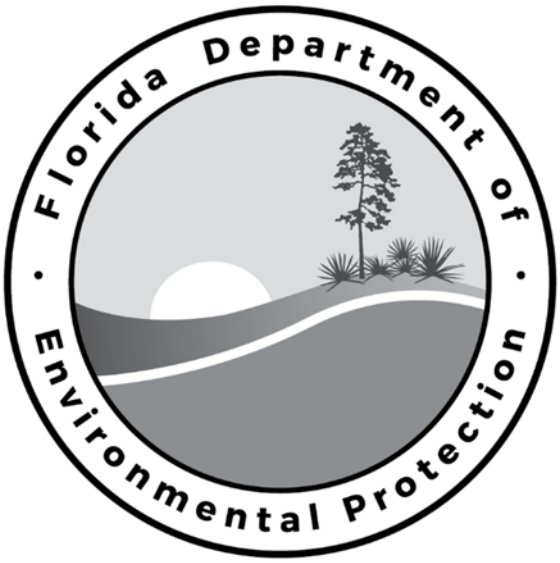


Effluent Quality Assessment of

East Putnam County RO WTP

Putnam County

NPDES # FL0433365

Sampled October 19, 2015

March 2016

Biology Program

FDEP Laboratory

Division of Environmental Assessment and Restoration

FDEP Laboratory Quality Manual

NELAC Certification No. E31780

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East Putnam County RO WTP, 2509 Crill Avenue, Suite 200, Palatka, Putnam County, Florida, 32177. NPDES #FL0433365.

Facility Overview

East Putnam County RO WTF is a water treatment plant which uses reverse osmosis technology to produce potable water. See Appendix A for a description of the facility, summary of permit limits, Administrative Order (AO) and Discharge Monitoring Report (DMR) information.

Methods

Effluent grab samples for toxicity testing, biological and chemical analyses for this facility were collected on October 19, 2015. All samples were collected from the EFF-1 NPDES sampling point for Outfall D-001 by Jann Gruentzel and Amy Kalmbacher (FDEP Northeast District) 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_01, TA07_02, and TA08_01 through TA08_09 (see Appendix B).

Results

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

- The total ammonia concentration in the grab sample collected and preserved for chemical analysis was 0.68 mg N/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated unionized ammonia concentration was < 0.02 mg/L.
- Turbidity, alkalinity, fluoride, radium 226 + radium 228, arsenic, copper, and lead were detected in the effluent at levels that comply with Class III Fresh Water Quality Criteria (62-302.530, F.A.C.) and or/permit conditions. Aluminum, nickel, carbonaceous biochemical oxygen demand (CBOD), total suspended solids, diethyl phthalate and di-n-butyl phthalate were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL). Total ammonia and di-n-butyl phthalate were detected in the field blank.

Algal Growth Potential (See Table 4 and Appendix C)

- The effluent Algal Growth Potential (AGP) was 0.300 U mg dry wt/L of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum*. Raschke and Schultz (1987) determined that AGP values above 5.0 mg dry weight/L, which represents a “problem” threshold for fresh receiving waters, imply nutrient enrichment. The analytical chemistry suggests that the effluent is phosphorus–limited (Miller et al. 1978). To determine actual nutrient limitation, a limiting-nutrient algal growth potential test with associated nutrient chemistry should be performed (Miller et al. 1978).
- An aliquot of the AGP sample was salinity adjusted from an apparent salinity of approximately 1.7 parts per thousand (ppth) to a salinity of approximately 7 ppth by the addition of artificial sea salts to meet the salinity requirements of the test species. The AGP of the salinity adjusted effluent was 3.00 U mg dry wt/L of the saltwater species *Dunaliella tertiolecta.* Raschke and Schultz determined that AGP values above 10.0 mg dry weight/L, which represents a “problem” threshold for marine receiving waters, imply nutrient enrichment (personal communication, Marshall Faircloth, et. al. FDEP, with Ron Raschke USEPA Region 4 1987). The analytical chemistry suggests that the effluent is phosphorus–limited (Maloney et al. 1974).

Toxicity Test Results (See Appendix C)

- Tests were performed October 20 - 24, 2015.
- Per permit requirements, 60% effluent was highest test concentration.

  Ceriodaphnia dubia 96-hour acute definitive bioassay – LC_{50} > 60%, 0%* mortality in 60% sample at 96 hours

  Cyprinella leedsi 96-hour acute definitive bioassay – LC_{50} > 60%, 40%* 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 were not acutely toxic to the *Ceriodaphnia dubia* test organisms but did show moderate toxicity to the *Cyprinella leedsi* test organisms. The noted toxicity did not exceed permitted limits. The cause of toxicity was not determined.

