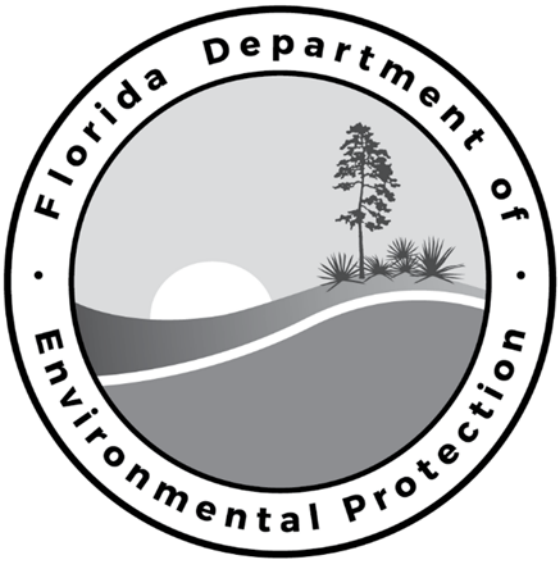


Effluent Quality Assessment of

Marsh Landing WWTF

St. Johns County

NPDES # FL0044253

Sampled September 27, 2016

March 2017

Biology Program

DEP Laboratory

Division of Environmental Assessment and Restoration

DEP Laboratory Quality Manual

NELAC Certification No. E31780

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Marsh Landing Wastewater Treatment Facility (WWTF), 166 Marsh Cove Drive, Ponte Vedra Beach, St. Johns County, Florida, 32082. NPDES #FL0044253.

Facility Overview

Marsh Landing WWTF is a domestic wastewater treatment plant which utilizes a biological treatment process to treat domestic wastewater. 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 were collected on September 27, 2016. Effluent grab and composite samples for biological and chemical analyses for this facility were collected on September 26 and 27, 2016. Samples were collected from the EFA-1 and the EFD-1 NPDES sampling points for Outfall D-001 by Brian Davis and Patrick O'Conner (DEP Northeast Regional Operation Center).
All field and laboratory methods followed DEP Standard Operating Procedures (see http://www.dep.state.fl.us/labs/library/lab_sops.htm and http://www.dep.state.fl.us/water/sas/sop/sops.htm for details) and met DEP quality assurance/quality control standards (see http://www.dep.state.fl.us/water/sas/qa/index.htm). Explanations of specific methods and measurements can be found in Appendix C.

Results

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

- Receiving Waters for this facility fall within 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.
  http://ca.dep.state.fl.us/mapdirect/?focus=nutrientcriteria
- The total ammonia concentration in the composite sample collected and preserved for chemical analysis was 0.006 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.
- Aluminum, arsenic, chromium, copper, nickel, and zinc 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. Carbonaceous biochemical oxygen demand (CBOD), lead, total ammonia, and total suspended solids were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL).
- Fecal coliforms exceeded the Class III Marine Water Quality Standard but did not exceed the permitted limit.

Algal Growth Potential (See Table 4 and Appendix C)

- The effluent Algal Growth Potential (AGP) was 377 A (A – Reported value is the mean of two or more determinations) mg dry wt/L of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum.* The analytical chemistry suggests that the effluent is nitrogen–limited (Miller et al. 1978) (USEPA 2000).
- The effluent AGP result is more than an order of magnitude greater than the AGP range (6.10 to 20.0 mg dry wt/L) shown to be representative of high productivity for freshwater (Miller et al. 1978). Although effluent is discharged into Class III Marine Waters, an inference can be made that the effluent has the potential to contribute nutrients to the receiving water.

Toxicity Test Results (See Table 2 and Appendix C)

- Tests were performed September 28 – October 2, 2016.

  Acute bioassay results are reported as the Concentration Lethal to 50% of the test organisms (LC50).

  Ceriodaphnia dubia 96-hour acute definitive bioassay – LC_{50} > 100%, 0%* mortality in 100% sample at 96 hours

  Cyprinella leedsi 96-hour acute definitive bioassay – LC_{50} > 100%, 0%* mortality in 100% 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 test organisms.

Conclusion

- The effluent sample collected from the EFD-1 NPDES sampling point for this facility on September 27, 2016, was not acutely toxic to either test species during the 96-hour acute definitive bioassays. The freshwater AGP result was more than an order of magnitude greater than the AGP shown to be representative of high productivity for freshwater (Miller et al. 1978), suggesting that the effluent has the potential to contribute nutrients to the receiving water. Fecal coliforms exceeded the Class III Marine Water Quality standard but did not exceed the permitted limit. Additional effluent water quality samples collected on September 27, 2016, 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 Amelia.Rankin@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.

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

Marsh Landing WWTF	Units	Class III Criteria	Effluent Permit Limits	Effluent Composite	Effluent Grab
Sample Depth	m	-	-	-	0.3
Temperature	°C	-	-	-	29
pH	SU	6.0 - 8.5	6.5 - 8.5	-	6.3
Specific Conductance	µmhos/cm	-	-	-	1355
Salinity	ppt	-	-	-	0.6 c
Dissolved Oxygen	% saturation	≥ 42	-	-	69
Dissolved Oxygen	mg/L	-	-	-	5.3
Total Residual Chlorine	mg/L	≤ 0.01	≥ 0.5	-	4.8

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

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

Marsh Landing WWTF	Units	Class III Criteria	Effluent Permit Limits	Effluent Composite	Effluent Grab	EFD1
Ortho-phosphate	mg P/L	-	Report	-	4.2	-
Total Phosphorus	mg P/L	-	Report	4.4	4.3	-
Total Ammonia	mg N/L	-	Report	0.003 I	0.006	-
Un-ionized Ammonia (calculated salinity)	mg N/L	≤ 0.02 s	-	-	< 0.02 c	-
Nitrate and Nitrite	mg N/L	-	Report	28	28	-
Total Kjeldahl Nitrogen	mg N/L	-	≤10.0	1.1	1.1	-
Organic Nitrogen	mg N/L	-	Report	1.1 c	1.1 c	-
Total Nitrogen	mg N/L	-	Report	29 c	29 c	-
Total Organic Carbon	mg C/L	-	-	6.4	6.2	-
Chlorophyll *a* - Corrected	µg/L	-	-	-	0.55 U	-
Phaeophytin	µg/L	-	-	-	0.40 U	-
CBOD, 5 day, N - inhibited	mg/L	-	≤60.0 s	0.83 I	-	-
Total Suspended Solids	mg/L	-	≤5.0 s	2 I	-	-
Turbidity	NTU	< 29 t	-	-	0.50	-
Color (true)	PCU	-	-	-	3.0 I	-
Alkalinity	mg $CaCO_3$/L	-	-	-	81	-
Chloride	mg Cl/L	-	-	-	210	-
Fluoride	mg F/L	≤ 5.0	-	-	0.84	-
Sulfate	mg SO4/L	-	-	-	140	-
Flow (7-1-15 through 6-30-16)	MGD	-	≤ 0.800	0.30 a	-	-
Microbiology						
Fecal Coliforms [1]	cfu/100 mL	≤ 400s #	≤ 800s	-	-	600 B
Toxicity (96 hour Acute Definitive % LC50)						
Bioassay - Water flea *(Ceriodaphnia dubia)*	% Effluent-	≥100	≥100 s	-	>100	-
Bioassay - Fish *(Cyprinella leedsi)*	% Effluent-	≥100	≥100 s	-	>100	-

