Effluent Quality Assessment of Lee County Utilities- Fiesta Village WRF Lee County NPDES # FL0039829 Sampled March 11, 2019

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

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Summary of Results

Effluent samples for all water chemistry and metal analyses were collected as grab samples, though several permitted analytes require a 24-hour flow proportioned composite sample. Effluent composite samples were collected for chronic toxicity testing on three occasions, but the third sample was received past hold time and the test was cancelled.

Facility Overview

Lee County Utilities-Fiesta Village WRF is an advanced domestic wastewater treatment plant. 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. AO-0039829 was issued on February 19, 2019 regarding cyanide concentrations in the effluent. It states that the facility should be in full compliance by February 1, 2020. The effluent is continuously discharged into the Caloosahatchee River, a Class III Marine Water (Figure1).

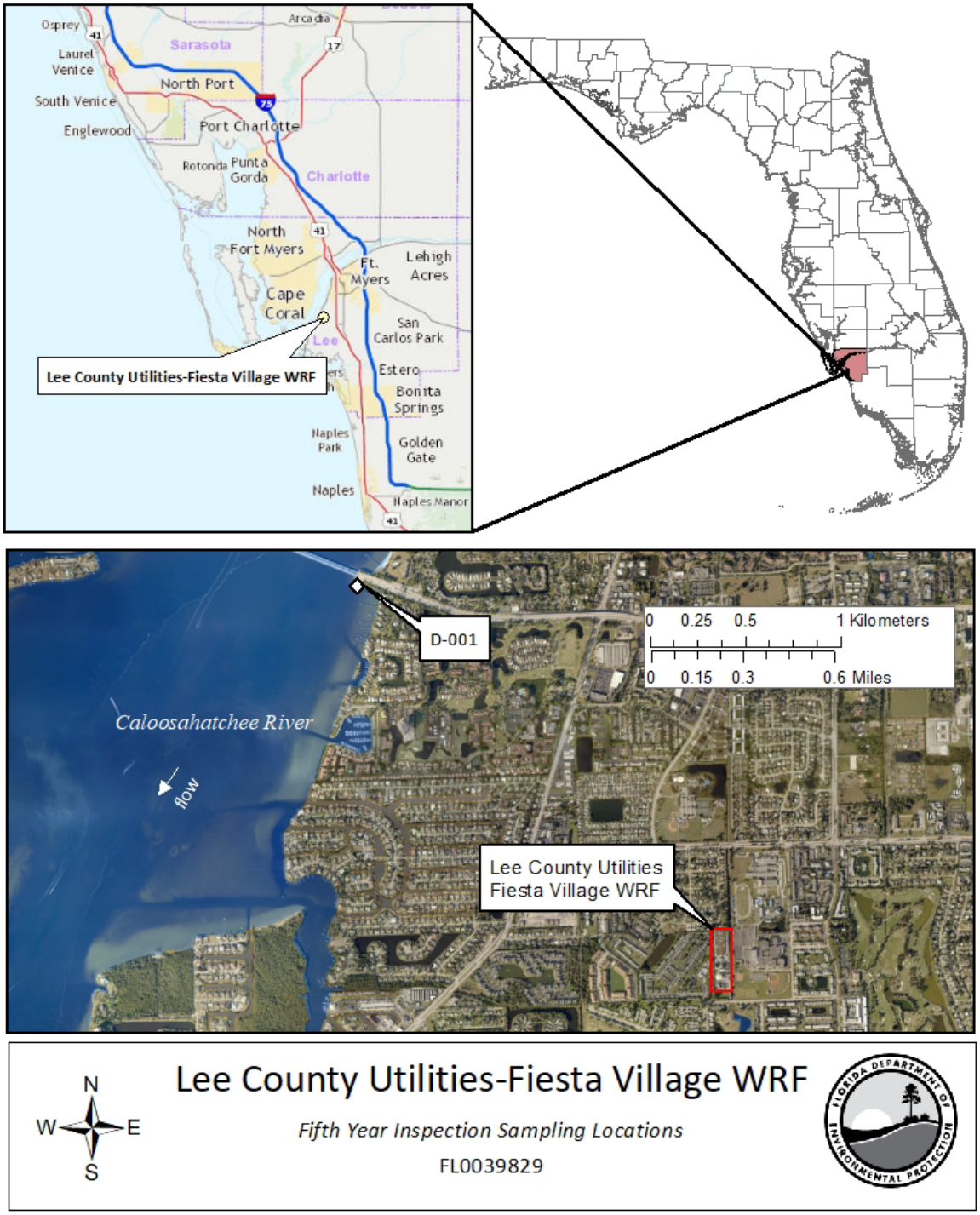
Receiving waters for this facility fall under the Estuary-Specific Numeric Interpretations of the Narrative Nutrient Criteria for the Lower Caloosahatchee River Estuary Nutrient Region (62-302.532, F.A.C.). The NNC thresholds, expressed as long-term averages, are 0.040 mg/L total phosphorus and 5.6 µg/L chlorophyll *a*. The NNC threshold for total nitrogen is 9,086,094 lbs/year. 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 samples were taken as grab and composite samples from monitoring site location EFD-01 for outfall D-001 on March 11, 2019. Effluent composite samples were collected for chronic toxicity testing three days that week, but the third sample was received past hold time and the test was cancelled. All other analytes were scheduled for grab samples though several have permit limits requiring a 24-hour flow proportioned composite sample. Cyanide has a permit limit and was not scheduled for analysis. Samples were collected by Alfredo Velazquez, Brian Ellis, and Narrisa Pannell.

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

All references to 62-302.530, F.A.C. are to the surface water quality criteria table with an effective date of 02/17/2016 and a notice identification number of 17115667.



Map produced by Lisa Homann on 9/18/19

Figure 1. Map of Facility and Sampling Locations

Results

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

- Compliance for total residual chlorine of the effluent could not be determined because the detection limit for the field colorimeter used is 0.2 mg/L.

- The single measurement of effluent dissolved oxygen was below the monthly average for the effluent permit limit. Daily measurements are recorded to determine permit compliance.

Analytical Water Chemistry (See Table 2 and Appendix D)

- Turbidity, oils and greases, and fluoride detected in the effluent grab sample complied with permit limits and/or Class III Marine Water Quality Criteria (62-302.530, F.A.C.).

- Effluent samples for all water chemistry analytes were collected as grab samples. Permit limits for total phosphorus, total nitrogen, carbonaceous biochemical oxygen demand, and total suspended solids are for 24-hour flow proportioned composite samples.

- Cyanide has a permit limit and was not scheduled for analysis.

Microbiology (See Table 2 and Appendix D)

- Fecal coliforms detected in the effluent complied with effluent permit limits. *Escherichia coli* (*E. coli*) was not detected.