Conclusion

The effluent sample collected from the EFF-1 NPDES sampling point for this facility on October 19, 2015, was not acutely toxic to the *Ceriodaphnia dubia* test organisms but did show moderate toxicity to the *Cyprinella leedsi* test organisms during the 96-hour acute bioassays. The cause of the observed toxicity was not determined. The permitted LC50 of ≥30 % effluent was not exceeded. The AGP results for both the freshwater and marine test species were less than the method detection limits. Effluent water quality samples collected on October 19, 2015, did not exceed any applicable water quality standards or 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

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

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

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

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

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

East Putnam County RO WTP	Units	Class III Criteria	Effluent Permit Limits	EFF-1
Temperature	C	-	Report	24.9
pH	SU	6.0 - 8.5	6.0 - 8.5	7.2
Specific Conductance	umhos/cm	≤ 1,275	≤ 14,000	4,180
Salinity	ppth	-	-	2.21
Dissolved Oxygen	% saturation	≥ 34	-	106.8 d
Dissolved Oxygen	mg/L	≥ 5.0	≥ 5.0	8.7 d
Total Residual Chlorine	mg/L	≤ 0.01	-	< 0.03 UQd

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

d - Measurement taken in the FDEP laboratory

Q - Sample held beyond normal holding time

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

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

East Putnam County RO WTP	Units	Class III Criteria	Effluent Permit Limits	EFF-1
Ortho-phosphate	mg P/L	-	-	0.012
Total Phosphorus	mg P/L	-	Report	0.012
Total Ammonia	mg N/L	-	Report	0.68 F
Un-ionized Ammonia (calculated salinity)	mg/L	≤ 0.02	≤ 0.02	< 0.02 c
Nitrate and Nitrite	mg N/L	-	-	1.0
Total Kjeldahl Nitrogen	mg N/L	-	-	0.91
Organic Nitrogen	mg N/L	-	-	0.23 c
Total Nitrogen	mg N/L		Report	1.9 c
Total Organic Carbon	mg C/L	-	-	5.5 A
Chlorophyll *a* - Corrected	ug/L	-	-	0.75 U
Phaeophytin	ug/L	-	-	0.55 U
CBOD, 5 day, N - inhibited	mg/L	-	≤ 20	0.68 IJ
Total Suspended Solids	mg/L	-	Report	4.0 I
Turbidity	NTU	< 29 t	-	0.40
Color (true)	PCU	-	-	8.0
Alkalinity	mg CaCO3/L	≥ 20		378 A
Chloride	mg Cl/L	-	-	760 A
Fluoride	mg F/L	≤ 10.0	-	0.83
Sulfate	mg SO4/L	-	-	240 A
Sulfide	mg S2/L	-	-	1.0 U
Alpha, Total	pCi/L	≤ 15	≤ 15	15.1 U
Alpha-Counting Error	pCi/L	-	-	6.19 U
Radium 226	pCi/L	-	-	3.20
Radium 226-Counting Error	pCi/L	-	-	0.345
Radium 228	pCi/L	-	-	0.687 U
Radium 228-Counting Error	pCi/L	-	-	0.421 U
Radium 226 + 228	pCi/L	≤ 5	≤ 13.3	3.2 c
Toxicity (Acute Definitive, percent LC50)				
Bioassay - Water flea *(Ceriodaphnia dubia)*	%	≥ 100	≥ 30	60 L
Bioassay - Fish *(Cyprinella leedsi)*	%	≥ 100	≥ 30	60 L

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
c - Value is calculated
t - Shall not exceed 29 NTUs above background
A - Value reported is the mean of two or more determinations
F - Analyte was detected in both sample and field blank
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
L - Actual value is known to be greater than value given
U - Material analyzed for but not detected; value reported is the method detection limit

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

East Putnam County RO WTP	Units	EFF-1 Class III Criteria	Effluent Permit Limits	EFF-1
Hardness	mg CaCO3/L	-	-	1190 c
Aluminum	ug/L	-	-	3.1 I
Arsenic	ug/L	≤ 50	-	0.24
Cadmium	ug/L	≤ 0.756 b	-	0.020 U
Calcium	mg/L	-	-	249
Chromium, Total [1]	ug/L	≤ 268 b	-	0.050 U
Copper	ug/L	≤ 30.5 b	-	14.3
Iron	ug/L	≤ 1,000	≤ 1,000	30 U
Lead	ug/L	≤ 18.6 b	-	1.0
Magnesium	mg/L	-	-	138
Nickel	ug/L	≤ 169 b	-	0.18 I
Potassium	mg/L	-	-	9.8
Selenium	ug/L	≤ 5.0	-	0.20 U
Silver	ug/L	≤ 0.07	-	0.0050 U
Sodium	mg/L	-	-	302
Zinc	ug/L	≤ 388 b	-	5.0 U

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

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

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

c - Value is calculated

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

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

Table 4. Measured and predicted 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

East Putnam County RO WTP								
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**
EFF-1	*Pseudokirchneriella subcapitata*	0.300 U	63.8 ± 12.8	5.2 ± 1	72.6 ± 14.5	5.2 ± 1	140	159.2
EFF-1	*Dunaliella tertiolecta*	3.00 U [2]	not applicable [3]	not applicable [3]	not applicable [3]	not applicable [3]	140	159.2