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
c - Value is calculated
s - Single sample
t - Shall not exceed 29 NTUs above background
B - Results based on colony counts outside the acceptance range
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
- If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)
1 - Fecal coliform analysis performed by Analytical Lab Services Jacksonville lab

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

Marsh Landing WWTF	Units	Class III Criteria	Permit Limits	Effluent Grab
Hardness	mg $CaCO_3$/L	-	-	309 c
Aluminum	µg/L	≤ 1500 s	-	8.2
Arsenic	µg/L	≤ 50 s	-	0.35
Cadmium	µg/L	≤ 8.8 s	-	0.020 U
Calcium	mg/L	-	-	68.6
Chromium, Total [2]	µg/L	≤ 50 s	-	0.30
Copper	µg/L	≤ 3.7 s	-	2.45
Iron	µg/L	≤ 300 s	-	30 U
Lead	µg/L	≤ 8.5 s	-	0.050 I
Magnesium	mg/L	-	-	33.4
Nickel	µg/L	≤ 8.5 s	-	2.02
Potassium	mg/L	-	-	12.1
Selenium	µg/L	≤ 71 s	-	0.20 U
Silver	µg/L	≤ 2.3 s	-	0.0050 U
Sodium	mg/L	-	-	141
Zinc	µg/L	≤ 86 s	-	46

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
2 - Class III Marine Water Quality Criterion (62-302.530(19)(b), F.A.C.) is for chromium-VI
c - Value is calculated
s - Single sample
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

Marsh Landing WWTF						
Location	**Test Species**	**AGP (measured)**	**Predicted AGP (TSIN) ± 20%**	**Predicted AGP (TN) ± 20%**	**Inorganic N:P ratio**	**Total N:P ratio**
Effluent Grab	*Pseudokirchneriella subcapitata*	377 A	1064.2 ± 212.8	1105.8 ± 221.2	6.7	6.8

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

Appendix A

Facility Summary

State of Florida

Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event

Prepared By: Ginny Montoya	**Contact Number:** 904-256-1632
Facility Name (as it appears on permit): Marsh Landing WWTF	**Former Names:** **N/A**
NPDES Permit Number: FL0044253	**Permit Expiration Date:** 10/15/2017
Physical Address: 166 Marsh Cove Drive, Ponte Vedra Beach, FL 32082	
District: Northeast	**County:** St. Johns
Function of Facility: Wastewater treatment	
Facility Type: Domestic Wastewater	**Permitted Capacity (MGD):** 0.800
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): 0.30 MGD (7-1-2015 thru 6-30-2016) at D-001	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): 0.10 MGD at R-001	
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** FLW-3 – Flow meter, in-line propeller meter downstream of system storage ponds EFA-1 – Effluent sample point immediately after disinfection prior to discharge to system storage reclaimed water holding ponds EFB-1 – Effluent sample point after filtration prior to disinfection EFD-1 – Effluent sample point after the reclaimed water holding ponds and prior to discharge to the Marsh Landing storm water system OTH-1 – Rainfall data as measured at the Ponte Cerda gauge station OTH-2 – Cumulative number of days during calendar year during which Limited Wet Weather Discharge (LWWD) is activated SWA-1 – Stream flow approximately 300-ft upstream of POD to ICWW or estimated value of 210 ft^3/s in receiving water body CAL-1 – Calculated value **Outfall R-001** FLW-1 – Marsh Landing Golf Club Flow meter, in-line propeller meter on MLGC property FLW-2 – Flow meter, in-line propeller meter downstream of disk-filter ML WWTF CAL-1 – Calculated value EFA-1 – Effluent sample point immediately after disinfection prior to transport to the lined or/and unlined reclaimed water holding ponds EFB-1 – Effluent sample point after filtration prior to disinfection	

RWS-A – Reclaimed water scan sample point for Effluent Analysis report (same as EFA-1)

Description of Permitted Outfall(s):

D-001 – An existing 0.800 MGD annual average daily flow permitted to discharge to the Intracoastal Waterway(Class III Marine waters) via Marsh Landing Stormwater management system. Outfall is 36-inch concrete pipe approx. 10 feet in length, discharging at a depth of approx. 5 feet. Located approximately at latitude 30° 14' 41" N, longitude 81° 25' 36" W.

R-001

(Site #1) - An existing 0.800 MGD annual average daily flow permitted capacity slow-rate public access system for golf-course irrigation at the 90-acre Marsh Landing Country Club Golf Course. Site #1 is located approximately at latitude 30° 14' 21.425" N, longitude 81° 23' 45.07" W.

Site #2 – An existing 0.300 MGD annual average daily flow permitted slow-rate capacity public access system for irrigation of the golf course and landscape areas at the 208-acre Ponte Vedra Golf Course and Pont Vedra Inn and Club. The reclaimed water is discharged from the Marsh Landing WWTF storage ponds to the Ponte Vedra Golf Course irrigation pond (Lake Hole #6) for irrigation of the Ponte Vedra Golf Course and Ponte Vedra Inn and Club common areas. Site #2 is located approximately at latitude 30° 14' 18.502" N, longitude 81° 23' 6.885" W.

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

One influent mechanical screen includes two manually cleaned Hycor model HS-72 780-gpm static wedge wire screens, one 0.145 million gallon (MG) equalization basin, a raw wastewater pump station splitting flows to the two separate but interconnected activated sludge biological treatment units (Plants # 1 and # 2) including an aeration basin and a center clarifier.

