility permit limits. Fecal coliform and enterococci 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.

(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(46), F.A.C., 62-302.530(47)(a), F.A.C., and/or 62-302.530(47)(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. Raschke and Shultz (1987) found that an AGP above 10.0 mg dry weight/L represents a “problem” threshold for marine receiving waters, implying nutrient enrichment. High AGP values may constitute exceedances of 62-302.530(46), F.A.C., 62-302.530(47)(a), F.A.C. and/or 62-302.530(47)(b), F.A.C..

The concentration of nutrients in a water sample may be used to calculate the expected yield of AGP 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(61) 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	Field ID	Analysis Group	Component	Result	Units	MDL	PQL
11/16/2015 7:00	EFF-1 COMP	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	110 JQ	mg/L	0.2	2
11/16/2015 7:00	EFF-1 COMP	Nutrients	Organic Carbon	280	mg C/L	5	10
11/16/2015 7:00	EFF-1 COMP	Nutrients	Kjeldahl Nitrogen	42	mg N/L	4	10
11/16/2015 7:00	EFF-1 COMP	Nutrients	TSS	234	mg/L	10	50
11/16/2015 7:00	EFF-1 COMP	Nutrients	Ammonia-N	16	mg N/L	1	2.5
11/16/2015 7:00	EFF-1 COMP	Nutrients	NO2NO3-N	0.014	mg N/L	0.004	0.01
11/16/2015 7:00	EFF-1 COMP	Nutrients	Total-P	1.5	mg P/L	0.025	0.25
11/16/2015 7:00	EFF-1 COMP	Overflow	2,3,7,8-TCDF	1.95 U	pg/L	1.95	4.73
11/16/2015 7:00	EFF-1 COMP	Overflow	2,3,7,8-TCDD	2.14 U	pg/L	2.14	4.73
11/16/2015 16:30	EFF-1 GRAB	AGP/LN	Algal Growth Potential-Salinity Adjusted	3.00 U	mg DryWt/L	3	3
11/16/2015 16:30	EFF-1 GRAB	Chlorophyll/Grain Size/BOD	Phaeophytin-a	8.0 U	ug/L	8	24
11/16/2015 16:30	EFF-1 GRAB	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	11 U	ug/L	11	34
11/16/2015 16:30	EFF-1 GRAB	Toxicology	Bioassay-Acute-Def-SW-Mysid, LC50	60 L	LC50		
11/16/2015 16:30	EFF-1 GRAB	Toxicology	Bioassay-Acute-Def-SW-Fish, LC50	60 L	LC50		
11/16/2015 16:30	EFF-1 GRAB	Metals	Iron	1.14E+03	ug/L	30	120
11/16/2015 16:30	EFF-1 GRAB	Metals	Zinc	131	ug/L	5	20
11/16/2015 16:30	EFF-1 GRAB	Metals	Arsenic	1.14	ug/L	0.05	0.2
11/16/2015 16:30	EFF-1 GRAB	Metals	Copper	9.97	ug/L	0.1	0.4
11/16/2015 16:30	EFF-1 GRAB	Metals	Magnesium	79.7	mg/L	0.04	0.16
11/16/2015 16:30	EFF-1 GRAB	Metals	Potassium	26	mg/L	3	12
11/16/2015 16:30	EFF-1 GRAB	Metals	Cadmium	0.716	ug/L	0.02	0.08
11/16/2015 16:30	EFF-1 GRAB	Metals	Lead	1.55	ug/L	0.05	0.2
11/16/2015 16:30	EFF-1 GRAB	Metals	Nickel	14.0	ug/L	0.05	0.2
11/16/2015 16:30	EFF-1 GRAB	Metals	Chromium	6.35	ug/L	0.05	0.2
11/16/2015 16:30	EFF-1 GRAB	Metals	Sodium	1.01E+03	mg/L	5	20
11/16/2015 16:30	EFF-1 GRAB	Metals	Selenium	0.20 U	ug/L	0.2	0.8
11/16/2015 16:30	EFF-1 GRAB	Metals	Silver	0.187	ug/L	0.005	0.02
11/16/2015 16:30	EFF-1 GRAB	Metals	Calcium	273	mg/L	0.75	3
11/16/2015 16:30	EFF-1 GRAB	Metals	Aluminum	586	ug/L	2	8
11/16/2015 16:30	EFF-1 GRAB	Nutrients	Sulfate	1.8E+03 A	mg SO4/L	20	50
11/16/2015 16:30	EFF-1 GRAB	Nutrients	Turbidity	210 A	NTU	1	1
11/16/2015 16:30	EFF-1 GRAB	Nutrients	Organic Carbon	290 A	mg C/L	5	10