Toxicity Whole Effluent Test (See Table 2)

- Effluent composite samples were collected for chronic toxicity testing on three days, but the third sample was received past hold time. The test was cancelled and reported as No Result.

- For more information or to obtain copies of the toxicity bench sheets, please contact the Biology Laboratory at 850-245-8177.

Metals (See Table 3 and Appendix D)

- Effluent samples for all metals were collected as grab samples. Permit limits for copper and nickel are for 24-hour flow proportioned composite samples.

- Effluent metals were detected at levels that complied with Class III Marine Quality Criteria (62-302.530, F.A.C.).

- Copper was detected in the field blank between the MDL and PQL.

Algal Growth Potential (See Table 4 and Appendix B)

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

- An aliquot of the AGP sample was salinity adjusted from an apparent salinity of approximately 0.359 parts per thousand (ppth) to a salinity of approximately 7.1 ppth by the addition of artificial sea salts to meet the salinity requirements of the marine test species.

- Nitrate and nitrite was not detected in the effluent sample. Using 1/2 the method detection limit (MDL) for nitrate and nitrite to calculate a value for total nitrogen to phosphorus ratio, the ratio suggests that the effluent is nitrogen-limited (Miller et al. 1978).

Organic Constituents (See Table 5 and Appendix D)

- Bromodichloromethane was detected in the effluent sample at levels that complied with permit limits.

- Atrazine, bromoform, chloroform, and dibromochloromethane were detected in the effluent sample.

Literature Cited

Miller, W. E., Maloney, T. E. and Greene, J. C. 1978. The *Selenastrum capricornutum* Printz algal assay bottle test. EPA600/978-018. U. S. EPA, Cincinnati, Ohio. 126 p.

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

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

Table 1. Measured field parameters

Effluent limits, Class III Marine Criteria, and field parameters

Parameter	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab
Temperature	C	-	-	27.0
pH	SU	6.5 - 8.5	6.5 - 8.5	7.1
Specific Conductance	umhos/cm	-	-	933
Salinity	ppt	-	-	0.4 c
Dissolved Oxygen	mg/L	-	-	6.2
Dissolved Oxygen	% saturation	≥ 42	≥ 90 [1]	77.7
Total Residual Chlorine	mg/L	≤ 0.01	≤ 0.01	≤ 0.2

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
c - Value is calculated
1 - limit is for monthly average; monitored daily

Table 2. Analytical water chemistry, microbiological, and toxicological data

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

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Composite	Effluent Grab
Ortho-phosphate	mg P/L	-	-	-	0.12
Total Phosphorus	mg P/L	0.040 [2]	≤ 1.0 p	-	0.15
Total Ammonia	mg N/L	-	-	-	0.034
Un-ionized Ammonia (calculated salinity)	mg NH3/L	-	-	-	< 0.02 c
Nitrate and Nitrite	mg N/L	-	-	-	0.004 U
Total Kjeldahl Nitrogen	mg N/L	-	-	-	0.81
Organic Nitrogen	mg N/L	-	-	-	0.78 c
Total Nitrogen	mg N/L	-	≤ 6.0 p	-	0.81 c
Total Organic Carbon	mg C/L	-	-	-	7.3
Chlorophyll *a* - Corrected	ug/L	5.6 [2]	-	-	0.82 U
Phaeophytin	ug/L	-	-	-	0.90 U
Chlorophyll *a*	ug/L	-	-	-	0.60 U
CBOD, 5 day, N - inhibited	mg/L	-	≤ 60.0 p	-	3.2 AJ
Hardness	mg CaCO3/L	-	-	-	165 c
Total Suspended Solids	mg/L	-	≤ 60 p	-	2 UA
Turbidity	NTU	< 29 t	-	-	0.45
Color (true)	PCU	-	-	-	10
Alkalinity	mg CaCO3/L	-	-	-	109 A
Chloride	mg Cl/L	< 10% [3]	-	-	140
Fluoride	mg F/L	≤ 5.0	-	-	0.46
Sulfate	mg SO4/L	-	-	-	110
Oils and Greases (HEM)	mg/L	-	≤ 5.0 s	-	1.4 U
Fecal Coliforms	cfu/100 mL	-	≤ 800 s	-	1.00
Escherichia coli	MPN/100 mL	-	-	-	1.00 U

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Composite	Effluent Grab
Bioassay - Water flea *(Ceriodaphnia dubia)*, IC25	% effluent	> 100	> 100 p	No Result O	-
Bioassay - Fish *(Pimephales promelas)*, IC25	% effluent	> 100	> 100 p	No Result O	-

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
c - Value is calculated
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
J - Estimated value
O - Sampled, but analysis lost or not performed
U - Material analyzed for but not detected; value reported is the method detection limit
2 - Lower Caloosahatchee River Estuary Nutrient Region for Numeric Nutrient Criteria (NNC), 62-302.532(16), F.A.C. Value expressed as a long-term average.
3 - Shall not exceed 10% mg Cl/L above background

Table 3. Analytical metals data

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

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab
Aluminum	ug/L	≤ 1,500	-	125
Arsenic	ug/L	≤ 50	-	0.63
Cadmium	ug/L	≤ 8.8	-	0.020 U
Calcium	mg/L	-	-	44.4
Chromium, Total [4]	ug/L	≤ 50	-	0.40 U
Copper [5]	ug/L	≤ 3.7	≤ 3.7 p	0.40 U
Iron	ug/L	≤ 300	-	30 U
Lead	ug/L	≤ 8.5	-	0.20 U
Magnesium	mg/L	-	-	13.2
Nickel	ug/L	≤ 8.3	≤ 8.3 p	0.75 I
Potassium	mg/L	-	-	14.2
Selenium	ug/L	≤ 71	-	0.20 U
Silver	ug/L	≤ 2.3	-	0.010 U
Sodium	mg/L	-	-	115
Zinc	ug/L	≤ 86	-	47

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

Table 4. Algal Growth Potential (AGP)

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

Location	Test Species	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (OP) ± 20%	Predicted AGP (TN) ± 20%	Predicted AGP (TP) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent Grab	*Dunaliella tertiolecta*	4.20 A *	not applicable [6]	not applicable [6]	not applicable [6]	not applicable [6]	0.3 [7]	5.4 [7]
Effluent Grab	*Pseudokirchneriella subcapitata*	2.37 A	1.4 ± 0.3 [7]	51.6 ± 10.3	30.9 ± 6.2 [7]	64.5 ± 12.9	0.3 [7]	5.4 [7]

* - sample salinity adjusted to 7.1 ppth

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

6 - predictions not applicable to marine matrix

7 - nitrate-nitrite was not detected in the effluent sample; Predicted AGP and N:P ratios calculated using ½ the method detection limit (MDL) for non-detect value

