Effluent Quality Assessment of Port Orange WWTF Volusia County NPDES # FL0020559 Sampled January 29, 2024

Division of Environmental Assessment and Restoration
Florida Department of Environmental Protection
May 2024

DEP Laboratory, Biology Program
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Summary of Results

The facility was not discharging at the time of sampling and grab samples were collected from monitoring site location EFA-1, at the end of the chlorine contact chamber. Permit compliance for most analytes cannot be determined. All analytes measured in the effluent grab sample complied with the Class III Water Quality Criteria for Marine Waters. Nutrient results do not suggest a potential for nutrient enrichment of the receiving waters.

Facility Overview

The Port Orange Wastewater Treatment Facility is a domestic wastewater treatment facility. A Facility Summary, including a description of the facility, summary of permit limits, and any relevant Administrative Order (AO), Consent Order (CO), and Discharge Monitoring Report (DMR) information is provided in Appendix A. A consent order (CO) was executed on September 29, 2021. CO has interim limits for Flow and TSS to D-002 only. Interim limits are in effect until November 30, 2024. Most effluent goes to a reuse outfall; some is intermittently discharged into two outfalls depending on rainfall. D-001 discharges into the Halifax River, a Class III Marine Water [waterbody identification (WBID) 2363A] (Figure 1). D-002 discharges into a receiving wetland that flows to the Spruce Creek Circle Drainage Ditch and has the potential to flow to the Sandy Creek, Class III Fresh Water (WBID 2675) (Figure 1).

Receiving waters for this facility fall under the Estuary-Specific Numeric Interpretations of the Narrative Nutrient Criteria (NNC) for the Lower Halifax River Estuary within the Volusia County region. For this region, the NNC, expressed as annual geometric means, are 0.142 mg/L total phosphorus, 0.72 mg/L total nitrogen, and 6.2 µg/L chlorophyll *a* (Subparagraph 62-302.532(1) (s)1, F.A.C.). For Class III predominantly marine waters, the daily average dissolved oxygen (DO) saturation shall not be below 42 percent in more than 10 percent of the values (Subsection 62-302.533(2), F.A.C.). This FYI event only provides single sample results. It should be noted that waterbody impairment assessments are based on longer-term data, and individual exceedances of a criterion do not indicate use impairment.
http://ca.dep.state.fl.us/mapdirect/?focus=nutrientcriteria

Methods

Effluent grab samples were collected from monitoring site location EFA-01, for outfall D-001 on January 29, 2024. Most permit limits apply to monitoring site EFD-1 when the facility is discharging; the facility was not discharging at the time of sampling and permit compliance cannot be determined. The permit limit specifies several flow proportioned composite samples and only grab samples were collected. Toxicity bioassays and algal growth potential were not performed due to the facility not discharging. There are permit limits for fecal coliform and enterococci but these analyses were not scheduled.

Samples were collected by Dr. Reyes Kane (Central District). Analyses were performed by Eurofins Environmental Testing, Orlando and DEP Laboratory in Tallahassee.

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

Class III Water Quality Criteria for Fresh and Marine Waters are found in Chapter 62-302, F.A.C. All references to Rule 62-302.530, F.A.C. are to the surface water quality criteria table with an effective date of 02/17/2016 and a notice identification number of 17115667.