Treatment Plant # 1 is a 73-ft. diameter steel ring package type treatment plant with a 406,084-gallon external annular aeration tank, a 106,800-gallon clarifier occupying the center 36-ft diameter ring (side water depth of 16.6-ft.) and a detached 25-ft. diameter tank serving as a 69,763-gallon aerobic digester. Treatment Plant # 2 is a 100-ft diameter steel ring package type treatment plant with an external annular 509,317-gallon aeration tank, an internal circular center feed well sludge withdraw clarifier having a 48-ft diameter and a side water depth of approximately 48 feet and 14.75-ft, respectively, and a 157,425-gallon aerobic digester located in the annular space of Plant #2. The two WWTF's share the following components: one 6-gpm/ft^2 Aqua-Aerobics cloth disk filter equipped with an automated backwash system, a 15,600-gallon chlorine contact chamber with two flow trains, one yard pump station for pumping of side-stream flows to the aerations tank, two in-ground, reclaimed water holding ponds (one lined 4.3-MG and one unlined 4.1-MG) having a total capacity of 8.4 MG, and one in-ground, lined 0.907 MG reject water holding pond.

PART I: Continued

List <u>current</u> Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under
(Leave cell blank if not applicable)

			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow, LWWD	MGD	Max	0.800				Continuous During Discharge		**FLW-3**	See I.A.4
		Max		Report						
Stream Flow, mean daily	MGD	Min				Report	Daily During Discharge		**SWA-1**	
Stream Dilution Factor	Ratio	Max				65	Daily During Discharge		**CAL-1**	
Rainfall	In.	Max				Report Annual Total	Daily During Discharge		**OTH-1**	
		Max				Report Monthly Total				
Duration of Discharge (Number days the LWWD occurs in a calendar year)	Day	Max				Report Annual Total in Calendar Year	Daily During Discharge		**OTH-2**	
BOD, Carbonaceous 5-day, 20ºC	mg/L	Max	20.0				Daily During Discharge		**EFA-1**	
		Max		20.0						
		Max				60.0				

Solids, Total Suspended	mg/L	Max				5.0	4 days/week		**EFB-1**	
Coliform, Fecal	#/100mL	Max	200				Weekly During Discharge		**EFA-1**	See I.A.5
		Max		200						
		Max				800				
pH	s.u.	Min				6.5	Daily During Discharge		**EFA-1**	
		Max				8.5				
Chlorine, Total Residual (for Disinfection)	mg/L	Min				0.5	Daily During Discharge		**EFA-1**	See I.A.3 and I.A.6
Chlorine, Total Residual (for Dechlorination)	mg/L	Max				0.01	Daily During Discharge		**EFD-1**	
Nitrogen, Total	mg/L	Max				Report	Monthly During Discharge		**CAL-1**	
Nitrogen, Kjeldahl, Total (as N)	mg/L	Max				10.0	Daily During Discharge		**EFA-1**	
		Max			7.5					
		Max		5.0						
		Max	5.0							
Nitrogen, Ammonia, Total (as N)	mg/L	Max				Report	Monthly During Discharge		**EFA-1**	
Nitrogen, Organic, Total (as N)	mg/L	Max				Report	Monthly During Discharge		**EFA-1**	

Nitrite plus Nitrate, Total 1 det. (as N)	mg/L	Max				Report	Monthly During Discharge		**EFA-1**	
Phosphorus, Total (as P)	mg/L	Max				Report	Monthly During Discharge**		**EFA-1**	
Phosphate, Ortho (as P)	mg/L	Max				Report	Monthly During Discharge**		**EFA-1**	
Acute Whole Effluent Toxicity, 96-Hour LC50 (*Ceriodaphnia dubia* & *Cyprinella leedsi*)	percent	Min				100	Annually During Discharge		**EFD-1**	See I.A.10

**** 16-hour flow proportioned composite or flow proportioned composite samples for the time period of discharge if discharge is less than 16 hours.***
***** Sample shall be taken on the first discharge day of the discharge month***

PART I: Continued

Receiving Waters:	**Classification (indicate whether fresh or marine):**
Intracoastal Waterway via Marsh Landing Stormwater Management System	Class III Marine Waters

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

a. Effluent Limitation
   (1) In any routine or additional follow-up test for acute whole effluent toxicity, the 96-hour LC50 shall not be less than 100% effluent. [Rules 62-302.200(1), 62-302.500(1)(a)4., 62-4.244(3)(a), and 62-4.241(1)(a) or (2)(a), F.A.C.]

b. Monitoring Frequency
   (1) Routine toxicity tests shall be conducted annually.

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

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

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

f. Reporting Requirements
   (1) Results from all required tests shall be reported on the Discharge Monitoring Report (DMR) as the calculated LC50 value for that test species.
   (2) A bioassay laboratory report for the routine test shall be prepared according to EPA-821-R-02-012, Section 12, Report Preparation and Test Review, and mailed or *emailed* to the Department at the address below within 30 days after the last day of the test.
   (3) For additional follow-up tests, a single bioassay laboratory report shall be prepared according to EPA-821-R-02-012, Section 12, and mailed or *emailed* within 30 days after the last day of the second valid additional follow-up test.

(4) Data for invalid tests shall be included in the bioassay laboratory report for the repeat test.
(5) The same bioassay data shall not be reported as the results of more than one test.
(6) All bioassay laboratory reports shall be mailed or *emailed* to Jacksonville *only*:

Florida Department of Environmental Protection
Northeast District – Wastewater Section
8800 Baymeadows Way West, Suite 100
Jacksonville, Florida 32256

g. Test Failures
(1) A test fails when the test results do not meet the limits in 10.a.(1).
(2) Additional Follow-up Tests:
(a) If a routine test does not meet the acute toxicity limitation in 10.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 10.d.
(b) The first test shall be initiated within 28 days after the last day of the failed routine test. The remaining additional follow-up tests shall be conducted weekly thereafter until a total of two valid additional follow-up tests are completed.
(c) The additional follow-up tests shall be conducted using a control (0% effluent) and a minimum of five dilutions: 100%, 75%, 50%, 25%, and 12.5% effluent. The permittee may modify the dilution series in the additional follow-up tests to more accurately bracket the toxicity such that at least two dilutions above and two dilutions below the target concentration and a control are run. All test results shall be statistically analyzed according to the procedures in EPA-821-R-02-012.
(3) In the event of three valid test failures (whether routine or additional follow-up tests) within a 12-month period, the permittee shall notify the Department within 21 days after the last day of the third test failure.
(a) The permittee shall submit a plan for correction of the effluent toxicity within 60 days after the last day of the third test failure.
(b) The Department shall review and approve the plan before initiation.
(c) The plan shall be initiated within 30 days following the Department's written approval of the plan.
(d) Progress reports shall be submitted quarterly to the Department at the address above.
(e) During the implementation of the plan, the permittee shall conduct quarterly routine whole effluent toxicity tests in accordance with 10.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 in10.b.(1). If a routine test is invalid according to the acceptance criteria in EPA-821-R-02-012, a repeat test shall be initiated within 14 days after the last day of the invalid routine test.
(f) Upon completion of four consecutive quarterly valid routine tests that demonstrate compliance with the effluent limitation in10.a.(1) above, the permittee may submit a written request to the Department to terminate the plan. The plan shall be terminated upon written verification by the Department that the facility has passed at least four consecutive quarterly valid routine whole effluent toxicity tests.
(g) If a test within the sequence of the four is deemed invalid, but is replaced by a repeat valid test initiated within 14 days after the last day of the invalid test, then the invalid test will not be counted against the requirement for four consecutive quarterly valid routine tests for the purpose of terminating the plan.
(4) The additional follow-up testing and the plan do not preclude the Department taking enforcement action for whole effluent toxicity failures.