Date Sampled	Field ID	Analysis Group	Component	Result	Units	MDL	PQL
11/16/2015 16:30	EFF-1 GRAB	Nutrients	Total Alkalinity	209 A	mg CaCO3/L	0.65	2.5
11/16/2015 16:30	EFF-1 GRAB	Nutrients	Chloride	700 A	mg Cl/L	20	50
11/16/2015 16:30	EFF-1 GRAB	Nutrients	Fluoride	0.68	mg F/L	0.035	0.1
11/16/2015 16:30	EFF-1 GRAB	Nutrients	Color (true)	600	PCU	15	36
11/16/2015 16:30	EFF-1 GRAB	Nutrients	NO2NO3-N	1.4	mg N/L	0.04	0.1
11/16/2015 16:30	EFF-1 GRAB	Nutrients	Kjeldahl Nitrogen	38	mg N/L	0.8	2
11/16/2015 16:30	EFF-1 GRAB	Nutrients	O-Phosphate-P	0.024	mg P/L	0.004	0.01
11/16/2015 16:30	EFF-1 GRAB	Nutrients	Ammonia-N	15	mg N/L	1	2.5
11/16/2015 16:30	EFF-1 GRAB	Nutrients	Total-P	1.4	mg P/L	0.025	0.25
11/16/2015 16:30	EFF-1 GRAB	Overflow	Adsorbable Organic Halides	8.0 I	ug/L	6.2	20
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Ethion	0.010 U	ug/L	0.01	0.04
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Hexazinone	0.030 UJ	ug/L	0.03	0.12
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Azinphos Methyl	0.020 U	ug/L	0.02	0.08
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Butylate	0.020 U	ug/L	0.02	0.08
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Prometon	0.020 U	ug/L	0.02	0.08
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Parathion Ethyl	0.020 U	ug/L	0.02	0.08
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Metalaxyl	0.040 UJ	ug/L	0.04	0.16
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Fenamiphos	0.030 U	ug/L	0.03	0.12
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Disulfoton	0.0050 U	ug/L	0.005	0.02
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Atrazine	0.010 U	ug/L	0.01	0.04
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Atrazine Desethyl	0.010 U	ug/L	0.01	0.04
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Fonofos	0.010 U	ug/L	0.01	0.04
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Naled	0.040 U	ug/L	0.04	0.16
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Malathion	0.010 U	ug/L	0.01	0.04
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Metribuzin	0.020 U	ug/L	0.02	0.08
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Prometryn	0.020 UJ	ug/L	0.02	0.08
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Atrazine Desisopropyl	0.010 U	ug/L	0.01	0.04
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Bromacil	0.040 U	ug/L	0.04	0.16
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Demeton	0.024 U	ug/L	0.024	0.096
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Ethoprop	0.0050 U	ug/L	0.005	0.02
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Mevinphos	0.010 U	ug/L	0.01	0.04
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Phorate	0.0050 U	ug/L	0.005	0.02
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Chlorpyrifos Ethyl	0.010 U	ug/L	0.01	0.04
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Sucralose	0.050 U	ug/L	0.05	0.25
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Chlorpyrifos Methyl	0.010 U	ug/L	0.01	0.04