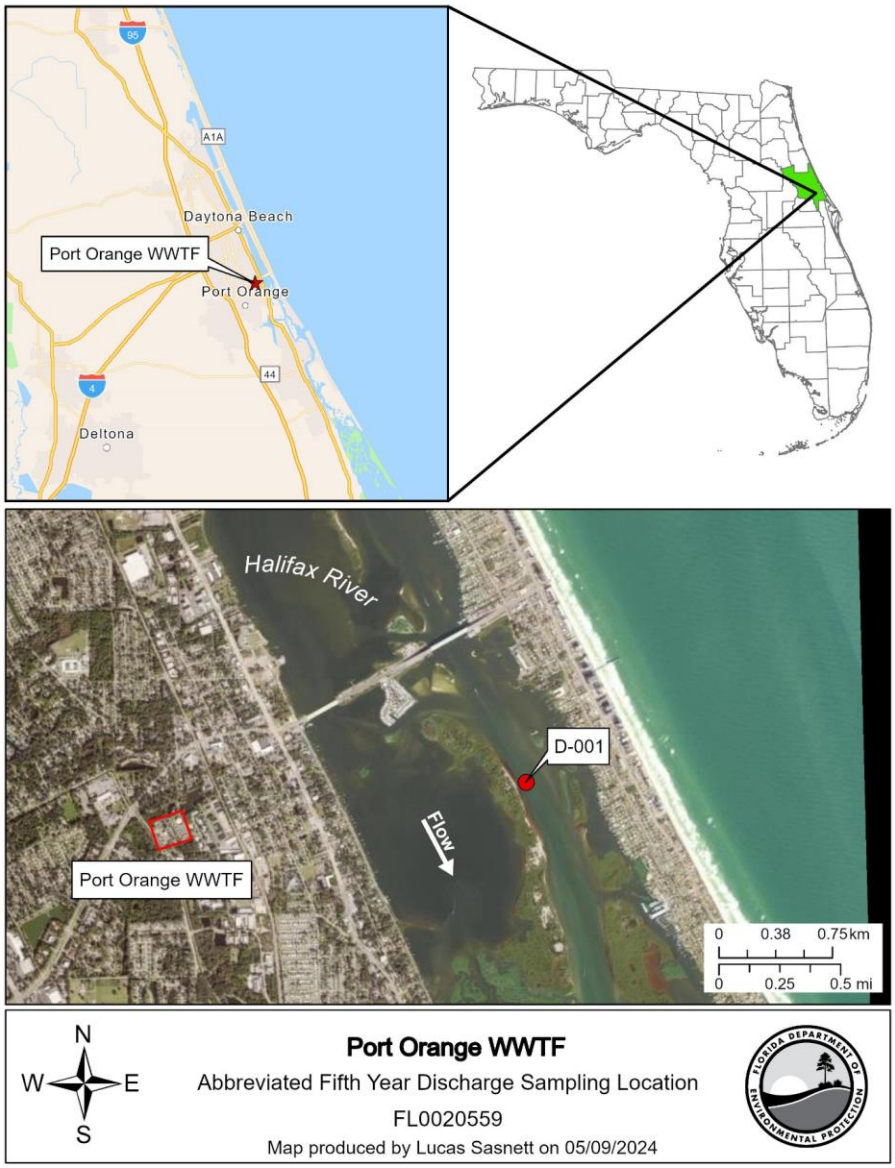


Figure 1. Map of Facility and Discharge Location

Results

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

- All effluent water quality parameters measured at EFA-1 complied with Class III Water Quality Criteria for Marine Waters and effluent permit limits at EFA-1 and EFD-1.

Analytical Water Chemistry (See Table 2 and Appendix D)

- All water chemistry analytes detected in the effluent grab sample at EFA-1 complied with Class III Water Quality Criteria for Marine Waters and effluent permit limits at EFD-1.

- For comparative purposes only, total nitrogen in the effluent grab sample was greater than the annual geometric mean limit for NNC for the Lower Halifax River Estuary.

Metals (See Table 3 and Appendix D)

- All effluent metals at EFA-1 complied with Class III Water Quality Criteria for Marine Waters and effluent permit limits for EFD-1.

Literature Cited

Commented [SC1]: Does this need to be on it's own page?

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

Table 1. Measured field parameters

Effluent limits, Class III Water Quality Criteria for Marine Waters, and field parameters

Parameter	Units	Class III Criteria	Effluent Permit Limits EFD-1	Effluent Grab EFA-1
Temperature	C	-	-	22.9
pH	SU	6.5 - 8.5	6.5 - 8.5	6.8
Specific Conductance	µmhos/cm	-	-	813
Salinity	ppth	-	-	0.4 c
Dissolved Oxygen	mg/L	-	≥ 6.0	7.3
Dissolved Oxygen	% saturation	≥ 42	-	85.1 c
Total Residual Chlorine (disinfection)	mg/L	-	≥ 0.5 (EFA-1)	2.7

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

Table 2. Analytical water chemistry data

Effluent limits, Class III Water Quality Criteria for Marine Waters, and analytical water chemistry data

Analyte	Units	Class III Criteria	Effluent Permit Limits EFD-1	Effluent Grab EFA-1
Ortho-phosphate	mg P/L	-	-	0.037
Total Phosphorus	mg P/L	≤ 0.142 g	≤ 6.0 sp	0.086
Total Ammonia Nitrogen	mg N/L	-	≤ 2.0 sp	0.018
Un-ionized Ammonia (calculated salinity)	mg N/L	-	-	< 0.02 c
Nitrate and Nitrite	mg N/L	-	≤ 20.0 sp	5.7
Total Kjeldahl Nitrogen	mg N/L	-	-	1.3
Organic Nitrogen	mg N/L	-	≤ 10.0 sp	1.3 c
Total Nitrogen	mg N/L	≤ 0.72 g	≤ 32.0 sp	7 c
Total Organic Carbon	mg C/L	-	-	16
Chlorophyll *a* - Corrected	µg/L	≤ 6.2 g	-	0.82 U
Phaeophytin	µg/L	-	-	0.90 U
CBOD, 5 day, N - inhibited	mg/L	-	≤ 60.0 sp	5.9
Hardness	mg CaCO3/L	-	-	202 c
Total Suspended Solids	mg/L	-	≤ 60.0 sp	2 I
Turbidity	NTU	≤ 29 t	-	0.95 I
Color (true)	PCU	-	-	12 Q
Alkalinity	mg CaCO3/L	-	-	175 A
Chloride	mg Cl/L	-	-	120 A
Fluoride	mg F/L	≤ 5.0	-	0.50
Sulfate	mg SO4/L	-	-	23 A

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
c - Value is calculated
g- Value expressed as annual geometric mean
p - 24-hour flow proportioned composite
s - Single sample
t - Shall not exceed 29 NTUs above background
A - Value reported is the mean of two or more determinations
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
Q - Sample held beyond normal holding time
U - Material analyzed for but not detected; value reported is the method detection limit