Table 5. Detected Organic Constituents

Effluent limits, Class III Marine Criteria, and analytical organic and pesticide

Analyte	Units	Class III Criteria	Effluent Permit Limits	Effluent Grab
Atrazine	ug/L	-	-	0.024 I
Bromodichloromethane	ug/L	≤ 57 a	≤ 52.2 s	19
Bromoform	ug/L	≤ 260 a	-	1.2 I
Chloroform	ug/L	≤ 2,300 a	-	35
Dibromochloromethane	ug/L	≤ 44 a	≤ 34 a	9.8

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
a - Annual average
s - Single sample
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Appendix A. Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Alfredo Velazquez	**Contact Number:** (239) 344-5713
Facility Name (as it appears on permit): Lee County Utilities – Fiesta Village WRF	**Former Names:** N/A
NPDES Permit Number: FL0039829	**Permit Expiration Date:** February 18, 2024
Physical Address: 1366 San Souci Dr. Fort Myers, FL 33919	
District: South District	**County:** Lee
Function of Facility: Wastewater Treatment Facility	
Facility Type: Domestic Wastewater (Major NPDES)	**Permitted Capacity (MGD):** 5.00 MGD
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): From 01/01/2018 through 01/31/2019. Outfall D-001 Mean Flow = 0.7 MGD	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): From 01/01/2018 through 01/31/2019. Outfall R-001 Mean Flow = 2.30 MGD	
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): EFD-01: The effluent transfer pump station's wet well upstream of the high service pump station. EFA-03: The east end of the southern chlorine contact basin. EFA-04: The east end of the northern chlorine contact basin. FLW-01: Outfall pipe near the Landings Golf Course. FLW-12: Plant effluent flow minus the river discharge flow. EFB-01: The clearwell. OTH-03: North outfall of the Landings Golf Course. OTH-04: South outfall of the Landings Golf Course. OTH-05: Northwest Parker Lakes. OTH-06: Southwest Parker Lakes. OTH-07: Southwest corner of stormwater pond in Cypress Lake Manor.	
Description of Permitted Outfall(s): Surface Water Discharge D-001: An existing 5.00 MGD monthly average daily flow discharge to Caloosahatchee River, Class III Marine waters, (WBID# 3240A) which is approximately 800 feet in length and discharges at a depth of approximately 7 feet. The point of discharge is located approximately at latitude 26°33'30" N, longitude 81°55'23" W. There is a mixing zone associated with this outfall for dichlorobromomethane. The mixing zone for dichlorobromomethane is the outfall. The mixture of effluent and receiving waters shall meet the surface water standards of Chapter 62-302, F.A.C, at the edges of the mixing zone.	

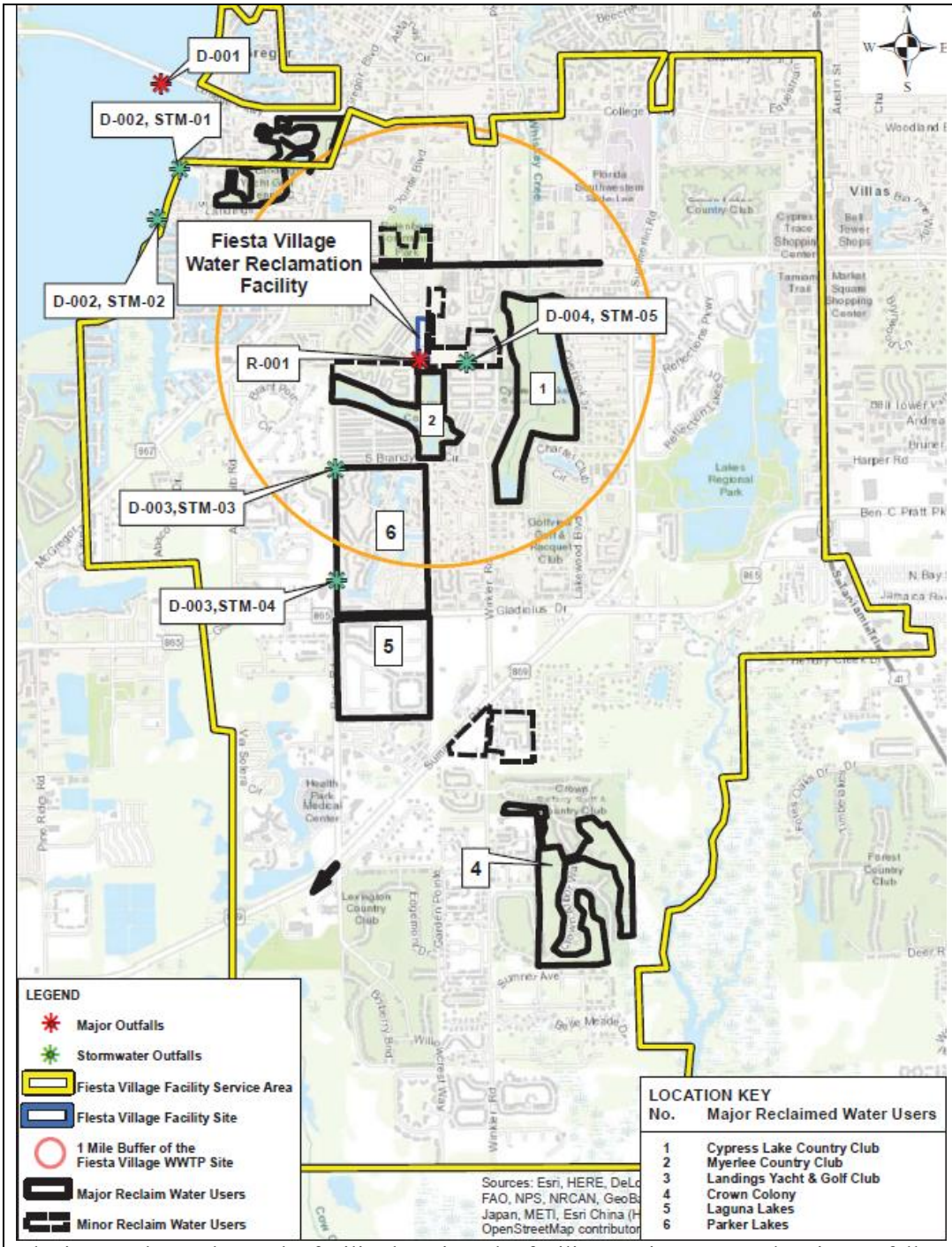
Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility):

Wastewater treatment: The facility is an advanced domestic wastewater treatment plant. The permitted capacity is 5.00 million gallons per day (MGD) annual average daily flow (AADF). The headworks consist of two mechanical screens, one standby bar screens, two aerated grit removal systems and an odor control system. Biological treatment occurs in two oxidation ditches. The clarification system consists of two settling tanks and an alum feed system. The denitrification/filtration system consists of four denitrification filters, three filter influent screw pumps, a backwash basin, a mudwell, a methanol feed system and two post aeration blowers to meet the dissolved oxygen requirements of the discharge. The disinfection/dechlorination system consists of two chlorine contact tanks, two dechlorination tanks, a sodium hypochlorite feed system and a sodium bisulfite feed system. The facility has two aerated sludge holding tanks.