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

Facility Mixing Zone Details (if applicable): N/A

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

Date	Parameter and Units	Limit	Result
N/A			

Describe previous FYI and WQBEL study:

FYI3 conducted 4/16/2012

Toxicity Test Results

Bioassay samples were not collected during this sampling event.

Algal Growth Potential

The effluent Algal Growth Potential (AGP) was 256 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 represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. The analytical chemistry suggests that the effluent is nitrogen-limited (Table 1; Miller et al. 1978).

An inference can be made based on the extremely high AGP value in the freshwater test that nutrient enrichment is likely to occur in marine receiving waters.

Normally, when a freshwater effluent discharges to marine receiving water, the laboratory splits the sample and runs a salinity adjusted effluent sample as well. However, in this case, not enough sample remained after sample preparation for an additional analysis.

See Table 1 for AGP results and qualifiers.

Chemistry Results

Total ammonia was not detected in the composite sample collected and preserved for chemical analysis. Total residual chlorine was not measured in the effluent when collected or in the Central Laboratory.

Copper, nickel and zinc were detected in the effluent at levels that comply with Class III Marine quality criteria (62-302.530, F.A.C.). Aluminum was detected between the laboratory method detection limit (MDL) and practical quantitation limit (PQL). TSS and fecal coliforms were detected in the effluent at levels that comply with water quality criteria and/or permit limits. Fluoride was detected in the effluent at a level that complies with Class III Marine criteria. Nitrate and nitrite were detected in the field blank. See Table 2 for results of analytes detected in the effluent, corresponding limits, and qualifiers. See Appendix B for a complete list of chemical analyses performed.

Conclusion

Bioassay samples were not collected from this facility during the April 16, 2012 sampling event. The AGP result greatly exceeded the problem threshold for fresh receiving water suggesting by inference that nutrient enrichment could be an issue in marine receiving waters.

Additional effluent water quality samples collected on April 16, 2012, did not exceed Class III Marine water quality standards or permitted limits.

Describe previous or current Enforcement Actions (including WLs):

CO 97-1667 – Fecal coliform exceedances at effluent during Feb-May 1996, TSS exceedances at effluent in Jan, Feb, Apr-Dec 1996, failed to routinely monitor for cl2 and turbidity, failed to "reject" effluent due to unpermitted cl2 and turbidity residuals, failed to install auto-dialer for cl2 and turbidity monitoring, flow meter faulty and flow not recorded during Jan-Sep 1996.

The facility was required to construct a reject pond, a cl2 and turbidity monitoring and management equipment, and to ensure that all permit levels are being met for all sampling at the effluent. This CO was resolved and facility paid in full.

CO 05-0074 from WL 05-0774 – September and November 2004 SSOs. Fees and penalties were assessed and paid in full. The facility took clean-up actions for the SSOs and discussed ways to prevent future incidents.

Describe any violations or problems noted in previous inspection:

Last CEI conducted 7/13/16. The facility and all records were found to be in full compliance.

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

In the last 5 years there were a few spikes in TSS, TKN, and total nitrogen. However, these appeared to have leveled out in the past 2 years. All other parameter results appear to be steady and within the permitted limits.

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

PART II: Sampling Event Information	
Date(s) sample collected:	**Sampler(s):**
Temperature (Deg C):	**pH (SU):**
Dissolved Oxygen (mg/L):	**Conductivity (umhos/cm):**
Total Residual Chlorine (mg/L):	**Total Residual Chlorine - after Disinfection (mg/L):**
Method of Chlorination:	**Method of De-chlorination:**
Flow During Sample Collection for each outfall(MGD):	
Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day):	
Describe Discharge during Sampling Event: ☐ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify:**	
Describe any conditions, difficulties or abnormal events that occurred during the sample collection and any other additional comments here:	

Appendix B

Explanation of Measurements

(1) Quality Assurance and Quality Control

Florida DEP's quality assurance requirements for analytical laboratories and field activities are codified in Chapter 62-160, F.A.C., Quality Assurance (QA Rule) and in internal Standard Operating Procedures (DEP SOPs). Methods for all analyses are on file at the DEP 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. The AGP range of 6.10 to 20.0 mg dry wt/L is suggested to be representative of high productivity for freshwater (Miller et al. 1978). High AGP values may constitute exceedances of 62-302.530(46), F.A.C., 62-302.530(47)(a), F.A.C. and/or 62-302.530(47)(b), F.A.C..