Table 3. Analytical metals data

Effluent limits, Class III Water Quality Criteria for Marine Waters, and analytical metals data

Analyte	Units	Class III Criteria	Effluent Permit Limits EFD-1	Effluent Grab EFA-1
Aluminum	µg/L	≤ 1500	-	66
Arsenic	µg/L	≤ 50	-	0.29
Cadmium	µg/L	≤ 8.8	-	0.020 U
Calcium	mg/L	-	-	36.4
Chromium, Total [1]	µg/L	≤ 50	-	0.70 I
Copper	µg/L	≤ 3.7	≤ 9.4 sp	1.60
Iron	µg/L	≤ 300	-	70 I
Lead	µg/L	≤ 8.5	-	0.20 U
Magnesium	mg/L	-	-	27.0
Nickel	µg/L	≤ 8.3	-	1.5 I
Potassium	mg/L	-	-	11.9
Selenium	µg/L	≤ 71	-	0.20 U
Silver	µg/L	≤ 2.3	-	0.010 U
Sodium	mg/L	-	-	79.0
Zinc	µg/L	≤ 86	≤ 205 sp	29

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
p - 24-hour flow proportioned composite
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
1 - Class III Marine Water Quality Criterion (62-302.530(19)(b), F.A.C.) is for chromium-VI

Appendix A. Facility Summary

PART I: Information gathered prior to sampling event	
Prepared By: David Smicherko	Contact Number: 407-897-4169
Facility Name (as it appears on permit): Port Orange WWTF	Former Names: N/A
NPDES Permit Number: FL0020559	Permit Expiration Date: November 20, 2024
Physical Address: 817 Oak Street, Port Orange, FL 32127-4331	
District: Central	County: Volusia
Function of Facility: Domestic Wastewater Treatment Facility	
Facility Type: Domestic Wastewater	Permitted Capacity (MGD): 12.0 MGD
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): D-001 outfall flow: 0.435 million gallons per day (MGD) annual average daily flow (AADF), as reported on the November 2023 DMR (December 2022 through November 202318 reporting period). D-002 outfall flow: 0.365 MGD AADF, as reported on the November 2023 DMR (December 2022 through November 2023 reporting period).	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): R-001 public access reuse system: 6.4 MGD AADF, as reported on the November 2023 DMR (December 2022 through November 2023 reporting period).	
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): The sampling location of D-001 is EFD-1, located after de-chlorination at the WWTF. The sampling location of D-002 is EFD-2, located at the discharge from the Reclaimed Reservoir to the Receiving Wetland. The sampling location of R-001 is EFA-1, located at the sampling point after the chlorine contact chamber (CCC), prior to transfer pumps. Total suspended solids grab samples are collected from EFB-1, after filtration and prior to disinfection. Additional sample points listed in the permit for R-001include: EFA-2, sampling point after CCC at Reclaimed Reservoir; EFB-2, sampling point after reservoir & prior to disinfection; EFA-3, sampling point at high service pump discharge at WWTF.
Description of Permitted Outfall(s): The D-001 Outfall discharges to the Halifax River, Class III Marine Water, (WBID# 2363A) which is approximately 4000 feet in length and discharges at a depth of approximately 15 feet. The point of discharge is located approximately at latitude 29°8' 23" N, longitude 80°58' 13" W. This permit includes authorization to use the outfall pipe for D-001 to convey stormwater from the Dunlawton Drainage pond to the Halifax River, including construction of the lift station, in accordance with Condition I.C.15. The D-002 Outfall discharges to a receiving wetland that flows infrequently and intermittently to the Spruce Creek Circle Drainage Ditch and at times has potential to flow to Sandy Creek, Class III fresh water, (WBID# 2675), which is a tributary to Spruce Creek. The outfall is approximately 300 feet in length and includes a screened intake to a weir box that is piped to an exfiltration trench system discharging via three 12" concrete spreaders, to minimize erosion as the water flows overland to the wetland system. 0416This permit includes the revision to add a 1,400 gpm average daily flow traveling bridge sand filtration system at D-002. The point of discharge is located approximately at latitude 29°6' 11" N, longitude 81°7' 34" W.
Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility): An existing 12.0 mgd annual average daily flow (AADF) permitted capacity anoxic/oxic (A/O) activated sludge domestic wastewater treatment plant consisting of influent screening, grit removal, biological nutrient removal using A/O system, clarification, chemical feed facilities including addition of a carbon source, filtration, re-aeration, chlorination, dechlorination, aerobic digestion and dewatering of biosolids. This permit includes the previously permitted revision to add a traveling bridge sand filtration system at D-002.