Land Application R-001: An existing 2.976 MGD annual average daily flow permitted capacity slow-rate public access system. R-001 is a reuse system which consists of Fiesta Village WRF has a General Reuse System as shown on the map found on page 2.

Reclaimed water is discharged into stormwater storage lake system(s) D-002 located on the Landings Golf Course which intermittently overflows to Caloosahatchee River, Class III Marine waters, (WBID# 3240A); D-003 located on the Parker Lakes Golf Course for R-001 which intermittently overflows to Caloosahatchee River, and D-004 located on the Cypress Lake Manor South Condominiums which intermittently overflows to Caloosahatchee River. The following ground water sources may be used to augment the supply of reclaimed water: Groundwater sources may be used to augment the supply of reclaimed water at the Crown Colony and Laguna Lakes Irrigation sites. The groundwater shall be introduced to the irrigation system by discharge to the storage ponds.

Please, refer to Figure 1 below:



The image above shows the facility location, the facility service area, and major outfalls. For more information, refer to the Legend.

PART I: Continued

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

			Effluent Limitations				Monitoring Requirements			
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow	MGD	Max	5.00	5.00	-	-	Continuous	Recording flow meter with totalizer	FLW-01	See I.A.4
BOD, Carbonaceous 5 day, 20C	mg/L	Max	20.0	25.0	40.0	60.0	5 Days/Week	24-hr FPC	EFD-01	See I.A.6
CBOD, % Removal, 5-day	percent	Min	-	85	-	-	5 Days/Week	Calculated	EFD-01	
Solids, Total Suspended	mg/L	Max	20.0	30	45	60	5 Days/Week	24-hr FPC	EFD-01	See I.A.6
Solids, Total Suspended % Removal	percent	Min	-	85	-	-	5 Days/Week	Calculated	EFD-01	
Coliform, Fecal	#100mL	Max	200	200	-	800	5 Days/Week	Grab	EFD-01	See I .A.5
pH	s.u.	Min/Max	-	-	-	6.5/8.5	Continuous	Meter	EFD-01	See I A.3
Chlorine, Total Residual (For Disinfection)	mg/L	Min	-	-	-	0.5	Continuous	Meter	EFA-03, and EFA-04	See I.A.3, and I.A.7
Chlorine, Total Residual (For Dechlorination)	mg/L	Max	-	-	-	0.01	24-hr FPC	Grab	EFD-01	
Nitrogen, Total	mg/L	Max	-	3.0	4.5	6.0	5 Days/Week	24-hr FPC	EFD-01	
Nitrogen, Total	lb/day	Max	-	124.9	-	-	Monthly	Calculated	EFD-01	
Phosphorus, Total (as P)	mg/L	Max	-	0.5	0.75	1.0	5 Days/Week	24-hr FPC	EFD-01	
Phosphorus, Total (as P)	lb/day	Max	-	20.8	-	-	Monthly	Calculated	EFD-01	

Chlorodibromomethane	ug/L	Max	34	-	-	-	Semi-annually; Twice per year	Grab	EFD-01	
Dichlorobromomethane	ug/L	Max	-	-	-	52.2	Monthly	Grab	EFD-01	
Copper, Total Recoverable	ug/L	Max	-	-	-	3.7	semi-annually; twice per year	24-hr FPC	EFD-01	
Cyanide, Total (as CN)	ug/L	Max	-	-	-	1.0	semi-annually; twice per year	24-hr FPC	EFD-01	
Oil and Grease	mg/L	Max	-	-	-	5.0	semi-annually; twice per year	Grab	EFD-01	
Chronic Whole Effluent Toxicity, 7-Day IC25 (Ceriodaphnia dubia)	percent	Min	-	-	-	100	Annually	24-hr FPC	EFD-01	See I.A.8
Chronic Whole Effluent Toxicity, 7-Day IC25 (Pimephales promelas)	percent	Min	-	-	-	100	Annually	24-hr FPC	EFD-01	See I.A.8
Oxygen, Dissolved Percent Saturation	% smpcmpln	Min	-	90	-	-	Daily; 24 hours	Calculated	EFD-01	See I.A.9, I.A.10, and I.A.11
Oxygen, Dissolved Percent Saturation	# of Exceedances	Max Max	1 1	-	-	-	Daily; 24 hours	Calculated	EFD-01	See I.A.9, I.A.10, and I.A.11
Nickel, Total Recoverable	ug/L	Max	-	-	-	8.3	Quarterly	24-hr FPC	EFD-01	
Administrative Order No. AO-0039829										
Cyanide, Total (as CN)	ug/L	Max	-	-	-	-	Monthly	Grab	EFD-01	

PART I: Continued	
Receiving Waters: Caloosahatchee River	**Classification (indicate whether fresh or marine):** Class III Marine water, (WBID# 3240A)

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

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

   a. Effluent Limitation
      (1) In any routine or additional follow-up test for chronic whole effluent toxicity, the 25 percent inhibition concentration (IC25) for reproduction or growth shall not be less than 100% effluent. [Rules 62-302.530(61) and 62-4.241(1)(b), F.A.C.]
      (2) For acute whole effluent toxicity, the 96-hour LC50 shall not be less than 100% effluent in any test. [Rule 62-302.500(1)(a)4. and 62-4.241(1)(a), F.A.C.]

   b. Monitoring Frequency
      (1) Routine toxicity tests shall be conducted annually, the first starting within 60 days of the effective date of this permit and lasting for the duration of this permit.

   c. Sampling Requirements
      (1) For each routine test or additional follow-up test conducted, a total of three flow proportional 24-hr composite samples of final effluent shall be collected and used in accordance with the sampling protocol discussed in EPA-821-R-02-013, Section 8.
      (2) The first sample shall be used to initiate the test. The remaining two samples shall be collected according to the protocol and used as renewal solutions on Day 3 (48 hours) and Day 5 (96 hours) of the test.
      (3) Samples for routine and additional follow-up tests shall not be collected on the same day.

   d. Test Requirements
      (1) Routine Tests: All routine tests shall be conducted using a control (0% effluent) and a minimum of five test dilutions: 100%, 50%, 25%, 12.5%, and 6.25% final effluent.
      (2) The permittee shall conduct a daphnid, Ceriodaphnia dubia, Survival and Reproduction Test and a fathead minnow, Pimephales promelas, Larval Survival and Growth Test, concurrently.
      (3) All test species, procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 4th Edition, EPA-821-R-02-013. Any deviation of the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use. In the event the above method is revised, the permittee shall conduct chronic toxicity testing in accordance with the revised method.
      (4) The control water and dilution water shall be moderately hard water as described in EPA-821-R-02-013, Section 7.2.3.