Date Sampled	Field ID	Analysis Group	Component	Result	Units	MDL	PQL
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Diazinon	0.010 U	ug/L	0.01	0.04
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Metolachlor	0.060 U	ug/L	0.06	0.24
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Ametryn	0.010 U	ug/L	0.01	0.04
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Norflurazon	0.030 U	ug/L	0.03	0.12
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Parathion Methyl	0.010 U	ug/L	0.01	0.04
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Simazine	0.010 U	ug/L	0.01	0.04
11/16/2015 16:30	EFF-1 GRAB	Pesticides	Alachlor	0.060 U	ug/L	0.06	0.24
11/16/2015 14:20	Eff-3 Grab	Overflow	Hexavalent Chromium	300 U	ug/L	300	1000
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	1,1-Dichloroethene	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Carbon tetrachloride	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Chlorobenzene	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Toluene	0.50 U	ug/L	0.5	2
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	2,4-Dinitrophenol	15 U	ug/L	15	61
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	3,3'-Dichlorobenzidine	40 U	ug/L	40	160
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Acenaphthene	0.20 U	ug/L	0.2	0.81
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Di-n-octyl phthalate	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Diethyl phthalate	2.0 U	ug/L	2	8.1
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.0 U	ug/L	3	12
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.0 U	ug/L	3	12
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	1,4-Dichlorobenzene	0.50 U	ug/L	0.5	2
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Bromoform	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Trichloroethene	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Trichlorofluoromethane	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Vinyl chloride	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Benzo(a)pyrene	0.20 U	ug/L	0.2	0.81
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Pentachlorophenol	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Bromodichloromethane	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Chloroethane	0.50 U	ug/L	0.5	2
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Benzo(a)anthracene	0.20 U	ug/L	0.2	0.81
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Dimethyl phthalate	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.20 U	ug/L	0.2	0.81
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Isophorone	1.0 U	ug/L	1	4

Date Sampled	Field ID	Analysis Group	Component	Result	Units	MDL	PQL
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	1,1-Dichloroethane	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	1,2-Dichlorobenzene	0.50 U	ug/L	0.5	2
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	1,2-Dichloroethane	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	1,2-Dichloropropane	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Benzene	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Bromomethane	0.50 U	ug/L	0.5	2
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Chloroform	4.6	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Tetrachloroethene	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	2,4-Dimethylphenol	10 U	ug/L	10	40
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	2,6-Dinitrotoluene	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	2-Nitrophenol	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Naphthalene	0.20 U	ug/L	0.2	0.81
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Phenol	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Chloromethane	0.50 U	ug/L	0.5	2
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	cis-1,3-Dichloropropene	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	2,4-Dichlorophenol	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	4-Nitrophenol	15 U	ug/L	15	61
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Benzo(b)fluoranthene	0.20 U	ug/L	0.2	0.81
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Chrysene	0.20 U	ug/L	0.2	0.81
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Fluorene	0.20 U	ug/L	0.2	0.81
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Hexachlorobenzene	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Hexachlorobutadiene	3.0 U	ug/L	3	12
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	N-Nitrosodimethylamine	2.0 U	ug/L	2	8.1
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	2,4-Dinitrotoluene	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	2-Chlorophenol	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.0 U	ug/L	2	8.1
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Acenaphthylene	0.20 U	ug/L	0.2	0.81
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.20 U	ug/L	0.2	0.81
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Benzo(k)fluoranthene	0.20 U	ug/L	0.2	0.81
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	2.0 U	ug/L	2	8.1
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.20 U	ug/L	0.2	0.81
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.0 U	ug/L	2	8.1
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Nitrobenzene	2.0 U	ug/L	2	8.1