PART I: Continued										
List current Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under (Leave cell blank if not applicable)										
D-001			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 (To the River)	MGD	Max	0.999	Report	-	-	Continuous	Recording Flow Meter with Totalizer	FLW-2	See I.Error! Reference source not found.A.Error! Reference source not found.4 and 19
BOD, Carbonaceous 5 day, 20C	mg/L	Max	-	20.0	45.0	60.0	5 Days/Week	24-hr FPC	EFD-1	See I.A.6
Solids, Total Suspended	mg/L	Max	-	20.0	45.0	60.0	5 Days/Week	24-hr FPC	EFD-1	See I.A.6
Coliform, Fecal	#/100mL	Max	200	200	-	800	5 Days/Week	Grab	EFD-1	See I.Error! Reference source not found.A.7

pH	s.u.	Min Max	-	-	-	6.5 8.5	Continuous	Meter	EFD-1	See I.Error! Reference source not found.A.Error! Reference source not found.3
Chlorine, Total Residual (For Disinfection)	mg/L	Min	-	-	-	0.5	Continuous	Meter	EFA-1	See I.Error! Reference source not found.A.Error! Reference source not found.3 and I.Error! Reference source not found.A.8Error! Reference source not found.6
Chlorine, Total Residual (For Dechlorination)	mg/L	Max	-	-	-	0.01	Daily; 24 hours	Grab	EFD-1	
Acute Whole Effluent Toxicity, 96 Hour LC50 (Ceriodaphnia dubia)	percent	Min	-	-	-	100	Semi-Annually; twice per year	4 grabs/24 hr.period	EFD-1	See I.Error! Reference source not found.A.10

Acute Whole Effluent Toxicity, 96 Hour LC50 (Cyprinella leedsi)	percent	Min	-	-	-	100	Semi-Annually; twice per year	4 grabs/24 hr.period	EFD-1	See I.Error! Reference source not found.A. 10
Nitrogen, Total	mg/L	Max	-	16.0	24.0	32.0	Daily; 24 hours	24-hr FPC	EFD-1	
Nitrogen, Organic, Total (as N)	mg/L	Max	-	5.0	7.5	10.0	Daily; 24 hours	24-hr FPC	EFD-1	
Nitrite plus Nitrate, Total 1 det. (as N)	mg/L	Max	-	12.0	15.0	20.0	Daily; 24 hours	24-hr FPC	EFD-1	
Nitrogen, Ammonia, Total (as N)	mg/L	Max	-	1.0	1.5	2.0	Daily; 24 hours	24-hr FPC	EFD-1	
Phosphorus, Total (as P)	mg/L	Max	-	3.0	4.5	6.0	Daily; 24 hours	24-hr FPC	EFD-1	
Oxygen, Dissolved (DO)	mg/L	Min	-	-	-	6.0	Daily; 24 hours	Grab	EFD-1	
Enterococci	#/100mL	Max	-	35	-	104	5 Days/Week	Grab	EFD-1	See I.Error! Reference source not found.A.9
Copper, Total Recoverable	µg/L	Max	-	-	-	9.4	Monthly	24-hr FPC	EFD-1	See I.A.11
Zinc, Total Recoverable	µg/L	Max	-	-	-	205	Monthly	24-hr FPC	EFD-1	See I.A.12
Dichlorobromomethane	µg/L	Max	-	-	-	27.5	Monthly	24-hr FPC	EFD-1	See I.A.13

Nitrogen, Total	lb/yr	Max	48686	Report	-	-	5 Days/Week	Grab	EFD-1	See I.Error! Reference source not found.A.Error! Reference source not found.7
Nitrite plus Nitrate, Total 1 det. (as N)	lb/yr	Max	36515	Report	-	-	Monthly	24-hr FPC	EFD-1	See Footnote b
Nitrogen, Organic, Total (as N)	lb/yr	Max	15214	Report	-	-	Monthly	24-hr FPC	EFD-1	See Footnote c
Nitrogen, Ammonia, Total (as N)	lb/yr	Max	3043	Report	-	-	Monthly	24-hr FPC	EFD-1	See Footnote d
Phosphorus, Total (as P)	lb/yr	Max	9129	Report	-	-	5 Days/Week	Grab	EFD-1	See I.Error! Reference source not found.A.Error! Reference source not found.7
D-002			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 (To the receiving Wetland)	MGD	Max	0.999	Report	-	-	Continuous	Recording Flow Meter with Totalizer	FLW-8	I.A.16 and 19
BOD, Carbonaceous 5 day, 20C	mg/L	Max	-	5.0	7.5	10.0	5 Days/Week	Grab	EFD-2	See I.A.18
Solids, Total Suspended	mg/L	Max	-	5.0	7.5	10.0	5 Days/Week	Grab	EFD-2	See I.A.18
Nitrogen, Total	mg/L	Max	-	3.0	4.5	6.0	5 Days/Week	Grab	EFD-2	
Phosphorus, Total (as P)	mg/L	Max	-	1.0	1.5	2.0	5 Days/Week	Grab	EFD-2	
Nitrogen, Ammonia, Total (as N)	mg/L	Max	-	2.0	-	-	5 Days/Week	Grab	EFD-2	

PART I: Continued	
Receiving Waters: Halifax River (D-001) Wetland to Spruce Creek Circle Drainage Ditch (D-002), possibly to Sandy Creek	Classification (indicate whether fresh or marine): Class III Marine waters, (WBID# 2363A) Class III fresh waters, (WBID# 2675)

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

D-001 Only

The permittee shall comply with the following requirements to evaluate acute whole effluent toxicity of the discharge from outfall D-001.