   e. Quality Assurance Requirements
      (1) A standard reference toxicant (SRT) quality assurance (QA) chronic toxicity test shall be conducted with each species used in the required toxicity tests either concurrently or initiated no more than 30 days before the date of each routine or additional follow-up test conducted. Additionally, the SRT test must be conducted concurrently if the test organisms are obtained from outside the test laboratory unless the test organism supplier provides control chart data from at least the last five monthly chronic toxicity tests using the same reference toxicant and test conditions. If the organism supplier provides the required SRT data, the organism supplier's SRT data and the test laboratory's monthly SRT-QA data shall be included in the reports for each companion routine or additional follow-up test required.
      (2) If the mortality in the control (0% effluent) exceeds 20% for either species in any test or the "test acceptability criteria" are not met, the test for that species (including the control) shall be invalidated and the test repeated. Test acceptability criteria for each species are defined in EPA-821-R-02-013, Section 13.12 (Ceriodaphnia dubia) and Section 11.11 (Pimephales promelas). The repeat test shall begin within 21 days after the last day of the invalid test.
      (3) If 100% mortality occurs in all effluent concentrations for either test species prior to the end of any test and the control mortality is less than 20% 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 observed dose-response relationship as required by EPA-821-R-02-013, Section 10.2.6., and the evaluation shall be included with the bioassay laboratory reports.

   f. Reporting Requirements
      (1) Results from all required tests shall be reported on the Discharge Monitoring Report (DMR) as follows:
         (a) Routine and Additional Follow-up Test Results: The calculated IC25 for reproduction or growth for each test species shall be entered on the DMR.
      (2) A bioassay laboratory report for each routine test shall be prepared according to EPA-821-R-02-013, Section 10, Report Preparation and Test Review, and 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-02-013, Section 10, 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 the South District's electronic mailing address SouthDistrict@floridadep.gov
Please contact the Department at (239) 344-5600 if you are unable to submit electronically

g. Test Failures
(1) A test fails when the test results do not meet the limits in 8.a.(1).
(2) Additional Follow-up Tests:
(a) If a routine test does not meet the chronic toxicity limitation in 8.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 8.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%, 50%, 25%, 12.5%, and 6.25% 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 analyzed according to the procedures in EPA-821-R-02-013.
(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 8.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 8.b.(1). If a routine test is invalid according to the acceptance criteria in EPA-821-R-02-013, a repeat test shall be initiated within 21 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 8.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 21 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) If chronic toxicity test results indicate greater than 50% mortality within 96 hours in an effluent concentration equal to or less than the effluent concentration specified as the acute toxicity limit in 8.a.(2), the Department may revise this permit to require acute definitive whole effluent toxicity testing.
(5) The additional follow-up testing and the plan do not preclude the Department taking enforcement action for acute or chronic whole effluent toxicity failures.

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

9. No more than 10 percent of the daily average percent dissolved oxygen (DO) saturation values shall be below 42%. To report the percent samples in compliance, count the number of daily average values greater than or equal to 42%, divide by the total number of daily average values, and multiply by 100% (round to the nearest integer). *[62-302.533(2)]*

10. The weekly average DO percent saturation shall not be below 51% more than once in any three-month period. To report the number of exceedances, count the number of weekly average values less than or equal to 51% during the three-month period. The weekly average value shall only be counted if samples or readings are taken on 3 or more days during the week. *[62-302.533(2)]*

11. The monthly average DO percent saturation shall not be below 56% more than once in any twelve-month period. To report the number of exceedances, count the number of monthly average values less than or equal to 56% during the twelve-month period. The monthly average value shall only be counted if samples or readings are taken on 10 or more days during the month. *[62-302.533(2)]*

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

Administrative Order No. AO-0039829
Effective Date: February 19, 2019

It is ordered,

1. Lee County Utilities, Fiesta Village Water Reclamation Facility shall be in full compliance by February 1st, 2020.
2. Lee County Utilities, Fiesta Village Water Reclamation Facility shall complete the following corrective actions:

a The Applicant shall submit a report that evaluates cyanide concentrations in the effluent. The report will include possible options for the Applicant to meet final permit conditions by October 1st, 2019.

b The Applicant shall design, and permit the chosen improvement/alternative, if needed by January 1st, 2020

c The Applicant shall be in compliance with the final permit conditions by February 1st, 2020.

3. Until the completion of improvements, the Applicant's surface water discharges (D-001) water shall sample the effluent monthly for Cyanide concentration and report the results on the Discharge Monitoring Report.

4. The Applicant Facility shall provide this office with quarterly email progress reports outlining progress toward compliance with the time frames specified in paragraph 1 of this Section, the first quarterly report is due March 31st, 2019.

5. This order may be modified through revisions as set forth in chapter 62-620 of Florida Administrative Code.

6. Reports or other information required by this order shall be sent to the Department of Environmental Protection, at SouthDistrict@floridadep.gov

7. This order does not operate as a permit under section 403.088 of the Florida Statutes. This order shall be incorporated by reference into DEP Permit No. FLA014689, which shall require compliance by the permittee with the requirements of this order.

8. Failure to comply with the requirements of this order shall constitute a violation of this order and DEP Permit No. FLA014689 and may subject the permittee to penalties as provided in section 403.161 of the Florida Statutes.

Facility Mixing Zone Details (if applicable):

There is a mixing zone associated with this outfall for dichlorobromomethane. The mixing zone for dichlorobromomethane is the outfall. The mixture of effluent and receiving waters shall meet the surface water standards of Chapter 62-302, F.A.C, at the edges of the mixing zone.

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

Date	Parameter and Units	Limit	Result
01/01/2018 - 03/31/2018	Chloride (as Cl) mg/L	250 mg/L	271 mg/L
01/01/2018 - 03/31/2018	TDS mg/L	500 mg/L	1580 mg/L
04/01/2018 – 06/30/2018	Chloride (as Cl) mg/L	250 mg/L	268 mg/L
04/01/2018 – 06/30/2018	TDS mg/L	500 mg/L	1490 mg/L
07/01/2018 – 09/30/2018	Coliform, Fecal #/100ml	8	0.0
07/01/2018 – 09/30/2018	Chloride (as Cl) mg/L	250 mg/L	279 mg/L
07/01/2018 – 09/30/2018	TDS mg/L	500 mg/L	1400 mg/L
10/01/2018 – 12/31/2018	Chloride (as Cl) mg/L	250 mg/L	265 mg/L
10/01/2018 – 12/31/2018	TDS mg/L	500 mg/L	1480 mg/L

Describe previous FYI and WQBEL study:

The most recent CSI as part of a FYI was conducted on 03/17/2008 and the facility was determined to be in-compliance.