The concentration of nutrients in a water sample may be used to calculate the expected yield of AGP 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	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
9/26/16	Effluent Composite	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.83 I	mg/L	0.2	2
9/26/16	Effluent Composite	Nutrients	Ammonia-N	0.003 I	mg N/L	0.002	0.005
9/26/16	Effluent Composite	Nutrients	Kjeldahl Nitrogen	1.1	mg N/L	0.4	1
9/26/16	Effluent Composite	Nutrients	Total-P	4.4	mg P/L	0.025	0.25
9/26/16	Effluent Composite	Nutrients	Organic Carbon	6.4	mg C/L	0.5	1
9/26/16	Effluent Composite	Nutrients	TSS	2 I	mg/L	2	10
9/26/16	Effluent Composite	Nutrients	NO2NO3-N	28	mg N/L	0.8	2
9/27/16	Effluent Grab	AGP/LN	Algal Growth Potential	377 A	mg DryWt/L	0.3	0.9
9/27/16	Effluent Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	0.40 U	µg/L	0.4	1.2
9/27/16	Effluent Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55 U	µg/L	0.55	1.7
9/27/16	Effluent Grab	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.40 U	µg/L	0.4	1.2
9/27/16	Effluent Grab	Chlorophyll/Grain Size/BOD	Chlorophyll/Phaeophytin Ratio	1.0		0	0
9/27/16	Effluent Grab	Toxicology	Bioassay-Acute-Def-FW-C.dubia, LC50	100 L	LC50		
9/27/16	Effluent Grab	Toxicology	Bioassay-Acute-Def-FW-Fish, LC50	100 L	LC50		
9/27/16	Effluent Grab	Metals	Arsenic	0.35	µg/L	0.05	0.2
9/27/16	Effluent Grab	Metals	Calcium	68.6	mg/L	0.075	0.3
9/27/16	Effluent Grab	Metals	Sodium	141	mg/L	0.5	2
9/27/16	Effluent Grab	Metals	Zinc	46	µg/L	5	20
9/27/16	Effluent Grab	Metals	Aluminum	8.2	µg/L	2	8
9/27/16	Effluent Grab	Metals	Copper	2.45	µg/L	0.1	0.4
9/27/16	Effluent Grab	Metals	Lead	0.050 I	µg/L	0.05	0.2
9/27/16	Effluent Grab	Metals	Selenium	0.20 U	µg/L	0.2	0.8
9/27/16	Effluent Grab	Metals	Nickel	2.02	µg/L	0.05	0.2
9/27/16	Effluent Grab	Metals	Iron	30 U	µg/L	30	120
9/27/16	Effluent Grab	Metals	Potassium	12.1	mg/L	0.3	1.2
9/27/16	Effluent Grab	Metals	Magnesium	33.4	mg/L	0.04	0.16
9/27/16	Effluent Grab	Metals	Chromium	0.30	µg/L	0.05	0.2
9/27/16	Effluent Grab	Metals	Silver	0.0050 U	µg/L	0.005	0.02
9/27/16	Effluent Grab	Metals	Cadmium	0.020 U	µg/L	0.02	0.08
9/27/16	Effluent Grab	Nutrients	Color (true)	3.0 I	PCU	2.5	6
9/27/16	Effluent Grab	Nutrients	O-Phosphate-P	4.2	mg P/L	0.08	0.2
9/27/16	Effluent Grab	Nutrients	Chloride	210	mg Cl/L	2	5

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
9/27/16	Effluent Grab	Nutrients	Kjeldahl Nitrogen	1.1	mg N/L	0.4	1
9/27/16	Effluent Grab	Nutrients	Sulfate	140	mg SO4/L	2	5
9/27/16	Effluent Grab	Nutrients	Total-P	4.3	mg P/L	0.025	0.25
9/27/16	Effluent Grab	Nutrients	Organic Carbon	6.2	mg C/L	0.5	1
9/27/16	Effluent Grab	Nutrients	Total Alkalinity	81	mg CaCO3/L	0.65	2.5
9/27/16	Effluent Grab	Nutrients	NO2NO3-N	28	mg N/L	0.8	2
9/27/16	Effluent Grab	Nutrients	Fluoride	0.84	mg F/L	0.035	0.1
9/27/16	Effluent Grab	Nutrients	Ammonia-N	0.006	mg N/L	0.002	0.005
9/27/16	Effluent Grab	Nutrients	Turbidity	0.50	NTU	0.1	0.1
9/27/16	Effluent Grab	Pesticides	Diazinon	0.0095 UJ	µg/L	0.0095	0.038
9/27/16	Effluent Grab	Pesticides	Metribuzin	0.019 U	µg/L	0.019	0.076
9/27/16	Effluent Grab	Pesticides	Parathion Methyl	0.0095 U	µg/L	0.0095	0.038
9/27/16	Effluent Grab	Pesticides	Prometon	0.019 U	µg/L	0.019	0.076
9/27/16	Effluent Grab	Pesticides	Carbamazepine	0.0048	µg/L	0.0004	0.0016
9/27/16	Effluent Grab	Pesticides	Chlorpyrifos Ethyl	0.0095 UJ	µg/L	0.0095	0.038
9/27/16	Effluent Grab	Pesticides	Fonofos	0.0095 UJ	µg/L	0.0095	0.038
9/27/16	Effluent Grab	Pesticides	Malathion	0.0095 UJ	µg/L	0.0095	0.038
9/27/16	Effluent Grab	Pesticides	Mevinphos	0.0095 U	µg/L	0.0095	0.038
9/27/16	Effluent Grab	Pesticides	Atrazine Desisopropyl	0.031 I	µg/L	0.0095	0.038
9/27/16	Effluent Grab	Pesticides	Chlorpyrifos Methyl	0.0095 UJ	µg/L	0.0095	0.038
9/27/16	Effluent Grab	Pesticides	Hexazinone	0.028 UJ	µg/L	0.028	0.11
9/27/16	Effluent Grab	Pesticides	Acetaminophen	0.0040 UJ	µg/L	0.004	0.016
9/27/16	Effluent Grab	Pesticides	Azinphos Methyl	0.019 U	µg/L	0.019	0.076
9/27/16	Effluent Grab	Pesticides	Ethoprop	0.0047 U	µg/L	0.0047	0.019
9/27/16	Effluent Grab	Pesticides	Parathion Ethyl	0.019 U	µg/L	0.019	0.076
9/27/16	Effluent Grab	Pesticides	Alachlor	0.057 U	µg/L	0.057	0.23
9/27/16	Effluent Grab	Pesticides	Disulfoton	0.0047 UJ	µg/L	0.0047	0.019
9/27/16	Effluent Grab	Pesticides	Naled	0.038 U	µg/L	0.038	0.15
9/27/16	Effluent Grab	Pesticides	Phorate	0.0047 UJ	µg/L	0.0047	0.019
9/27/16	Effluent Grab	Pesticides	Sucralose	41	µg/L	1	4
9/27/16	Effluent Grab	Pesticides	Atrazine	0.013 U	µg/L	0.013	0.052
9/27/16	Effluent Grab	Pesticides	Bromacil	0.038 U	µg/L	0.038	0.15
9/27/16	Effluent Grab	Pesticides	Prometryn	0.019 UJ	µg/L	0.019	0.076
9/27/16	Effluent Grab	Pesticides	Atrazine Desethyl	0.0095 U	µg/L	0.0095	0.038
9/27/16	Effluent Grab	Pesticides	Ametryn	0.0095 UJ	µg/L	0.0095	0.038