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, F.A.C.]

b. Monitoring Frequency
- **(1)** Routine toxicity tests shall be conducted once every six months, the first starting in accordance with the existing sampling schedule and lasting for the duration of this permit.

c. Sampling Requirements
- **(1)** Routine tests shall be conducted on four separate grab samples collected at evenly-spaced (6-hr) intervals over a 24-hour period. The four grab samples shall be used in eight bioassays (four bioassays for each species) and shall represent one test. If the duration of the discharge is less than 24-hours, the duration of discharge shall be documented on the chain of custody.
- **(2)** For additional follow-up tests, the first test shall be conducted on four separate grab samples collected at evenly-spaced (6-hr) intervals over a 24-hour period. The four grab samples shall be used in four separate bioassays for each species that failed the routine test. The four grab samples represent one test. The second follow-up test shall be run on a single grab sample collected on the day and time when the greatest toxicity was identified in the routine or first additional follow-up test.

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 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.

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 follows:
- **(a)** Routine Test Results: If an LC50 >100% effluent occurs in all four separate grab sample tests for the test species, ">100%" shall be entered on the DMR for that test species. If in any of the four separate grab sample tests for the test species an LC50 <100% effluent occurs, the lowest calculated LC50 effluent concentration shall be entered on the DMR for that test species.
- **(b)** Additional Follow-up Test Results: For each additional test required, the calculated LC50 value shall be entered on the DMR 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 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 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 sent to:
Florida Department of Environmental Protection

Central District Office

3319 Maguire Blvd, Suite 232

Orlando, Florida 32803-3767

g. Test Failures

(1) A test fails when the test results do not meet the limits in Error! Reference source not found..a.(1).

(2) Additional Follow-up Tests:
- **(a)** If a routine test does not meet the acute toxicity limitation in Error! Reference source not found..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 Error! Reference source not found..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 first additional follow-up test 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 second additional follow-up test to more accurately bracket the toxicity such that at least two dilutions above and two dilutions below the target concentration and a control (0% effluent) are run. All test results shall be 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 Error! Reference source not found..d. Additional follow-up tests are not required while the plan is in progress. Following completion or termination of the plan, the frequency of monitoring for routine and additional follow-up tests shall return to the schedule established in Error! Reference source not found..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 in Error! Reference source not found.~~7~~.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. If a test within the sequence of the four is deemed invalid, but is replaced by a repeat valid test initiated within 14 days after the last day of the invalid test, the

invalid test will not be counted against the requirement for four consecutive 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.

[62-4.241, 62-620.620(3)]

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.): A consent order (CO) was executed on September 29, 2021. CO has interim limits for Flow and TSS to D-002 only. Interim limits are in effect until November 30, 2024.

Facility Mixing Zone Details (if applicable): D-001 ONLY – see information below:

a. A mixing zone for copper has been approved in accordance with DEP permit file number: FL0020559-011-DW1P and is described as a rectangle centered along the diffuser with a mixing zone of 179,294 square feet or 16,657 square meters.
b. A mixing zone for zinc has been approved in accordance with DEP permit file number: FL0020559-011-DW1P and is described as a rectangle centered along the diffuser with a mixing zone of 899 square feet or 84 square meters.
c. A mixing zone for dichlorobromomethane (DCBM) has been approved in accordance with DEP permit file number: FL0020559-011-DW1P and is described as a rectangle centered along the diffuser with a mixing zone of 559 square feet or 52 square meters.

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

Date	Parameter and Units	Limit	Result
11/30/2023	Chlorine, Total Residual mg/L	0.01	1.1
10/31/2023	pH S.U.	6.5	6.4
10/31/2023	Solids, Total Suspended mg/L	15	15.9
09/30/2023	Solids, Total Suspended mg/L	15	17.8
09/30/2023	Coliform, Fecal #/100 mL	25	1299.7
07/31/2023	Coliform, Fecal, % less than detection	75	64.5
06/30/2023	Coliform, Fecal #/100 mL	25	290
06/30/2023	Coliform, Fecal, % less than detection	75	66.7
12/31/2022	Nitrogen, Total mg/L	10	10.1

Describe previous FYI and WQBEL study: None were noted in the last 5 years.			
Describe previous or current Enforcement Actions (including WLs): A consent order (CO) was executed on September 29, 2021. CO has interim limits for Flow and TSS to D-002 only. Interim limits are in effect until November 30, 2024			
Describe any violations or problems noted in previous inspection: DMR reporting errors and few TN, Nitrate TSS and Enterococci maximum exceedances for D001 and R-001.			
Discuss whether DMR trends within the previous five years are improving or declining: In the past 5 years: flow to D001 has remained steady and flow to D002 has increased. TN loading to D001 has increased and TP has loading has decreased to D001. TSS and CBOD have remained steady at D001. TSS has increased at D002.			

Commented [SC2]: Is this page supposed to be here?

Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse): All parameters on R001 have shown good compliance with permit limits.