Describe previous or current Enforcement Actions (including WLs):

Administrative Order No. AO-0039829 Issued on February 19th, 2019.

Warning Letter issued on October 20th, 2017 for SSO Hurricane Irma Spills.

Consent Order issued on March 9th, 2018 for SSO Hurricane Irma Spills.

Describe any violations or problems noted in previous inspection:

Our records indicate the latest compliance evaluation inspection was conducted on March 30, 2017. On this inspection, it was noted the facility has reported groundwater exceedances for Chlorides and TDS. The Department acknowledges that the water table in this are has a high range of salinity concentration.

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

DMRs for the past five years appear to be improving. A review of DMRs from 01/01/2013 through 01/31/2019 shows the facility has reduced the number of exceedances as well as the frequency of exceedances. However, groundwater trends remain stable for the most part.

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

NA

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

Appendix B. Explanations of Measurements

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

- **Chemical Analyses of the Effluent**

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

- **Toxicity Bioassays**

  Greater than 50% mortality in an acute toxicity test may constitute an exceedance of 62-302.500(1)a and/or facility permit limits. A 25% inhibition concentration (IC25) is the effluent concentration causing a 25% reduction in a biological response such as biomass or reproduction when compared to a control population. An IC25 of less than 100% in a chronic test may constitute exceedances of 62-302.530(20), 62-302.530(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.

- **Bacteriological Testing**

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

- **Chlorophyll *a* Content**

  Chlorophyll *a* content is an estimate of algal biomass. High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may be constitute exceedances of 62-302.530(46), F.A.C., 62-302.530(47)(a) F.A.C. and/or 62-302.530(47)(b) F.A.C..

- **Algal Growth Potential (AGP)**

  The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. AGP results within the range 6.10 to 20.0 mg dry wt/L are suggested to be representative of high productivity for freshwaters (Miller et al. 1978). High AGP values may constitute exceedances of 62-302.530(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 under the assumption that other required nutrients (e.g. silicon, micronutrients) are present in excess (Miller *et al*. 1978). The expected amount of production is calculated as 38

times the total soluble inorganic nitrogen (nitrate and nitrite plus ammonia) under nitrogen limitation or 430 times the ortho-phosphate (OP) concentration under phosphorus limitation with an error of ± 20%. When the ratio of nitrogen to phosphorus (N: P) is less than 10:1, nitrogen limitation of algal production is likely. When the N: P ratio is 20:1 or greater, phosphorus limitation is likely (USEPA 2000). For ratios in-between, co-limitation may occur. Production of lower biomass than expected may be evidence of growth inhibition related to toxic compounds present in the water sample tested and may constitute an exceedance of 62-302.530(61), F.A.C.

- **Definition of Qualifiers**

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

Appendix C. Chain of Custody

Request Number: RQ-2019-03-04-31

FY13 Lee County Utilities - Fiesta Village Sampling Inspection

Customer: SO-DIST

Project ID: FY13

Florida Department of Environmental Protection

Central Laboratory Submittal Form

Page 1 of 4

last revised Jan 25, 2018

Requester: Adrienne E. Pennington

Collected By: JW, AP, AV, DN, NP, BE

Field Report Prepared By: Alfredo Velázquez

Sampling Agency: FDEP-SD

Location: Lee County (AV) Fiesta Village	☐ Comp ☒ Grab	Collection (comp begin or grab) Date 3/11/19 Time 9:15 AM	Eastern Central	Composite end Date	Time	Bottle Group(s) (See pg 2): C					
Field ID: Field Blanks	Matrix (type, e.g., Salt, Fresh, etc): DI H_2O			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: Field Blanks collected @ EFD-01								
Location: Lee County Fiesta Village	☐ Comp ☒ Grab	Collection (comp begin or grab) Date 3/11/19 Time 9:30 AM	Eastern Central	Composite end Date	Time	Bottle Group(s): C					
Field ID: Equipment Blank	Matrix (type, e.g., Salt, Fresh, etc): DI H_2O			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: Equipment blank collected near EFD-01 BO AV VOC only								
Location: Lee County Fiesta Village	☐ Comp ☒ Grab	Collection (comp begin or grab) Date 3/11/19 Time 9:50 AM	Eastern Central	Composite end Date	Time	Bottle Group(s): A					
Field ID: Effluent Grab	Matrix (type, e.g., Salt, Fresh, etc): Effluent			Diss. Oxygen 6.18 77.7	☒ mg/L ☒ % sat	Total Res. Chlorine (mg/L) ~~0.07~~ ↳ ≤0.2					
WIN/STORET #	Temp (C) 27.0	pH 7.05		Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm) 933					
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments: EFD-01 – Sample collected from pipe.								
Location: Lee County Fiesta Village	☒ Comp ☐ Grab	Collection (comp begin or grab) Date 3/10/19 Time 10:00 AM	Eastern Central	Composite end Date 3/11/19 Time 10:00 AM		Bottle Group(s): B					
Field ID: Effluent comp	Matrix (type, e.g., Salt, Fresh, etc): Effluent			Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)					
WIN/STORET #	Temp (C) 3.0	pH		Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)					
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments: Bottle time 10:15 AM								

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
Alfredo Velázquez	3/11/19, 11:33 AM	Fedex	4	MK	3.12.19 @ 10:15

2 jugs JJ 3.12.19

Request Number: RQ-2019-03-04-31

FYI3 Lee County Utilities - Fiesta Village Sampling Inspection

Customer: SO-DIST

Project ID: FYI3

Florida Department of Environmental Protection
Central Laboratory Submittal Form

last revised Jan 25, 2018

Requester: Adrienne E. Pennington

Collected By: JW, AP, AV, DN, NP, BE

Field Report Prepared By: Alfredo Velazquez

Sampling Agency: FDEP - SD

Location: Lee County Fiesta Village	☐ Comp ☐ Grab	Collection (comp begin or grab) Date / Time / Eastern Central			Composite end Date / Time			Bottle Group(s) (See pg 2): D
Field ID: Trip 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	☐ Comp ☐ Grab	Collection (comp begin or grab) Date / Time / Eastern Central			Composite end Date / Time			Bottle Group(s)
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)			
WIN/STORET #	Temp (C)	pH	Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)			
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments					
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date / Time / Eastern Central			Composite end Date / Time			Bottle Group(s)
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)			
WIN/STORET #	Temp (C)	pH	Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)			
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments					
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date / Time / Eastern Central			Composite end Date / Time			Bottle Group(s)
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)			
WIN/STORET #	Temp (C)	pH	Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)			
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments					

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
Alfredo Velazquez	3/11/19, 11:33 AM	Fedex	4	KR	3/12/19 @ 10:15