Fresh - freshwater species *Pseudokirchneriella subcapitata*

Marine - saltwater species *Dunaliella tertiolecta*

2 - sample salinity adjusted to 7.06 ppth

3 - predictions not applicable to marine matrix

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: **Arturo Aranda**	Contact Number: **(904) 256-1641**
Facility Name (as it appears on permit): **East Putnam County RO WTP**	Former Names: **N/A**
NPDES Permit Number: **FL0433365**	Permit Expiration Date: **July 18, 2016**
Physical Address: **2509 Crill Avenue, Suite 200** **Palatka, Florida 32177**	
District: **Northeast District**	County: **Putnam**
Function of Facility: **This facility supplies potable water to the East Putnam County Regional Water System. The water treatment plant will draw water from an aquifer with high total dissolved solids and will use reverse osmosis technology to achieve drinking water standards. The process will create mineral-concentrated reject water.**	
Facility Type: **Industrial Wastewater**	Permitted Capacity (MGD): **0.126 MGD**
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): **0.046 MGD (July 2014-July 2015)**	
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): Outfall D-001: **EFF-1: Concentrate tap near outfall** **CAL-1: Calculated value.**	
Description of Permitted Outfall(s): **Surface Water Discharge D-001. A 0.186 MGD daily maximum permitted discharge to St. John's River, Class III Fresh Waters, (WBID# 2213M) which is approximately 200 feet in length and discharges at a depth of approximately 15 feet. The point of discharge is located approximately at latitude 29°38' 23" N, longitude 81°35'40" W.**	
Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility): **The permit is for the operation of a 0.126 million gallon per day (MGD) monthly average (0.186 MGD daily maximum) permitted capacity concentrate treatment and disposal system. Treatment of the concentrate includes pH adjustment and degasification. The concentrate will travel several miles through an 8-inch pipe before final discharge via a single-port, high rate diffuser into the St. Johns River, a Class III fresh water.**	

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)

Surface Water Discharge D-001: discharge to St. Johns River, Class III Fresh Waters, (WBID# 2213M) which is approximately 200 feet in length and discharges at a depth of approximately 15 feet.

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
Flow	MGD	Max	0.126	Monthly Average	Continuous	Recording Flow Meter with Totalizer	EFF-1	
		Max	0.186	Daily Maximum				
Oxygen, Dissolved (DO)	mg/L	Min	5.0	Daily Minimum	Weekly	Grab	EFF-1	
pH	s.u.	Min	6.0	Daily Minimum	Weekly	Grab	EFF-1	
		Max	8.5	Daily Maximum				
BOD, Carbonaceous 5-day, 20ºC	mg/L	Max	20	Daily Maximum	Monthly	Grab	EFF-1	
Solids, Total Suspended	mg/L	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	
Nitrogen, Total	mg/L	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	
Nitrogen, Total	lb/month	Max	Report	Monthly Mass Load	Monthly	Calculated	CAL – 1	See I.B

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
Nitrogen, Total	lb/year	Max	770	Rolling Annual Mass Load *(Total Annual Mass Load)*	Monthly	Calculated	CAL – 1	See I.B
Nitrogen, Ammonia, Total (as N)	mg/L	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	See I.A.5
Nitrogen, Ammonia, Total unionized (as N)	mg/L	Max	0.02	Daily Maximum	Monthly	Calculated	CAL – 1	See I.A.5
Temperature (ºC), Water	Deg C	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	See I.A.5
Phosphorus, Total (as P)	mg/L	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	
Phosphorus, Total (as P)	lb/month	Max	Report	Monthly Mass Load	Monthly	Calculated	CAL – 1	See I.B
Phosphorus, Total (as P)	lb/year	Max	770	Rolling Annual Mass Load (Total Annual Mass Load)	Monthly	Calculated	CAL – 1	See I.B
Alpha, Gross Particle Activity	pCi/L	Max	15.0	Daily Maximum	Monthly	Grab	EFF-1	
Radium 226 + Radium 228, Total	pCi/L	Max	13.3	Daily Maximum	Monthly	Grab	EFF-1	
Specific Conductance	umhos/cm	Max	14,000	Daily Maximum	Monthly	Grab	EFF-1	

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site Number	Notes
Hydrogen sulfide un-ionized	mg/L	Max	Report	Daily Maximum	Monthly	Grab	EFF-1	
Iron, Total Recoverable	mg/L	Max	1.0	Daily Maximum	Monthly	Grab	EFF-1	
Acute Whole Effluent Toxicity, 96-hr LC50 (Ceriodaphnia dubia & Cyprinella leedsi)	percent	Min	30	Single Sample	Semi-Annually; (Twice per year)	Grab	EFF-1	See I.A.6

PART I: Continued

Receiving Waters:	**Classification (indicate whether fresh or marine):**
St. Johns River	Class III fresh water

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

Routine or additional follow-up test for acute whole effluent toxicity, the 96-hour LC50 shall not be less than 30% **effluent. [Rules 62-302.200(1), 62-302.500(1)(a)4., 62-4.244(3)(b), and 62-4.241(3), F.A.C.]**

Monitoring Frequency

The toxicity tests shall be conducted once every six months, the first starting within 60 days of the issuance date of this permit and lasting for the duration of this permit.

Sampling Requirements

All tests shall be conducted on a single grab sample of final effluent.