Appendix B. Explanations of Measurements

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

- **Chemical Analyses of the Effluent**

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

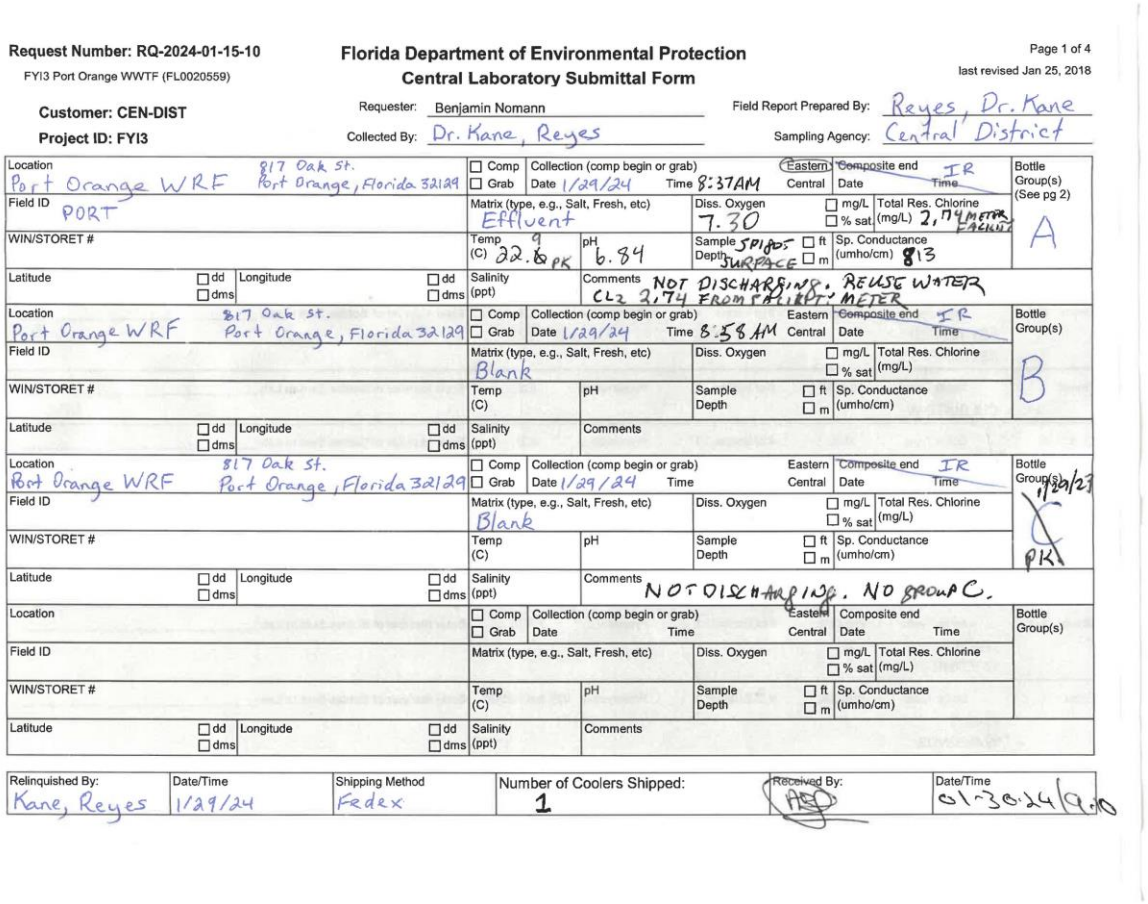
- **Chlorophyll *a* content**

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

- **Definition of Qualifiers** (Rule 62-160.700, F.A.C.)

  A - Value reported is the mean of two or more determinations
  B - Results based on colony counts outside the acceptable range.
  I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
  J - Estimated value
  K - Actual value is known to be less than value given
  L - Actual value is known to be greater than value given
  N - Presumptive evidence of presence of material.
  O - Sampled, but analysis lost or not performed.
  Q - Sample held beyond normal holding time.
  T - Value reported is less than the criterion of detection.
  U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
  V - Analyte was detected in both sample and method blank.
  X - Too few individuals to calculate SCI value.
  Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
  Z - Colonies were too numerous to count (TNTC)

Appendix C. Chain of Custody



Request Number: RQ-2024-01-15-10
FYI3 Port Orange WWTF (FL0020559)

Florida Department of Environmental Protection
Central Laboratory Submittal Form

Page 1 of 4
last revised Jan 25, 2018

Customer: CEN-DIST
Project ID: FYI3

Requester: Benjamin Nomann
Collected By: Dr. Kane, Reyes
Field Report Prepared By: Reyes, Dr. Kane
Sampling Agency: Central District