Request Number: RQ-2019-03-04-31

FYI3 Lee County Utilities - Fiesta Village Sampling Inspection

Customer: SO-DIST

Project ID: FYI3

Florida Department of Environmental Protection
Central Laboratory Submittal Form

Page 1 of 4

last revised Jan 25, 2018

Requester: Adrienne E. Pennington

Field Report Prepared By: Brian Ellis

Collected By: Brian Ellis + Alfredo Velazquez

Sampling Agency: FDEP - SD

Location: Lee County Fiesta Village	☒ Comp ☐ Grab	Collection (comp begin or grab) Date 3/12/19 Time 10:05 AM	Eastern / Central	Composite end Date 3/13/19 Time 10:05	Bottle Group(s) (See pg 2): B					
Field ID: Effluent Comp.	Matrix (type, e.g., Salt, Fresh, etc): Effluent		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: Effluent collected at EFD-01							
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern / Central	Composite end Date Time	Bottle Group(s)					
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen ☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)						
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)						
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments							
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern / Central	Composite end Date Time	Bottle Group(s)					
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen ☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)						
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)						
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments							
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern / Central	Composite end Date Time	Bottle Group(s)					
Field ID	Matrix (type, e.g., Salt, Fresh, etc)		Diss. Oxygen ☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)						
WIN/STORET #	Temp (C)	pH	Sample Depth ☐ ft ☐ m	Sp. Conductance (umho/cm)						
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments							

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped: 2	Received By: IAK Lauren Rothfred	Date/Time: 3.14.19 @10.35 3.14.19 1154

Request Number: RQ-2019-03-04-31

FYI3 Lee County Utilities - Fiesta Village Sampling Inspection

Customer: SO-DIST

Project ID: FYI3

Florida Department of Environmental Protection
Central Laboratory Submittal Form

last revised Jan 25, 2018

Requester: Adrienne E. Pennington

Field Report Prepared By: Narrisa Bonnell

Collected By: NB BE AV

Sampling Agency: FDEP - SD

Location: Lee Count - Fiesta Village	☒ Comp ☐ Grab	Collection (comp begin or grab) Date 3/14/19 Time 10:00 AM	Eastern Central	Composite end Date 3/14/19 Time 10:00 AM					Bottle Group(s) (See pg 2): B
Field ID: EFFLUENT COMP	Matrix (type, e.g., Salt, Fresh, etc): Effluent			Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)			
WIN/STORET #	Temp (C): 5°	pH		Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)			
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments: Sample collected EFF-01. Lid broke on sample bottle cooler.						
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time					Bottle Group(s)
Field ID	Matrix (type, e.g., Salt, Fresh, etc)			Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)			
WIN/STORET #	Temp (C)	pH		Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)			
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments						
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time					Bottle Group(s)
Field ID	Matrix (type, e.g., Salt, Fresh, etc)			Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)			
WIN/STORET #	Temp (C)	pH		Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)			
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments						
Location	☐ Comp ☐ Grab	Collection (comp begin or grab) Date Time	Eastern Central	Composite end Date Time					Bottle Group(s)
Field ID	Matrix (type, e.g., Salt, Fresh, etc)			Diss. Oxygen	☐ mg/L ☐ % sat	Total Res. Chlorine (mg/L)			
WIN/STORET #	Temp (C)	pH		Sample Depth	☐ ft ☐ m	Sp. Conductance (umho/cm)			
Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms	Salinity (ppt)	Comments						

Relinquished By:	Date/Time	Shipping Method	Number of Coolers Shipped:	Received By:	Date/Time
				NK	3.18.19/9:45

Lauren Stanfield

Appendix D. Chemical Analysis of Effluent and Receiving Water

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/14/2019 10:00	Effluent Composite	Nutrients	Temperature	5	C		
3/11/2019 10:00	Effluent Composite	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	No result O	NOEC		
3/11/2019 10:00	Effluent Composite	Toxicology	Bioassay-Chron-Def-FW-C.dubia, NOEC	No result O	NOEC		
3/11/2019 10:00	Effluent Composite	Toxicology	Bioassay-Chron-Def-FW-Fish, IC25	No result O	IC25		
3/11/2019 10:00	Effluent Composite	Toxicology	Bioassay-Chron-Def-FW-C.dubia, IC25	No result O	IC25		
3/11/2019 10:00	Effluent Composite	Nutrients	Temperature	3.0	C		
3/11/2019 9:50	Effluent Grab	AGP/LN	Algal Growth Potential	2.37 A	mg DryWt/L	0.3	0.9
3/11/2019 9:50	Effluent Grab	AGP/LN	Algal Growth Potential-Salinity Adjusted	4.20 A	mg DryWt/L	0.3	0.9
3/11/2019 9:50	Effluent Grab	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.90 U	ug/L	0.9	2.7
3/11/2019 9:50	Effluent Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.82 U	ug/L	0.82	2.6
3/11/2019 9:50	Effluent Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	0.60 U	ug/L	0.6	1.8
3/11/2019 9:50	Effluent Grab	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	3.2 AJ	mg/L	0.2	2
3/11/2019 9:50	Effluent Grab	Overflow	Fecal Coliforms-Membrane Filter	1.00	cfu/100 mL	1	1
3/11/2019 9:50	Effluent Grab	Overflow	Escherichia Coli-Quanti-Tray	1.00 U	MPN/100 mL	1	1
3/11/2019 9:50	Effluent Grab	Metals	Chromium	0.40 U	ug/L	0.4	1.6
3/11/2019 9:50	Effluent Grab	Metals	Magnesium	13.2	mg/L	0.04	0.16
3/11/2019 9:50	Effluent Grab	Metals	Nickel	0.75 I	ug/L	0.5	2
3/11/2019 9:50	Effluent Grab	Metals	Arsenic	0.63	ug/L	0.05	0.2
3/11/2019 9:50	Effluent Grab	Metals	Iron	30 U	ug/L	30	120
3/11/2019 9:50	Effluent Grab	Metals	Zinc	47	ug/L	5	20
3/11/2019 9:50	Effluent Grab	Metals	Sodium	115	mg/L	0.5	2
3/11/2019 9:50	Effluent Grab	Metals	Potassium	14.2	mg/L	0.3	1.2
3/11/2019 9:50	Effluent Grab	Metals	Copper	0.40 U	ug/L	0.4	0.8
3/11/2019 9:50	Effluent Grab	Metals	Selenium	0.20 U	ug/L	0.2	0.8
3/11/2019 9:50	Effluent Grab	Metals	Lead	0.20 U	ug/L	0.2	0.4
3/11/2019 9:50	Effluent Grab	Metals	Aluminum	125	ug/L	5	20
3/11/2019 9:50	Effluent Grab	Metals	Cadmium	0.020 U	ug/L	0.02	0.08
3/11/2019 9:50	Effluent Grab	Metals	Calcium	44.4	mg/L	0.075	0.3
3/11/2019 9:50	Effluent Grab	Metals	Silver	0.010 U	ug/L	0.01	0.04
3/11/2019 9:50	Effluent Grab	Nutrients	Total Alkalinity	109 A	mg CaCO3/L	0.65	2.5
3/11/2019 9:50	Effluent Grab	Nutrients	Turbidity	0.45	NTU	0.1	0.13