Date Sampled	Field ID	Analysis Group	Component	Result	Units	MDL	PQL
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Phenanthrene	0.20 U	ug/L	0.2	0.81
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	1,1,1-Trichloroethane	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	1,1,2,2-Tetrachloroethane	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	1,1,2-Trichloroethane	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Ethylbenzene	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Methylene chloride	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	trans-1,3-Dichloropropene	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Anthracene	0.20 U	ug/L	0.2	0.81
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Benzidine	100 U	ug/L	100	400
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.0 U	ug/L	3	12
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Di-n-butyl phthalate	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Fluoranthene	0.20 U	ug/L	0.2	0.81
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Pyrene	0.20 U	ug/L	0.2	0.81
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	1,3-Dichlorobenzene	0.50 U	ug/L	0.5	2
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Dibromochloromethane	0.20 U	ug/L	0.2	0.8
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	2-Chloronaphthalene	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.0 U	ug/L	3	12
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Butyl benzyl phthalate	1.0 U	ug/L	1	4
11/16/2015 14:20	Eff-3 Grab	Priority Organic Pollutants	Hexachloroethane	3.0 U	ug/L	3	12
11/16/2015 14:20	Eff-3 Grab	Nutrients	Sample Depth	0.3	m		
11/16/2015 14:20	Eff-3 Grab	Nutrients	pH	7.04			
11/16/2015 14:20	Eff-3 Grab	Nutrients	Temperature	25.53	C		
11/16/2015 14:20	Eff-3 Grab	Nutrients	Specific Conductance	4722	umhos/cm		
11/16/2015 14:20	Eff-3 Grab	Nutrients	Dissolved Oxygen	0.4	mg/L		
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	1,1,2,2-Tetrachloroethane	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	Trichloroethene	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	Dibromochloromethane	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	Ethylbenzene	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	1,2-Dichloropropane	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	Tetrachloroethene	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	Chloroethane	0.50 U	ug/L	0.5	2
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	Carbon tetrachloride	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	1,2-Dichloroethane	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	1,1-Dichloroethane	0.20 U	ug/L	0.2	0.8

Date Sampled	Field ID	Analysis Group	Component	Result	Units	MDL	PQL
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	cis-1,3-Dichloropropene	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	1,1-Dichloroethene	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	Trichlorofluoromethane	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	1,1,2-Trichloroethane	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	Toluene	0.50 U	ug/L	0.5	2
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	Benzene	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	Chlorobenzene	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	Vinyl chloride	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	1,1,1-Trichloroethane	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	1,3-Dichlorobenzene	0.50 U	ug/L	0.5	2
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	trans-1,3-Dichloropropene	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	1,2-Dichlorobenzene	0.50 U	ug/L	0.5	2
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	Bromomethane	0.50 U	ug/L	0.5	2
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	Chloromethane	0.50 U	ug/L	0.5	2
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	Methylene chloride	1.0 U	ug/L	1	4
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	1,4-Dichlorobenzene	0.50 U	ug/L	0.5	2
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	Bromodichloromethane	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	Bromoform	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	TRIP BLANK	Priority Organic Pollutants	Chloroform	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Metals	Aluminum	2.0 U	ug/L	2	8
11/16/2015 10:25	FIELD BLANK	Metals	Silver	0.0050 U	ug/L	0.005	0.02
11/16/2015 10:25	FIELD BLANK	Metals	Potassium	0.30 U	mg/L	0.3	1.2
11/16/2015 10:25	FIELD BLANK	Metals	Calcium	0.075 U	mg/L	0.075	0.3
11/16/2015 10:25	FIELD BLANK	Metals	Sodium	0.50 U	mg/L	0.5	2
11/16/2015 10:25	FIELD BLANK	Metals	Cadmium	0.020 U	ug/L	0.02	0.08
11/16/2015 10:25	FIELD BLANK	Metals	Copper	1.74	ug/L	0.1	0.4
11/16/2015 10:25	FIELD BLANK	Metals	Magnesium	0.040 U	mg/L	0.04	0.16
11/16/2015 10:25	FIELD BLANK	Metals	Arsenic	0.050 U	ug/L	0.05	0.2
11/16/2015 10:25	FIELD BLANK	Metals	Lead	0.050 U	ug/L	0.05	0.2
11/16/2015 10:25	FIELD BLANK	Metals	Selenium	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Metals	Nickel	0.050 U	ug/L	0.05	0.2
11/16/2015 10:25	FIELD BLANK	Metals	Zinc	5.0 U	ug/L	5	20
11/16/2015 10:25	FIELD BLANK	Metals	Iron	30 U	ug/L	30	120
11/16/2015 10:25	FIELD BLANK	Metals	Chromium	0.050 U	ug/L	0.05	0.2
11/16/2015 10:25	FIELD BLANK	Nutrients	Total Alkalinity	0.65 U	mg CaCO3/L	0.65	2.5