Location: Port Orange WRF, 817 Oak St. Port Orange, Florida 32129	☐ Comp ☐ Grab	Collection (comp begin or grab) Date 1/29/24 Time 8:37AM	Eastern Central	Composite end Date IR Time	Bottle Group(s) (See pg 2): A
Field ID: PORT	Matrix (type, e.g., Salt, Fresh, etc): Effluent	Diss. Oxygen: 7.30	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L): 2.74 METER FAILURE	
WIN/STORET #	Temp (C): 32.8 PK	pH: 6.84	Sample Depth: SPIGOT SURFACE ☐ ft ☐ m	Sp. Conductance (umho/cm): 813	
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments: NOT DISCHARGING. REUSE WATER CL2 2.74 FROM FAILURE METER		
Location: Port Orange WRF, 817 Oak St. Port Orange, Florida 32129	☐ Comp ☐ Grab	Collection (comp begin or grab) Date 1/29/24 Time 8:58 AM	Eastern Central	Composite end Date IR Time	Bottle Group(s): B
Field ID: Blank	Matrix (type, e.g., Salt, Fresh, etc)	Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)	
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)	
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments		
Location: Port Orange WRF, 817 Oak St. Port Orange, Florida 32129	☐ Comp ☐ Grab	Collection (comp begin or grab) Date 1/29/24 Time	Eastern Central	Composite end Date IR Time	Bottle Group(s): 1/29/24 C PK
Field ID: Blank	Matrix (type, e.g., Salt, Fresh, etc)	Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)	
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)	
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments: NOT DISCHARGING. NO GROUP C.		
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time	Bottle Group(s)
Field ID	Matrix (type, e.g., Salt, Fresh, etc)	Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)	
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)	
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments		

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
Kane, Reyes	1/29/24	Fedex	1		01-30-24/9:00

670-3832

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
TASK ASSIGNMENT/NOTIFICATION FORM: LAB145

Contract Manager: Linda Allen/Devan Cobb (850)-245-8084 / (850) 245-8078
2600 Blair Stone Rd., MS 6512
Tallahassee, FL 32399-2400

Contractor: Eurofins Environmental Testing Southeast, LLC
5102 LaRoche Ave
Savannah, GA 31404
ATTN: Noel Savoie

DEP Approval By: Devan R. Cobb-Williams Contractor Approval By: Noel Savoie
Project Manager

Contractor Representatives Contacted: Noel Savoie

Date: 12/19/2023
Means of Contact: Email

Task Assignment Number: OV499 Maximum Cost: **$41.50** Turnaround Time: 5 BD

Sample Delivery Date: 1/30/2024

Project Name/Description:
RQ-2024-01-15-10; FYI3 Port Orange WWTF (FL0020559)

Deliverable Number/ Parameter Group/ Method	**Sample Matrix**	**# of Samples**	**# of Containers**	**DEP ID #**	**Unit Cost**	**% Mark-up (if any)**	**Cost**
Quote/OV-CBOD-1N CBOD, nitrogen-inhibited 5210B-2011	W	1	1		$39.00		$39.00
217/Sample Disposal Fee:	1				$2.50		$2.50
Total Number of Containers Shipped:		1				**Total:**	**$41.50**

QC Instructions:

Comments: Quote #

Samples released to Contract Lab by: _____ Date/Time: _____

Delivery Method: _____ Shipping _____

Samples Accepted by: Orlando Date/Time 1-30-2024 0910

* **Please sign and return by email to** Linda.S.Allen@FloridaDEP.gov and Devan.R.Cobb@dep.state.fl.us

Appendix D. Chemical Analysis of Effluent

Commented [SC3]: Why is the header of this section different?

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
1/29/2024 8:58	Field Blank	Metals	Magnesium	0.040 U	mg/L	0.040	0.16
1/29/2024 8:58	Field Blank	Metals	Zinc	5.0 U	µg/L	5.0	20
1/29/2024 8:58	Field Blank	Metals	Silver	0.010 U	µg/L	0.010	0.040
1/29/2024 8:58	Field Blank	Metals	Chromium	0.40 U	µg/L	0.40	1.6
1/29/2024 8:58	Field Blank	Metals	Potassium	0.30 U	mg/L	0.30	1.2
1/29/2024 8:58	Field Blank	Metals	Iron	30 U	µg/L	30	120
1/29/2024 8:58	Field Blank	Metals	Selenium	0.20 U	µg/L	0.20	0.80
1/29/2024 8:58	Field Blank	Metals	Lead	0.20 U	µg/L	0.20	0.40
1/29/2024 8:58	Field Blank	Metals	Aluminum	5.0 U	µg/L	5.0	20
1/29/2024 8:58	Field Blank	Metals	Arsenic	0.050 U	µg/L	0.050	0.20
1/29/2024 8:58	Field Blank	Metals	Nickel	0.50 U	µg/L	0.50	2.0
1/29/2024 8:58	Field Blank	Metals	Calcium	0.075 U	mg/L	0.075	0.30
1/29/2024 8:58	Field Blank	Metals	Sodium	0.50 U	mg/L	0.50	2.0
1/29/2024 8:58	Field Blank	Metals	Cadmium	0.020 U	µg/L	0.020	0.080
1/29/2024 8:58	Field Blank	Metals	Copper	0.40 U	µg/L	0.40	0.80
1/29/2024 8:58	Field Blank	Nutrients	Ammonia-N	0.002 U	mg N/L	0.0020	0.0050
1/29/2024 8:58	Field Blank	Nutrients	Chloride	0.20 U	mg Cl/L	0.20	0.50
1/29/2024 8:58	Field Blank	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.080	0.20
1/29/2024 8:58	Field Blank	Nutrients	Fluoride	0.025 U	mg F/L	0.025	0.10
1/29/2024 8:58	Field Blank	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.0040	0.010
1/29/2024 8:58	Field Blank	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.0040	0.010
1/29/2024 8:58	Field Blank	Nutrients	Total Alkalinity	0.65 U	mg CaCO3/L	0.65	2.5
1/29/2024 8:58	Field Blank	Nutrients	Total-P	0.002 U	mg P/L	0.0020	0.0050
1/29/2024 8:58	Field Blank	Nutrients	Organic Carbon	0.50 U	mg C/L	0.50	1.0