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
9/27/16	Effluent Grab	Pesticides	Ethion	0.0095 UJ	µg/L	0.0095	0.038
9/27/16	Effluent Grab	Pesticides	Fenamiphos	0.028 U	µg/L	0.028	0.11
9/27/16	Effluent Grab	Pesticides	Metolachlor	0.057 U	µg/L	0.057	0.23
9/27/16	Effluent Grab	Pesticides	Norflurazon	0.028 U	µg/L	0.028	0.11
9/27/16	Effluent Grab	Pesticides	Simazine	0.0095 U	µg/L	0.0095	0.038
9/27/16	Effluent Grab	Pesticides	Butylate	0.019 U	µg/L	0.019	0.076
9/27/16	Effluent Grab	Pesticides	Demeton	0.023 U	µg/L	0.023	0.091
9/27/16	Effluent Grab	Pesticides	Metalaxyl	0.038 UJ	µg/L	0.038	0.15
9/27/16	Effluent Grab	Priority Organic Pollutants	2,4-Dinitrotoluene	0.94 U	µg/L	0.94	3.8
9/27/16	Effluent Grab	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.94 U	µg/L	0.94	3.8
9/27/16	Effluent Grab	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19 U	µg/L	0.19	0.75
9/27/16	Effluent Grab	Priority Organic Pollutants	Dimethyl phthalate	0.94 U	µg/L	0.94	3.8
9/27/16	Effluent Grab	Priority Organic Pollutants	Fluorene	0.19 U	µg/L	0.19	0.75
9/27/16	Effluent Grab	Priority Organic Pollutants	Pentachlorophenol	0.94 UJ	µg/L	0.94	3.8
9/27/16	Effluent Grab	Priority Organic Pollutants	Phenol	0.94 UJ	µg/L	0.94	3.8
9/27/16	Effluent Grab	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.94 U	µg/L	0.94	3.8
9/27/16	Effluent Grab	Priority Organic Pollutants	2,4-Dimethylphenol	9.4 UJ	µg/L	9.4	38
9/27/16	Effluent Grab	Priority Organic Pollutants	4-Nitrophenol	14 U	µg/L	14	57
9/27/16	Effluent Grab	Priority Organic Pollutants	Benzo(a)pyrene	0.19 UJ	µg/L	0.19	0.75
9/27/16	Effluent Grab	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9 U	µg/L	1.9	7.5
9/27/16	Effluent Grab	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.8 U	µg/L	2.8	11
9/27/16	Effluent Grab	Priority Organic Pollutants	Phenanthrene	0.19 U	µg/L	0.19	0.75
9/27/16	Effluent Grab	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.94 U	µg/L	0.94	3.8
9/27/16	Effluent Grab	Priority Organic Pollutants	2-Chlorophenol	0.94 UJ	µg/L	0.94	3.8
9/27/16	Effluent Grab	Priority Organic Pollutants	Benzidine	94 UJ	µg/L	94	380
9/27/16	Effluent Grab	Priority Organic Pollutants	Diethyl phthalate	1.9 U	µg/L	1.9	7.5
9/27/16	Effluent Grab	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19 U	µg/L	0.19	0.75
9/27/16	Effluent Grab	Priority Organic Pollutants	Nitrobenzene	1.9 U	µg/L	1.9	7.5
9/27/16	Effluent Grab	Priority Organic Pollutants	2-Nitrophenol	0.94 UJ	µg/L	0.94	3.8
9/27/16	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.94 U	µg/L	0.94	3.8
9/27/16	Effluent Grab	Priority Organic Pollutants	Chrysene	0.19 U	µg/L	0.19	0.75
9/27/16	Effluent Grab	Priority Organic Pollutants	Di-n-octyl phthalate	0.94 U	µg/L	0.94	3.8
9/27/16	Effluent Grab	Priority Organic Pollutants	Hexachlorobenzene	0.94 U	µg/L	0.94	3.8
9/27/16	Effluent Grab	Priority Organic Pollutants	Isophorone	0.94 U	µg/L	0.94	3.8
9/27/16	Effluent Grab	Priority Organic Pollutants	Pyrene	0.19 U	µg/L	0.19	0.75

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
9/27/16	Effluent Grab	Priority Organic Pollutants	Acenaphthylene	0.19 UJ	µg/L	0.19	0.75
9/27/16	Effluent Grab	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19 U	µg/L	0.19	0.75
9/27/16	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.8 U	µg/L	2.8	11
9/27/16	Effluent Grab	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9 U	µg/L	1.9	7.5
9/27/16	Effluent Grab	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.8 UJ	µg/L	2.8	11
9/27/16	Effluent Grab	Priority Organic Pollutants	Naphthalene	0.19 U	µg/L	0.19	0.75
9/27/16	Effluent Grab	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.8 U	µg/L	2.8	11
9/27/16	Effluent Grab	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38 UJ	µg/L	38	150
9/27/16	Effluent Grab	Priority Organic Pollutants	Benzo(a)anthracene	0.19 U	µg/L	0.19	0.75
9/27/16	Effluent Grab	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19 U	µg/L	0.19	0.75
9/27/16	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.94 U	µg/L	0.94	3.8
9/27/16	Effluent Grab	Priority Organic Pollutants	Di-n-butyl phthalate	1.9 U	µg/L	1.9	7.5
9/27/16	Effluent Grab	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9 U	µg/L	1.9	7.5
9/27/16	Effluent Grab	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19 U	µg/L	0.19	0.75
9/27/16	Effluent Grab	Priority Organic Pollutants	Butyl benzyl phthalate	0.94 U	µg/L	0.94	3.8
9/27/16	Effluent Grab	Priority Organic Pollutants	Fluoranthene	0.19 U	µg/L	0.19	0.75
9/27/16	Effluent Grab	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	µg/L	1.9	7.5
9/27/16	Effluent Grab	Priority Organic Pollutants	2,4-Dichlorophenol	0.94 UJ	µg/L	0.94	3.8
9/27/16	Effluent Grab	Priority Organic Pollutants	2,4-Dinitrophenol	14 U	µg/L	14	57
9/27/16	Effluent Grab	Priority Organic Pollutants	2,6-Dinitrotoluene	0.94 U	µg/L	0.94	3.8
9/27/16	Effluent Grab	Priority Organic Pollutants	2-Chloronaphthalene	0.94 U	µg/L	0.94	3.8
9/27/16	Effluent Grab	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.94 UJ	µg/L	0.94	3.8
9/27/16	Effluent Grab	Priority Organic Pollutants	Acenaphthene	0.19 UJ	µg/L	0.19	0.75
9/27/16	Effluent Grab	Priority Organic Pollutants	Anthracene	0.19 U	µg/L	0.19	0.75
9/27/16	Effluent Grab	Priority Organic Pollutants	Hexachlorobutadiene	2.8 U	µg/L	2.8	11
9/27/16	Effluent Grab	Priority Organic Pollutants	Hexachloroethane	2.8 U	µg/L	2.8	11
9/27/16	Effluent Grab	Nutrients	Specific Conductance	1355	µmhos/cm		
9/27/16	Effluent Grab	Nutrients	Temperature	29	C		
9/27/16	Effluent Grab	Nutrients	pH	6.3			
9/27/16	Effluent Grab	Nutrients	Dissolved Oxygen	5.3	mg/L		
9/27/16	Effluent Grab	Nutrients	Sample Depth	0.3	m		
9/27/16	EFD1	Overflow	Fecal Coliforms-Membrane Filter	600 B	cfu/100 mL	100	100
9/27/16	Field Blank	Metals	Lead	0.050 U	µg/L	0.05	0.2
9/27/16	Field Blank	Metals	Calcium	0.075 U	mg/L	0.075	0.3
9/27/16	Field Blank	Metals	Nickel	0.050 U	µg/L	0.05	0.2