Test Requirements

(1) Routine Tests: 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.**

(2) The permittee shall conduct 96-hour acute static renewal multi-concentration toxicity tests using the daphnid, *Ceriodaphnia dubia***, and the bannerfin shiner,** *Cyprinella leedsi***, concurrently.**

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

(4) The control water and dilution water shall be moderately hard water as described in EPA-821-R-02-012, Table 7.

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

N/A – No Administrative or Consent Orders have been issued to this facility.

Facility Mixing Zone Details (if applicable):

The Permittee's discharge shall not cause an exceedance of the Chapter 62-302.530, F.A.C., Class III fresh water quality criteria outside the described mixing zones.

Parameter	**Mixing Zone Size**
Combined Radium 226+228	**0.28 square meters (radius of 0.3 meters)**
Specific Conductance	**28 square meters (radius of 3 meters)**

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

N/A

Describe previous FYI and WQBEL study:

CSI – Conducted on October 18, 2010

No WQBEL study on file

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

Describe any violations or problems noted in previous inspection:

The last inspection was conducted January 24, 2012. The facility was in-compliance.

Discuss whether DMR trends within previous five years are improving or declining: **A review data of the last five years of DMRs data shows a trend for the following parameter: Phosphorus, Total (as P). From the beginning of 2010 until 2011, phosphorus had a low value of 0.005 mg/L and a high value of 0.7 mg/L 2011. On 2012, phosphorus reported a minim value of approximately 0.005 mg/L and a maximum approximate high value of 0.6 mg/L by the end of 2012. Phosphorus results have been very low on 2013 and started increasing at the beginning of year 2014. The following parameters have been notice no significant trends from year 2010 – 2015: Dissolved Oxygen (DO), Total Nitrogen, Nitrogen, Ammonia, Total Unionized (as N), Total Phosphorus (as P) and Specific Conductance. All parameters were below detection limit**.
Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse): **The facility is not having any problem with meeting the surface water discharge limits.**

PART II: Sampling Event Information	
Date(s) sample collected:	Sampler(s): Sharon Piltz
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) 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..

(5) Algal Growth Potential (AGP)

The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. 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*.

(6) 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	Field ID	Analysis	Component	Result	Units	MDL	PQL
10/19/2015 11:35	EFF-1	AGP/LN	Algal Growth Potential-Salinity Adjusted	3.00 U	mg DryWt/L	3	3
10/19/2015 11:35	EFF-1	AGP/LN	Algal Growth Potential	0.300 U	mg DryWt/L	0.3	0.9
10/19/2015 11:35	EFF-1	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.55 U	ug/L	0.55	1.6
10/19/2015 11:35	EFF-1	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.68 IJ	mg/L	0.2	2
10/19/2015 11:35	EFF-1	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.75 U	ug/L	0.75	2.3
10/19/2015 11:35	EFF-1	Toxicology	Bioassay-Acute-Def-FW-C.dubia, LC50	60 L	LC50		
10/19/2015 11:35	EFF-1	Toxicology	Bioassay-Acute-Def-FW-Fish, LC50	60 L	LC50		
10/19/2015 11:35	EFF-1	Metals	Arsenic	0.24	ug/L	0.05	0.2
10/19/2015 11:35	EFF-1	Metals	Potassium	9.8	mg/L	0.3	1.2
10/19/2015 11:35	EFF-1	Metals	Lead	1.0	ug/L	0.05	0.2
10/19/2015 11:35	EFF-1	Metals	Nickel	0.18 I	ug/L	0.05	0.2
10/19/2015 11:35	EFF-1	Metals	Selenium	0.20 U	ug/L	0.2	0.8
10/19/2015 11:35	EFF-1	Metals	Zinc	5.0 U	ug/L	5	20
10/19/2015 11:35	EFF-1	Metals	Magnesium	138	mg/L	0.2	0.8
10/19/2015 11:35	EFF-1	Metals	Sodium	302	mg/L	2.5	10
10/19/2015 11:35	EFF-1	Metals	Calcium	249	mg/L	0.38	1.5
10/19/2015 11:35	EFF-1	Metals	Chromium	0.050 U	ug/L	0.05	0.2
10/19/2015 11:35	EFF-1	Metals	Copper	14.3	ug/L	0.1	0.4
10/19/2015 11:35	EFF-1	Metals	Aluminum	3.1 I	ug/L	2	8
10/19/2015 11:35	EFF-1	Metals	Iron	30 U	ug/L	30	120
10/19/2015 11:35	EFF-1	Metals	Silver	0.0050 U	ug/L	0.005	0.02
10/19/2015 11:35	EFF-1	Metals	Cadmium	0.020 U	ug/L	0.02	0.08
10/19/2015 11:35	EFF-1	Nutrients	Turbidity	0.4	NTU	0.1	0.1
10/19/2015 11:35	EFF-1	Nutrients	O-Phosphate-P	0.012	mg P/L	0.004	0.01
10/19/2015 11:35	EFF-1	Nutrients	Color (true)	8.0	PCU	2.5	6
10/19/2015 11:35	EFF-1	Nutrients	Ammonia-N	0.68	mg N/L	0.04	0.1
10/19/2015 11:35	EFF-1	Nutrients	Fluoride	0.83	mg F/L	0.035	0.1
10/19/2015 11:35	EFF-1	Nutrients	NO2NO3-N	1.0	mg N/L	0.04	0.1
10/19/2015 11:35	EFF-1	Nutrients	Chloride	760 A	mg Cl/L	4	10