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
1/29/2024 8:58	Field Blank	Nutrients	TSS	2 U	mg/L	2.0	10
1/29/2024 8:58	Field Blank	Nutrients	Sulfate	0.20 U	mg SO4/L	0.20	0.50
1/29/2024 8:58	Field Blank	Nutrients	Color (true)	2.5 U	PCU	2.5	6.0
1/29/2024 8:58	Field Blank	Nutrients	Turbidity	0.10 U	NTU	0.10	1.0
1/29/2024 8:37	Effluent Grab	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.90 U	µg/L	0.90	2.7
1/29/2024 8:37	Effluent Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.82 U	µg/L	0.82	2.5
1/29/2024 8:37	Effluent Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	0.60 U	µg/L	0.60	1.8
1/29/2024 8:37	Effluent Grab	Overflow	Carbonaceous Biochemical Oxygen Demand	5.9	mg/L	2.0	2.0
1/29/2024 8:37	Effluent Grab	Metals	Lead	0.20 U	µg/L	0.20	0.40
1/29/2024 8:37	Effluent Grab	Metals	Chromium	0.70 I	µg/L	0.40	1.6
1/29/2024 8:37	Effluent Grab	Metals	Aluminum	66	µg/L	5.0	20
1/29/2024 8:37	Effluent Grab	Metals	Zinc	29	µg/L	5.0	20
1/29/2024 8:37	Effluent Grab	Metals	Silver	0.010 U	µg/L	0.010	0.040
1/29/2024 8:37	Effluent Grab	Metals	Nickel	1.5 I	µg/L	0.50	2.0
1/29/2024 8:37	Effluent Grab	Metals	Copper	1.60	µg/L	0.40	0.80
1/29/2024 8:37	Effluent Grab	Metals	Potassium	11.9	mg/L	0.30	1.2
1/29/2024 8:37	Effluent Grab	Metals	Magnesium	27.0	mg/L	0.040	0.16
1/29/2024 8:37	Effluent Grab	Metals	Sodium	79.0	mg/L	0.50	2.0
1/29/2024 8:37	Effluent Grab	Metals	Calcium	36.4	mg/L	0.075	0.30
1/29/2024 8:37	Effluent Grab	Metals	Selenium	0.20 U	µg/L	0.20	0.80
1/29/2024 8:37	Effluent Grab	Metals	Cadmium	0.020 U	µg/L	0.020	0.080
1/29/2024 8:37	Effluent Grab	Metals	Arsenic	0.29	µg/L	0.050	0.20
1/29/2024 8:37	Effluent Grab	Metals	Iron	70 I	µg/L	30	120
1/29/2024 8:37	Effluent Grab	Nutrients	TSS	2 I	mg/L	2.0	10
1/29/2024 8:37	Effluent Grab	Nutrients	Kjeldahl Nitrogen	1.3	mg N/L	0.080	0.20
1/29/2024 8:37	Effluent Grab	Nutrients	O-Phosphate-P	0.037	mg P/L	0.0040	0.010
1/29/2024 8:37	Effluent Grab	Nutrients	Total-P	0.086	mg P/L	0.010	0.050
1/29/2024 8:37	Effluent Grab	Nutrients	Organic Carbon	16	mg C/L	0.50	1.0

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
1/29/2024 8:37	Effluent Grab	Nutrients	Sulfate	23 A	mg SO4/L	0.40	1.0
1/29/2024 8:37	Effluent Grab	Nutrients	Turbidity	0.95 I	NTU	0.10	1.0
1/29/2024 8:37	Effluent Grab	Nutrients	Chloride	120 A	mg Cl/L	0.40	1.0
1/29/2024 8:37	Effluent Grab	Nutrients	NO2NO3-N	5.7	mg N/L	0.040	0.10
1/29/2024 8:37	Effluent Grab	Nutrients	Total Alkalinity	175 A	mg CaCO3/L	0.65	2.5
1/29/2024 8:37	Effluent Grab	Nutrients	Fluoride	0.50	mg F/L	0.025	0.10
1/29/2024 8:37	Effluent Grab	Nutrients	Color (true)	12 Q	PCU	2.5	6.0
1/29/2024 8:37	Effluent Grab	Nutrients	Ammonia-N	0.018	mg N/L	0.0020	0.0050
1/29/2024 8:37	Effluent Grab	Nutrients	Specific Conductance	813	µmhos/cm		
1/29/2024 8:37	Effluent Grab	Nutrients	Temperature	22.9	C		
1/29/2024 8:37	Effluent Grab	Nutrients	pH	6.84			
1/29/2024 8:37	Effluent Grab	Nutrients	Dissolved Oxygen mg/L	7.30	mg/L		