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
9/27/16	Field Blank	Metals	Copper	0.11 I	µg/L	0.1	0.4
9/27/16	Field Blank	Metals	Potassium	0.30 U	mg/L	0.3	1.2
9/27/16	Field Blank	Metals	Arsenic	0.050 U	µg/L	0.05	0.2
9/27/16	Field Blank	Metals	Zinc	5.0 U	µg/L	5	20
9/27/16	Field Blank	Metals	Sodium	0.50 U	mg/L	0.5	2
9/27/16	Field Blank	Metals	Silver	0.0050 U	µg/L	0.005	0.02
9/27/16	Field Blank	Metals	Chromium	0.050 U	µg/L	0.05	0.2
9/27/16	Field Blank	Metals	Magnesium	0.040 U	mg/L	0.04	0.16
9/27/16	Field Blank	Metals	Iron	30 U	µg/L	30	120
9/27/16	Field Blank	Metals	Aluminum	2.0 U	µg/L	2	8
9/27/16	Field Blank	Metals	Cadmium	0.020 U	µg/L	0.02	0.08
9/27/16	Field Blank	Metals	Selenium	0.20 U	µg/L	0.2	0.8
9/27/16	Field Blank	Nutrients	Sulfate	0.20 U	mg SO4/L	0.2	0.5
9/27/16	Field Blank	Nutrients	Organic Carbon	0.50 U	mg C/L	0.5	1
9/27/16	Field Blank	Nutrients	Total Alkalinity	0.65 U	mg CaCO3/L	0.65	2.5
9/27/16	Field Blank	Nutrients	Chloride	0.20 U	mg Cl/L	0.2	0.5
9/27/16	Field Blank	Nutrients	Ammonia-N	0.002 U	mg N/L	0.002	0.005
9/27/16	Field Blank	Nutrients	Color (true)	2.5 U	PCU	2.5	6
9/27/16	Field Blank	Nutrients	Turbidity	0.10 U	NTU	0.1	0.1
9/27/16	Field Blank	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.1
9/27/16	Field Blank	Nutrients	Total-P	0.002 U	mg P/L	0.002	0.005
9/27/16	Field Blank	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.08	0.2
9/27/16	Field Blank	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
9/27/16	Field Blank	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.004	0.01
9/27/16	Field Blank	Pesticides	Atrazine Desethyl	0.0095 U	µg/L	0.0095	0.038
9/27/16	Field Blank	Pesticides	Atrazine Desisopropyl	0.0095 U	µg/L	0.0095	0.038
9/27/16	Field Blank	Pesticides	Bromacil	0.038 U	µg/L	0.038	0.15
9/27/16	Field Blank	Pesticides	Fonofos	0.0095 UJ	µg/L	0.0095	0.038
9/27/16	Field Blank	Pesticides	Carbamazepine	4.0E-04 U	µg/L	0.0004	0.0016
9/27/16	Field Blank	Pesticides	Chlorpyrifos Ethyl	0.0095 U	µg/L	0.0095	0.038
9/27/16	Field Blank	Pesticides	Diazinon	0.0095 UJ	µg/L	0.0095	0.038
9/27/16	Field Blank	Pesticides	Parathion Ethyl	0.019 U	µg/L	0.019	0.076
9/27/16	Field Blank	Pesticides	Ametryn	0.0095 U	µg/L	0.0095	0.038
9/27/16	Field Blank	Pesticides	Demeton	0.023 U	µg/L	0.023	0.091
9/27/16	Field Blank	Pesticides	Fenamiphos	0.028 U	µg/L	0.028	0.11

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
9/27/16	Field Blank	Pesticides	Malathion	0.0095 U	µg/L	0.0095	0.038
9/27/16	Field Blank	Pesticides	Naled	0.038 U	µg/L	0.038	0.15
9/27/16	Field Blank	Pesticides	Simazine	0.0095 U	µg/L	0.0095	0.038
9/27/16	Field Blank	Pesticides	Ethoprop	0.0047 U	µg/L	0.0047	0.019
9/27/16	Field Blank	Pesticides	Mevinphos	0.0095 U	µg/L	0.0095	0.038
9/27/16	Field Blank	Pesticides	Norflurazon	0.028 U	µg/L	0.028	0.11
9/27/16	Field Blank	Pesticides	Butylate	0.019 U	µg/L	0.019	0.076
9/27/16	Field Blank	Pesticides	Chlorpyrifos Methyl	0.0095 U	µg/L	0.0095	0.038
9/27/16	Field Blank	Pesticides	Metolachlor	0.057 U	µg/L	0.057	0.23
9/27/16	Field Blank	Pesticides	Acetaminophen	0.0040 U	µg/L	0.004	0.016
9/27/16	Field Blank	Pesticides	Alachlor	0.057 U	µg/L	0.057	0.23
9/27/16	Field Blank	Pesticides	Azinphos Methyl	0.019 U	µg/L	0.019	0.076
9/27/16	Field Blank	Pesticides	Disulfoton	0.0047 U	µg/L	0.0047	0.019
9/27/16	Field Blank	Pesticides	Prometon	0.019 U	µg/L	0.019	0.076
9/27/16	Field Blank	Pesticides	Parathion Methyl	0.0095 U	µg/L	0.0095	0.038
9/27/16	Field Blank	Pesticides	Atrazine	0.0095 U	µg/L	0.0095	0.038
9/27/16	Field Blank	Pesticides	Ethion	0.0095 U	µg/L	0.0095	0.038
9/27/16	Field Blank	Pesticides	Hexazinone	0.028 UJ	µg/L	0.028	0.11
9/27/16	Field Blank	Pesticides	Metalaxyl	0.038 UJ	µg/L	0.038	0.15
9/27/16	Field Blank	Pesticides	Metribuzin	0.019 U	µg/L	0.019	0.076
9/27/16	Field Blank	Pesticides	Phorate	0.0047 U	µg/L	0.0047	0.019
9/27/16	Field Blank	Pesticides	Prometryn	0.019 U	µg/L	0.019	0.076
9/27/16	Field Blank	Pesticides	Sucralose	0.010 U	µg/L	0.01	0.04
9/27/16	Field Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.94 U	µg/L	0.94	3.8
9/27/16	Field Blank	Priority Organic Pollutants	Isophorone	0.94 U	µg/L	0.94	3.8
9/27/16	Field Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.8 U	µg/L	2.8	11
9/27/16	Field Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.94 U	µg/L	0.94	3.8
9/27/16	Field Blank	Priority Organic Pollutants	4-Nitrophenol	14 U	µg/L	14	57
9/27/16	Field Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9 U	µg/L	1.9	7.5
9/27/16	Field Blank	Priority Organic Pollutants	Diethyl phthalate	1.9 U	µg/L	1.9	7.5
9/27/16	Field Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.8 U	µg/L	2.8	11
9/27/16	Field Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.94 U	µg/L	0.94	3.8
9/27/16	Field Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.94 U	µg/L	0.94	3.8
9/27/16	Field Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9 U	µg/L	1.9	7.5
9/27/16	Field Blank	Priority Organic Pollutants	2-Nitrophenol	0.94 U	µg/L	0.94	3.8