Date Sampled	Field ID	Analysis Group	Component	Result	Units	MDL	PQL
11/16/2015 10:25	FIELD BLANK	Nutrients	Total-P	0.002 U	mg P/L	0.002	0.005
11/16/2015 10:25	FIELD BLANK	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.004	0.01
11/16/2015 10:25	FIELD BLANK	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.1
11/16/2015 10:25	FIELD BLANK	Nutrients	Sulfate	0.20 U	mg SO4/L	0.2	0.5
11/16/2015 10:25	FIELD BLANK	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.08	0.2
11/16/2015 10:25	FIELD BLANK	Nutrients	Turbidity	0.10 U	NTU	0.1	0.1
11/16/2015 10:25	FIELD BLANK	Nutrients	Organic Carbon	0.57 I	mg C/L	0.5	1
11/16/2015 10:25	FIELD BLANK	Nutrients	Chloride	0.20 U	mg Cl/L	0.2	0.5
11/16/2015 10:25	FIELD BLANK	Nutrients	Color (true)	2.5 U	PCU	2.5	6
11/16/2015 10:25	FIELD BLANK	Nutrients	Ammonia-N	0.002 U	mg N/L	0.002	0.005
11/16/2015 10:25	FIELD BLANK	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
11/16/2015 10:25	FIELD BLANK	Overflow	2,3,7,8-TCDF	2.89 I	pg/L	1.12	4.73
11/16/2015 10:25	FIELD BLANK	Overflow	Hexavalent Chromium	3.0 UQ	ug/L	3	10
11/16/2015 10:25	FIELD BLANK	Overflow	2,3,7,8-TCDD	2.59 IJ	pg/L	0.952	4.73
11/16/2015 10:25	FIELD BLANK	Overflow	Adsorbable Organic Halides	2400 A	ug/L	6.2	20
11/16/2015 10:25	FIELD BLANK	Pesticides	Chlorpyrifos Ethyl	0.0095 U	ug/L	0.0095	0.038
11/16/2015 10:25	FIELD BLANK	Pesticides	Naled	0.038 U	ug/L	0.038	0.15
11/16/2015 10:25	FIELD BLANK	Pesticides	Prometryn	0.019 UJ	ug/L	0.019	0.076
11/16/2015 10:25	FIELD BLANK	Pesticides	Parathion Methyl	0.0095 U	ug/L	0.0095	0.038
11/16/2015 10:25	FIELD BLANK	Pesticides	Ethoprop	0.0047 U	ug/L	0.0047	0.019
11/16/2015 10:25	FIELD BLANK	Pesticides	Atrazine Desethyl	0.0095 U	ug/L	0.0095	0.038
11/16/2015 10:25	FIELD BLANK	Pesticides	Ametryn	0.0095 U	ug/L	0.0095	0.038
11/16/2015 10:25	FIELD BLANK	Pesticides	Mevinphos	0.0095 U	ug/L	0.0095	0.038
11/16/2015 10:25	FIELD BLANK	Pesticides	Fonofos	0.0095 U	ug/L	0.0095	0.038
11/16/2015 10:25	FIELD BLANK	Pesticides	Fenamiphos	0.028 U	ug/L	0.028	0.11
11/16/2015 10:25	FIELD BLANK	Pesticides	Disulfoton	0.0047 U	ug/L	0.0047	0.019
11/16/2015 10:25	FIELD BLANK	Pesticides	Atrazine	0.0095 U	ug/L	0.0095	0.038
11/16/2015 10:25	FIELD BLANK	Pesticides	Alachlor	0.057 U	ug/L	0.057	0.23
11/16/2015 10:25	FIELD BLANK	Pesticides	Simazine	0.0095 U	ug/L	0.0095	0.038
11/16/2015 10:25	FIELD BLANK	Pesticides	Prometon	0.019 U	ug/L	0.019	0.076
11/16/2015 10:25	FIELD BLANK	Pesticides	Metribuzin	0.019 U	ug/L	0.019	0.076
11/16/2015 10:25	FIELD BLANK	Pesticides	Metalaxyl	0.038 UJ	ug/L	0.038	0.15
11/16/2015 10:25	FIELD BLANK	Pesticides	Diazinon	0.0095 U	ug/L	0.0095	0.038
11/16/2015 10:25	FIELD BLANK	Pesticides	Demeton	0.023 U	ug/L	0.023	0.091
11/16/2015 10:25	FIELD BLANK	Pesticides	Butylate	0.019 U	ug/L	0.019	0.076