Date	Field ID	Analysis	Component	Result	Units	MDL	PQL
10/19/2015 11:35	EFF-1	Nutrients	Sulfate	240 A	mg SO4/L	4	10
10/19/2015 11:35	EFF-1	Nutrients	TSS	4.0 I	mg/L	2	10
10/19/2015 11:35	EFF-1	Nutrients	Total-P	0.012	mg P/L	0.002	0.005
10/19/2015 11:35	EFF-1	Nutrients	Organic Carbon	5.5 A	mg C/L	0.5	1
10/19/2015 11:35	EFF-1	Nutrients	Total Alkalinity	378 A	mg CaCO3/L	0.65	2.5
10/19/2015 11:35	EFF-1	Nutrients	Kjeldahl Nitrogen	0.91	mg N/L	0.08	0.2
10/19/2015 11:35	EFF-1	Overflow	Sulfide	1.0 U	mg/L	1	1
10/19/2015 11:35	EFF-1	Overflow	Radium 228-Counting Error	0.421 U	pCi/L	0.687	0.687
10/19/2015 11:35	EFF-1	Overflow	Radium 228	0.687 U	pCi/L	0.687	0.687
10/19/2015 11:35	EFF-1	Overflow	Radium 226	3.2	pCi/L	0.158	0.158
10/19/2015 11:35	EFF-1	Overflow	Radium 226-Counting Error	0.345	pCi/L	0.158	0.158
10/19/2015 11:35	EFF-1	Overflow	Alpha, Total	15.1 U	pCi/L	15.1	15.1
10/19/2015 11:35	EFF-1	Overflow	Alpha-Counting Error	6.19 U	pCi/L	15.1	15.1
10/19/2015 11:35	EFF-1	Pesticides	Butylate	0.021 U	ug/L	0.021	0.084
10/19/2015 11:35	EFF-1	Pesticides	Metribuzin	0.021 U	ug/L	0.021	0.084
10/19/2015 11:35	EFF-1	Pesticides	Prometon	0.021 U	ug/L	0.021	0.084
10/19/2015 11:35	EFF-1	Pesticides	Alachlor	0.063 U	ug/L	0.063	0.25
10/19/2015 11:35	EFF-1	Pesticides	Demeton	0.025 U	ug/L	0.025	0.1
10/19/2015 11:35	EFF-1	Pesticides	Ethoprop	0.0053 U	ug/L	0.0053	0.021
10/19/2015 11:35	EFF-1	Pesticides	Fonofos	0.011 U	ug/L	0.011	0.042
10/19/2015 11:35	EFF-1	Pesticides	Mevinphos	0.011 U	ug/L	0.011	0.042
10/19/2015 11:35	EFF-1	Pesticides	Norflurazon	0.032 U	ug/L	0.032	0.13
10/19/2015 11:35	EFF-1	Pesticides	Parathion Methyl	0.011 U	ug/L	0.011	0.042
10/19/2015 11:35	EFF-1	Pesticides	Phorate	0.0053 U	ug/L	0.0053	0.021
10/19/2015 11:35	EFF-1	Pesticides	Disulfoton	0.0053 U	ug/L	0.0053	0.021
10/19/2015 11:35	EFF-1	Pesticides	Bromacil	0.042 U	ug/L	0.042	0.17
10/19/2015 11:35	EFF-1	Pesticides	Ethion	0.011 U	ug/L	0.011	0.042
10/19/2015 11:35	EFF-1	Pesticides	Malathion	0.011 UJ	ug/L	0.011	0.042
10/19/2015 11:35	EFF-1	Pesticides	Simazine	0.011 U	ug/L	0.011	0.042
10/19/2015 11:35	EFF-1	Pesticides	Azinphos Methyl	0.021 U	ug/L	0.021	0.084
10/19/2015 11:35	EFF-1	Pesticides	Fenamiphos	0.032 U	ug/L	0.032	0.13
10/19/2015 11:35	EFF-1	Pesticides	Metolachlor	0.063 U	ug/L	0.063	0.25
10/19/2015 11:35	EFF-1	Pesticides	Prometryn	0.021 U	ug/L	0.021	0.084
10/19/2015 11:35	EFF-1	Pesticides	Atrazine Desethyl	0.011 U	ug/L	0.011	0.042
10/19/2015 11:35	EFF-1	Pesticides	Ametryn	0.011 U	ug/L	0.011	0.042