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
9/27/16	Field Blank	Priority Organic Pollutants	Phenol	0.94 U	µg/L	0.94	3.8
9/27/16	Field Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19 U	µg/L	0.19	0.75
9/27/16	Field Blank	Priority Organic Pollutants	Fluoranthene	0.19 U	µg/L	0.19	0.75
9/27/16	Field Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.94 U	µg/L	0.94	3.8
9/27/16	Field Blank	Priority Organic Pollutants	2-Chlorophenol	0.94 U	µg/L	0.94	3.8
9/27/16	Field Blank	Priority Organic Pollutants	Acenaphthylene	0.19 U	µg/L	0.19	0.75
9/27/16	Field Blank	Priority Organic Pollutants	Chrysene	0.19 U	µg/L	0.19	0.75
9/27/16	Field Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	µg/L	1.9	7.5
9/27/16	Field Blank	Priority Organic Pollutants	Naphthalene	0.19 U	µg/L	0.19	0.75
9/27/16	Field Blank	Priority Organic Pollutants	2,4-Dinitrophenol	14 U	µg/L	14	57
9/27/16	Field Blank	Priority Organic Pollutants	Benzidine	94 U	µg/L	94	380
9/27/16	Field Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.94 U	µg/L	0.94	3.8
9/27/16	Field Blank	Priority Organic Pollutants	Di-n-butyl phthalate	1.9 U	µg/L	1.9	7.5
9/27/16	Field Blank	Priority Organic Pollutants	Fluorene	0.19 U	µg/L	0.19	0.75
9/27/16	Field Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.8 U	µg/L	2.8	11
9/27/16	Field Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.94 U	µg/L	0.94	3.8
9/27/16	Field Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.19 U	µg/L	0.19	0.75
9/27/16	Field Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.19 U	µg/L	0.19	0.75
9/27/16	Field Blank	Priority Organic Pollutants	Hexachlorobutadiene	2.8 U	µg/L	2.8	11
9/27/16	Field Blank	Priority Organic Pollutants	Nitrobenzene	1.9 U	µg/L	1.9	7.5
9/27/16	Field Blank	Priority Organic Pollutants	Pentachlorophenol	0.94 U	µg/L	0.94	3.8
9/27/16	Field Blank	Priority Organic Pollutants	Phenanthrene	0.19 U	µg/L	0.19	0.75
9/27/16	Field Blank	Priority Organic Pollutants	Pyrene	0.19 U	µg/L	0.19	0.75
9/27/16	Field Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.94 U	µg/L	0.94	3.8
9/27/16	Field Blank	Priority Organic Pollutants	2,4-Dimethylphenol	9.4 U	µg/L	9.4	38
9/27/16	Field Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	38 U	µg/L	38	150
9/27/16	Field Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19 U	µg/L	0.19	0.75
9/27/16	Field Blank	Priority Organic Pollutants	Butyl benzyl phthalate	0.94 U	µg/L	0.94	3.8
9/27/16	Field Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19 U	µg/L	0.19	0.75
9/27/16	Field Blank	Priority Organic Pollutants	Hexachlorobenzene	0.94 U	µg/L	0.94	3.8
9/27/16	Field Blank	Priority Organic Pollutants	Hexachloroethane	2.8 U	µg/L	2.8	11
9/27/16	Field Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9 U	µg/L	1.9	7.5
9/27/16	Field Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.94 U	µg/L	0.94	3.8
9/27/16	Field Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.94 U	µg/L	0.94	3.8
9/27/16	Field Blank	Priority Organic Pollutants	Acenaphthene	0.19 U	µg/L	0.19	0.75

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
9/27/16	Field Blank	Priority Organic Pollutants	Anthracene	0.19 U	µg/L	0.19	0.75
9/27/16	Field Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19 U	µg/L	0.19	0.75
9/27/16	Field Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19 U	µg/L	0.19	0.75
9/27/16	Field Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.94 U	µg/L	0.94	3.8
9/27/16	Field Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.8 U	µg/L	2.8	11
9/27/16	Field Blank	Priority Organic Pollutants	Dimethyl phthalate	0.94 U	µg/L	0.94	3.8
9/27/16	Equipment Blank	Nutrients	Organic Carbon	0.50 U	mg C/L	0.5	1
9/27/16	Equipment Blank	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.08	0.2
9/27/16	Equipment Blank	Nutrients	Total-P	0.002 U	mg P/L	0.002	0.005
9/27/16	Equipment Blank	Nutrients	Ammonia-N	0.002 U	mg N/L	0.002	0.005
9/27/16	Equipment Blank	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01

EPA End Sheet

The Bioassay of Marsh Landing Wastewater Treatment Facility effluent sampled on September 27, 2016. NPDES #FL0044253.

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 FL0044253	11 12 160927	18 B	19 S	20 1

Remarks

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The Priority Pollutants Analysis of Marsh Landing Wastewater Treatment Facility effluent sampled on September 27, 2016. NPDES #FL0044253.

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 FL0044253	11 12 160927	18 X	19 S	20 1

Remarks

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Biological Analyses of Marsh Landing Wastewater Treatment Facility effluent sampled on September 27, 2016. NPDES #FL0044253.

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 FL0044253	11 12 160927	18 S	19 S	20 1

Remarks

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