Date Sampled	Field ID	Analysis Group	Component	Result	Units	MDL	PQL
11/16/2015 10:25	FIELD BLANK	Pesticides	Atrazine Desisopropyl	0.0095 U	ug/L	0.0095	0.038
11/16/2015 10:25	FIELD BLANK	Pesticides	Parathion Ethyl	0.019 U	ug/L	0.019	0.076
11/16/2015 10:25	FIELD BLANK	Pesticides	Malathion	0.0095 U	ug/L	0.0095	0.038
11/16/2015 10:25	FIELD BLANK	Pesticides	Bromacil	0.038 U	ug/L	0.038	0.15
11/16/2015 10:25	FIELD BLANK	Pesticides	Azinphos Methyl	0.019 U	ug/L	0.019	0.076
11/16/2015 10:25	FIELD BLANK	Pesticides	Sucralose	0.010 U	ug/L	0.01	0.05
11/16/2015 10:25	FIELD BLANK	Pesticides	Norflurazon	0.028 U	ug/L	0.028	0.11
11/16/2015 10:25	FIELD BLANK	Pesticides	Metolachlor	0.057 U	ug/L	0.057	0.23
11/16/2015 10:25	FIELD BLANK	Pesticides	Hexazinone	0.028 UJ	ug/L	0.028	0.11
11/16/2015 10:25	FIELD BLANK	Pesticides	Chlorpyrifos Methyl	0.0095 U	ug/L	0.0095	0.038
11/16/2015 10:25	FIELD BLANK	Pesticides	Phorate	0.0047 U	ug/L	0.0047	0.019
11/16/2015 10:25	FIELD BLANK	Pesticides	Ethion	0.0095 U	ug/L	0.0095	0.038
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19 U	ug/L	0.19	0.76
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Chrysene	0.19 U	ug/L	0.19	0.76
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	4-Nitrophenol	14 U	ug/L	14	57
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9 U	ug/L	1.9	7.6
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	2,4-Dichlorophenol	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	trans-1,3-Dichloropropene	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Toluene	0.50 U	ug/L	0.5	2
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Chloroform	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Chlorobenzene	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	1,1-Dichloroethene	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Isophorone	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	2-Chloronaphthalene	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	2,4-Dinitrophenol	14 U	ug/L	14	57
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Chloromethane	0.50 U	ug/L	0.5	2
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	1,4-Dichlorobenzene	0.50 U	ug/L	0.5	2
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Naphthalene	0.19 U	ug/L	0.19	0.76
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Hexachlorobutadiene	2.9 U	ug/L	2.9	11
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Butyl benzyl phthalate	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9 U	ug/L	1.9	7.6
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Benzo(a)pyrene	0.19 U	ug/L	0.19	0.76