Date	Field ID	Analysis	Component	Result	Units	MDL	PQL
10/19/2015 11:35	EFF-1	Pesticides	Atrazine Desisopropyl	0.011 U	ug/L	0.011	0.042
10/19/2015 11:35	EFF-1	Pesticides	Chlorpyrifos Methyl	0.011 U	ug/L	0.011	0.042
10/19/2015 11:35	EFF-1	Pesticides	Hexazinone	0.032 UJ	ug/L	0.032	0.13
10/19/2015 11:35	EFF-1	Pesticides	Metalaxyl	0.042 U	ug/L	0.042	0.17
10/19/2015 11:35	EFF-1	Pesticides	Naled	0.042 U	ug/L	0.042	0.17
10/19/2015 11:35	EFF-1	Pesticides	Chlorpyrifos Ethyl	0.011 U	ug/L	0.011	0.042
10/19/2015 11:35	EFF-1	Pesticides	Diazinon	0.011 U	ug/L	0.011	0.042
10/19/2015 11:35	EFF-1	Pesticides	Parathion Ethyl	0.021 U	ug/L	0.021	0.084
10/19/2015 11:35	EFF-1	Pesticides	Sucralose	0.010 U	ug/L	0.01	0.05
10/19/2015 11:35	EFF-1	Pesticides	Atrazine	0.011 U	ug/L	0.011	0.042
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	2-Chloronaphthalene	1.1 U	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Fluoranthene	0.22 U	ug/L	0.22	0.86
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Benzo(a)anthracene	0.22 U	ug/L	0.22	0.86
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Pyrene	0.22 U	ug/L	0.22	0.86
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	2,4-Dinitrophenol	16 U	ug/L	16	65
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	2,4-Dinitrotoluene	1.1 U	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	2,6-Dinitrotoluene	1.1 U	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Acenaphthylene	0.22 U	ug/L	0.22	0.86
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Benzidine	110 U	ug/L	110	430
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Benzo(a)pyrene	0.22 U	ug/L	0.22	0.86
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Dimethyl phthalate	1.1 U	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Hexachloroethane	3.2 U	ug/L	3.2	13
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Nitrobenzene	2.2 U	ug/L	2.2	8.6
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Pentachlorophenol	1.1 U	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	2,4-Dimethylphenol	11 U	ug/L	11	43
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Acenaphthene	0.22 U	ug/L	0.22	0.86
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Di-n-butyl phthalate	2.3 IV	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Di-n-octyl phthalate	1.1 U	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Benzo(k)fluoranthene	0.22 U	ug/L	0.22	0.86
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.1 U	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.2 U	ug/L	3.2	13
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	2.2 U	ug/L	2.2	8.6
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Butyl benzyl phthalate	1.1 U	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Diethyl phthalate	1.3 I	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Hexachlorobenzene	1.1 U	ug/L	1.1	4.3

Date	Field ID	Analysis	Component	Result	Units	MDL	PQL
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.2 U	ug/L	3.2	13
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	2,4,6-Trichlorophenol	1.1 U	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	2,4-Dichlorophenol	1.1 U	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.2 U	ug/L	2.2	8.6
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	4-Nitrophenol	16 U	ug/L	16	65
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Chrysene	0.22 U	ug/L	0.22	0.86
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Fluorene	0.22 U	ug/L	0.22	0.86
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Hexachlorobutadiene	3.2 U	ug/L	3.2	13
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.2 U	ug/L	3.2	13
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.2 U	ug/L	2.2	8.6
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.2 U	ug/L	3.2	13
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	2-Nitrophenol	1.1 U	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.1 U	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Isophorone	1.1 U	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Phenol	1.1 U	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Anthracene	0.22 U	ug/L	0.22	0.86
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	N-Nitrosodimethylamine	2.2 U	ug/L	2.2	8.6
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Naphthalene	0.22 U	ug/L	0.22	0.86
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Phenanthrene	0.22 U	ug/L	0.22	0.86
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.1 U	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	3,3'-Dichlorobenzidine	43 U	ug/L	43	170
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.1 U	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Benzo(b)fluoranthene	0.22 U	ug/L	0.22	0.86
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.22 U	ug/L	0.22	0.86
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.1 U	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.22 U	ug/L	0.22	0.86
10/19/2015 11:35	EFF-1	Priority Organic Pollutants	2-Chlorophenol	1.1 U	ug/L	1.1	4.3
10/19/2015 11:35	EFF-1	Nutrients	pH	7.23			
10/19/2015 11:35	EFF-1	Nutrients	Temperature	24.9	C		
10/19/2015 11:35	EFF-1	Nutrients	Specific Conductance	4180	umhos/cm		
10/19/2015 11:50	Field Blank	Metals	Cadmium	0.020 U	ug/L	0.02	0.08
10/19/2015 11:50	Field Blank	Metals	Magnesium	0.040 U	mg/L	0.04	0.16
10/19/2015 11:50	Field Blank	Metals	Sodium	0.50 U	mg/L	0.5	2
10/19/2015 11:50	Field Blank	Metals	Zinc	5.0 U	ug/L	5	20
10/19/2015 11:50	Field Blank	Metals	Aluminum	2.0 U	ug/L	2	8

Date	Field ID	Analysis	Component	Result	Units	MDL	PQL
10/19/2015 11:50	Field Blank	Metals	Nickel	0.050 U	ug/L	0.05	0.2
10/19/2015 11:50	Field Blank	Metals	Iron	30 U	ug/L	30	120
10/19/2015 11:50	Field Blank	Metals	Silver	0.0050 U	ug/L	0.005	0.02
10/19/2015 11:50	Field Blank	Metals	Arsenic	0.050 U	ug/L	0.05	0.2
10/19/2015 11:50	Field Blank	Metals	Copper	0.10 U	ug/L	0.1	0.4
10/19/2015 11:50	Field Blank	Metals	Lead	0.050 U	ug/L	0.05	0.2
10/19/2015 11:50	Field Blank	Metals	Selenium	0.20 U	ug/L	0.2	0.8
10/19/2015 11:50	Field Blank	Metals	Calcium	0.075 U	mg/L	0.075	0.3
10/19/2015 11:50	Field Blank	Metals	Chromium	0.050 U	ug/L	0.05	0.2
10/19/2015 11:50	Field Blank	Metals	Potassium	0.30 U	mg/L	0.3	1.2
10/19/2015 11:50	Field Blank	Nutrients	Chloride	0.20 U	mg Cl/L	0.2	0.5
10/19/2015 11:50	Field Blank	Nutrients	Total-P	0.002 U	mg P/L	0.002	0.005
10/19/2015 11:50	Field Blank	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.08	0.2
10/19/2015 11:50	Field Blank	Nutrients	Organic Carbon	0.50 U	mg C/L	0.5	1
10/19/2015 11:50	Field Blank	Nutrients	Color (true)	2.5 U	PCU	2.5	6
10/19/2015 11:50	Field Blank	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.004	0.01
10/19/2015 11:50	Field Blank	Nutrients	Turbidity	0.10 U	NTU	0.1	0.1
10/19/2015 11:50	Field Blank	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.1
10/19/2015 11:50	Field Blank	Nutrients	Sulfate	0.20 U	mg SO4/L	0.2	0.5
10/19/2015 11:50	Field Blank	Nutrients	Ammonia-N	0.003 I	mg N/L	0.002	0.005
10/19/2015 11:50	Field Blank	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
10/19/2015 11:50	Field Blank	Nutrients	Total Alkalinity	0.65 U	mg CaCO3/L	0.65	2.5
10/19/2015 11:50	Field Blank	Overflow	Sulfide	1.0 U	mg/L	1	1
10/19/2015 11:50	Field Blank	Overflow	Radium 226-Counting Error	0.0760 U	pCi/L	0.139	0.139
10/19/2015 11:50	Field Blank	Overflow	Radium 228	0.766 U	pCi/L	0.766	0.766
10/19/2015 11:50	Field Blank	Overflow	Alpha, Total	0.939 U	pCi/L	0.939	0.939
10/19/2015 11:50	Field Blank	Overflow	Radium 226	0.139 U	pCi/L	0.139	0.139
10/19/2015 11:50	Field Blank	Overflow	Radium 228-Counting Error	0.473 U	pCi/L	0.766	0.766
10/19/2015 11:50	Field Blank	Overflow	Alpha-Counting Error	0.482 U	pCi/L	0.939	0.939
10/19/2015 11:50	Field Blank	Pesticides	Atrazine Desethyl	0.0095 U	ug/L	0.0095	0.038
10/19/2015 11:50	Field Blank	Pesticides	Metolachlor	0.057 U	ug/L	0.057	0.23
10/19/2015 11:50	Field Blank	Pesticides	Simazine	0.0095 U	ug/L	0.0095	0.038
10/19/2015 11:50	Field Blank	Pesticides	Chlorpyrifos Ethyl	0.0095 U	ug/L	0.0095	0.038
10/19/2015 11:50	Field Blank	Pesticides	Chlorpyrifos Methyl	0.0095 U	ug/L	0.0095	0.038
10/19/2015 11:50	Field Blank	Pesticides	Demeton	0.023 U	ug/L	0.023	0.091