Date Sampled	Field ID	Analysis Group	Component	Result	Units	MDL	PQL
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Benzo(a)anthracene	0.19 U	ug/L	0.19	0.76
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Acenaphthene	0.19 U	ug/L	0.19	0.76
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	2-Nitrophenol	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	2,6-Dinitrotoluene	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	2,4-Dinitrotoluene	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Bromomethane	0.50 U	ug/L	0.5	2
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Phenol	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Nitrobenzene	1.9 U	ug/L	1.9	7.6
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	2-Chlorophenol	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Vinyl chloride	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Benzene	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	1,2-Dichloropropane	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	1,1,2,2-Tetrachloroethane	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9 U	ug/L	2.9	11
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Fluoranthene	0.19 U	ug/L	0.19	0.76
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Anthracene	0.19 U	ug/L	0.19	0.76
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	2,4-Dimethylphenol	9.5 U	ug/L	9.5	38
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Ethylbenzene	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Bromodichloromethane	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	1,3-Dichlorobenzene	0.50 U	ug/L	0.5	2
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	1,1,1-Trichloroethane	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Pyrene	0.19 U	ug/L	0.19	0.76
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Phenanthrene	0.19 U	ug/L	0.19	0.76
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	ug/L	1.9	7.6
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Dimethyl phthalate	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Di-n-octyl phthalate	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Tetrachloroethene	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Bromoform	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	1,2-Dichloroethane	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	1,1,2-Trichloroethane	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Fluorene	0.19 U	ug/L	0.19	0.76
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Di-n-butyl phthalate	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19 U	ug/L	0.19	0.76

Date Sampled	Field ID	Analysis Group	Component	Result	Units	MDL	PQL
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Benzidine	95 U	ug/L	95	380
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38 U	ug/L	38	150
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Trichloroethene	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Dibromochloromethane	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	1,2-Dichlorobenzene	0.50 U	ug/L	0.5	2
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	1,1-Dichloroethane	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9 U	ug/L	2.9	11
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19 U	ug/L	0.19	0.76
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Hexachloroethane	2.9 U	ug/L	2.9	11
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9 U	ug/L	2.9	11
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19 U	ug/L	0.19	0.76
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19 U	ug/L	0.19	0.76
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Acenaphthylene	0.19 U	ug/L	0.19	0.76
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	ug/L	2.9	11
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	cis-1,3-Dichloropropene	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Trichlorofluoromethane	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Methylene chloride	1.0 U	ug/L	1	4
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Chloroethane	0.50 U	ug/L	0.5	2
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Carbon tetrachloride	0.20 U	ug/L	0.2	0.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Pentachlorophenol	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9 U	ug/L	1.9	7.6
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Hexachlorobenzene	0.95 U	ug/L	0.95	3.8
11/16/2015 10:25	FIELD BLANK	Priority Organic Pollutants	Diethyl phthalate	1.9 U	ug/L	1.9	7.6

EPA End Sheet

The Bioassay of Rayonier Performance Fibers, LLC effluent sampled on November 16, 2015. NPDES #FL0000701.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 0 0 7 0 1	11 12 15 11 11 16	18 **B**	19 **S**	20 2

Remarks

66

The Priority Pollutants Analysis of Rayonier Performance Fibers, LLC effluent sampled on November 16, 2015. NPDES #FL0000701.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 0 0 7 0 1	11 12 15 11 11 16	18 **X**	19 **S**	20 2

Remarks

66

Biological Analyses of Rayonier Performance Fibers, LLC effluent sampled on November 16, 2015. NPDES #FL0000701.

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

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 0 0 7 0 1	11 12 15 11 11 16	18 **S**	19 **S**	20 2

Remarks

66