Date	Field ID	Analysis	Component	Result	Units	MDL	PQL
10/19/2015 11:50	Field Blank	Pesticides	Ethion	0.0095 U	ug/L	0.0095	0.038
10/19/2015 11:50	Field Blank	Pesticides	Malathion	0.0095 UJ	ug/L	0.0095	0.038
10/19/2015 11:50	Field Blank	Pesticides	Metribuzin	0.019 U	ug/L	0.019	0.076
10/19/2015 11:50	Field Blank	Pesticides	Naled	0.038 U	ug/L	0.038	0.15
10/19/2015 11:50	Field Blank	Pesticides	Prometryn	0.019 U	ug/L	0.019	0.076
10/19/2015 11:50	Field Blank	Pesticides	Atrazine Desisopropyl	0.0095 U	ug/L	0.0095	0.038
10/19/2015 11:50	Field Blank	Pesticides	Disulfoton	0.0048 U	ug/L	0.0048	0.019
10/19/2015 11:50	Field Blank	Pesticides	Ethoprop	0.0048 U	ug/L	0.0048	0.019
10/19/2015 11:50	Field Blank	Pesticides	Parathion Ethyl	0.019 U	ug/L	0.019	0.076
10/19/2015 11:50	Field Blank	Pesticides	Phorate	0.0048 U	ug/L	0.0048	0.019
10/19/2015 11:50	Field Blank	Pesticides	Alachlor	0.057 U	ug/L	0.057	0.23
10/19/2015 11:50	Field Blank	Pesticides	Fonofos	0.0095 U	ug/L	0.0095	0.038
10/19/2015 11:50	Field Blank	Pesticides	Hexazinone	0.029 UJ	ug/L	0.029	0.11
10/19/2015 11:50	Field Blank	Pesticides	Metalaxyl	0.038 U	ug/L	0.038	0.15
10/19/2015 11:50	Field Blank	Pesticides	Norflurazon	0.029 U	ug/L	0.029	0.11
10/19/2015 11:50	Field Blank	Pesticides	Sucralose	0.010 U	ug/L	0.01	0.05
10/19/2015 11:50	Field Blank	Pesticides	Diazinon	0.0095 U	ug/L	0.0095	0.038
10/19/2015 11:50	Field Blank	Pesticides	Azinphos Methyl	0.019 U	ug/L	0.019	0.076
10/19/2015 11:50	Field Blank	Pesticides	Parathion Methyl	0.0095 U	ug/L	0.0095	0.038
10/19/2015 11:50	Field Blank	Pesticides	Ametryn	0.0095 U	ug/L	0.0095	0.038
10/19/2015 11:50	Field Blank	Pesticides	Fenamiphos	0.029 U	ug/L	0.029	0.11
10/19/2015 11:50	Field Blank	Pesticides	Prometon	0.019 U	ug/L	0.019	0.076
10/19/2015 11:50	Field Blank	Pesticides	Atrazine	0.0095 U	ug/L	0.0095	0.038
10/19/2015 11:50	Field Blank	Pesticides	Bromacil	0.038 U	ug/L	0.038	0.15
10/19/2015 11:50	Field Blank	Pesticides	Butylate	0.019 U	ug/L	0.019	0.076
10/19/2015 11:50	Field Blank	Pesticides	Mevinphos	0.0095 U	ug/L	0.0095	0.038
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	2,4-Dinitrophenol	14 U	ug/L	14	57
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9 U	ug/L	1.9	7.6
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Butyl benzyl phthalate	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Diethyl phthalate	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Hexachlorobutadiene	2.9 U	ug/L	2.9	11
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Benzidine	95 U	ug/L	95	380
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9 U	ug/L	1.9	7.6
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19 U	ug/L	0.19	0.76

Date	Field ID	Analysis	Component	Result	Units	MDL	PQL
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9 U	ug/L	1.9	7.6
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Phenanthrene	0.19 U	ug/L	0.19	0.76
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Anthracene	0.19 U	ug/L	0.19	0.76
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9 U	ug/L	2.9	11
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Pyrene	0.19 U	ug/L	0.19	0.76
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	ug/L	2.9	11
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19 U	ug/L	0.19	0.76
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Fluoranthene	0.19 U	ug/L	0.19	0.76
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Fluorene	0.19 U	ug/L	0.19	0.76
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	2-Nitrophenol	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	4-Nitrophenol	14 U	ug/L	14	57
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Acenaphthene	0.19 U	ug/L	0.19	0.76
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19 U	ug/L	0.19	0.76
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Chrysene	0.19 U	ug/L	0.19	0.76
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Isophorone	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	ug/L	1.9	7.6
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Nitrobenzene	1.9 U	ug/L	1.9	7.6
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Pentachlorophenol	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38 U	ug/L	38	150
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9 U	ug/L	2.9	11
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19 U	ug/L	0.19	0.76
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9 U	ug/L	2.9	11
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	2,4-Dimethylphenol	9.5 U	ug/L	9.5	38
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	2-Chlorophenol	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.19 U	ug/L	0.19	0.76
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Hexachlorobenzene	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Hexachloroethane	2.9 U	ug/L	2.9	11

Date	Field ID	Analysis	Component	Result	Units	MDL	PQL
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Phenol	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Acenaphthylene	0.19 U	ug/L	0.19	0.76
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.19 U	ug/L	0.19	0.76
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19 U	ug/L	0.19	0.76
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Di-n-butyl phthalate	1.9 IV	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Dimethyl phthalate	0.95 U	ug/L	0.95	3.8
10/19/2015 11:50	Field Blank	Priority Organic Pollutants	Naphthalene	0.19 U	ug/L	0.19	0.76

EPA End Sheet

The Bioassay of East Putnam County RO WTP effluent sampled on October 19, 2015. NPDES #FL0433365.

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 4 3 3 3 6 5	11 12 15 10 19	18 **B**	19 **S**	20 2

Remarks

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The Priority Pollutants Analysis of East Putnam County RO WTP effluent sampled on October 19, 2015. NPDES #FL0433365.

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 4 3 3 3 6 5	11 12 15 10 19	18 **X**	19 **S**	20 2

Remarks

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Biological Analyses of East Putnam County RO WTP effluent sampled on October 19, 2015. NPDES #FL0433365.

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 4 3 3 3 6 5	11 12 15 10 19	18 **S**	19 **S**	20 2

Remarks

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