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/11/2019 9:50	Effluent Grab	Nutrients	Fluoride	0.46	mg F/L	0.035	0.1
3/11/2019 9:50	Effluent Grab	Nutrients	TSS	2 UA	mg/L	2	10
3/11/2019 9:50	Effluent Grab	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
3/11/2019 9:50	Effluent Grab	Nutrients	O-Phosphate-P	0.12	mg P/L	0.04	0.1
3/11/2019 9:50	Effluent Grab	Nutrients	Organic Carbon	7.3	mg C/L	0.5	1
3/11/2019 9:50	Effluent Grab	Nutrients	Kjeldahl Nitrogen	0.81	mg N/L	0.08	0.2
3/11/2019 9:50	Effluent Grab	Nutrients	Color (true)	10	PCU	2.5	6
3/11/2019 9:50	Effluent Grab	Nutrients	Sulfate	110	mg SO4/L	0.4	1.2
3/11/2019 9:50	Effluent Grab	Nutrients	Chloride	140	mg Cl/L	0.4	1.2
3/11/2019 9:50	Effluent Grab	Nutrients	Ammonia-N	0.034	mg N/L	0.002	0.005
3/11/2019 9:50	Effluent Grab	Nutrients	Total-P	0.15	mg P/L	0.005	0.05
3/11/2019 9:50	Effluent Grab	Overflow	HEM	1.4 U	mg/L	1.4	5
3/11/2019 9:50	Effluent Grab	Pesticides	Sucralose	62	ug/L	0.1	0.4
3/11/2019 9:50	Effluent Grab	Pesticides	Ametryn	0.010 U	ug/L	0.01	0.041
3/11/2019 9:50	Effluent Grab	Pesticides	Malathion	0.010 U	ug/L	0.01	0.041
3/11/2019 9:50	Effluent Grab	Pesticides	Simazine	0.010 U	ug/L	0.01	0.041
3/11/2019 9:50	Effluent Grab	Pesticides	Phorate	0.0051 U	ug/L	0.0051	0.02
3/11/2019 9:50	Effluent Grab	Pesticides	Ethion	0.010 U	ug/L	0.01	0.041
3/11/2019 9:50	Effluent Grab	Pesticides	Naproxen	0.0080 U	ug/L	0.008	0.032
3/11/2019 9:50	Effluent Grab	Pesticides	Atrazine Desisopropyl	0.010 U	ug/L	0.01	0.041
3/11/2019 9:50	Effluent Grab	Pesticides	Diazinon	0.010 U	ug/L	0.01	0.041
3/11/2019 9:50	Effluent Grab	Pesticides	Ethoprop	0.0051 U	ug/L	0.0051	0.02
3/11/2019 9:50	Effluent Grab	Pesticides	Fenamiphos	0.030 UJ	ug/L	0.03	0.12
3/11/2019 9:50	Effluent Grab	Pesticides	Metolachlor	0.12 U	ug/L	0.12	0.49
3/11/2019 9:50	Effluent Grab	Pesticides	Prometryn	0.020 U	ug/L	0.02	0.081
3/11/2019 9:50	Effluent Grab	Pesticides	Azinphos Methyl	0.091 U	ug/L	0.091	0.37
3/11/2019 9:50	Effluent Grab	Pesticides	Disulfoton	0.0051 U	ug/L	0.0051	0.02
3/11/2019 9:50	Effluent Grab	Pesticides	Fonofos	0.010 U	ug/L	0.01	0.041
3/11/2019 9:50	Effluent Grab	Pesticides	Butylate	0.051 UJ	ug/L	0.051	0.2
3/11/2019 9:50	Effluent Grab	Pesticides	Chlorpyrifos Methyl	0.010 U	ug/L	0.01	0.041
3/11/2019 9:50	Effluent Grab	Pesticides	Norflurazon	0.051 U	ug/L	0.051	0.2
3/11/2019 9:50	Effluent Grab	Pesticides	Parathion Ethyl	0.020 U	ug/L	0.02	0.081
3/11/2019 9:50	Effluent Grab	Pesticides	Atrazine Desethyl	0.010 U	ug/L	0.01	0.041
3/11/2019 9:50	Effluent Grab	Pesticides	Chlorpyrifos Ethyl	0.010 U	ug/L	0.01	0.041

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/11/2019 9:50	Effluent Grab	Pesticides	Ibuprofen	0.020 U	ug/L	0.02	0.08
3/11/2019 9:50	Effluent Grab	Pesticides	Atrazine	0.024 I	ug/L	0.01	0.041
3/11/2019 9:50	Effluent Grab	Pesticides	Bromacil	0.041 U	ug/L	0.041	0.16
3/11/2019 9:50	Effluent Grab	Pesticides	Metribuzin	0.051 U	ug/L	0.051	0.2
3/11/2019 9:50	Effluent Grab	Pesticides	Mevinphos	0.010 U	ug/L	0.01	0.041
3/11/2019 9:50	Effluent Grab	Pesticides	Prometon	0.020 UJ	ug/L	0.02	0.081
3/11/2019 9:50	Effluent Grab	Pesticides	Alachlor	0.061 U	ug/L	0.061	0.24
3/11/2019 9:50	Effluent Grab	Pesticides	Demeton	0.024 U	ug/L	0.024	0.098
3/11/2019 9:50	Effluent Grab	Pesticides	Hexazinone	0.071 U	ug/L	0.071	0.28
3/11/2019 9:50	Effluent Grab	Pesticides	Metalaxyl	0.18 U	ug/L	0.18	0.73
3/11/2019 9:50	Effluent Grab	Pesticides	Naled	0.081 UJ	ug/L	0.081	0.33
3/11/2019 9:50	Effluent Grab	Pesticides	Parathion Methyl	0.010 U	ug/L	0.01	0.041
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Bromoform	1.2 I	ug/L	0.5	2
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Chloroethane	0.50 U	ug/L	0.5	2
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Dibromochloromethane	9.8	ug/L	0.2	0.8
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	2,4-Dinitrotoluene	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	2-Chloronaphthalene	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	3,3'-Dichlorobenzidine	10 U	ug/L	10	41
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Fluoranthene	0.026 U	ug/L	0.026	0.1
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.026 U	ug/L	0.026	0.1
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	0.10 U	ug/L	0.1	0.41
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Naphthalene	0.10 U	ug/L	0.1	0.41
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	1,1-Dichloroethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	1,1,2,2-Tetrachloroethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	1,2-Dichloropropane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	1,4-Dichlorobenzene	0.50 U	ug/L	0.5	2
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Chlorobenzene	0.20 U	ug/L	0.2	0.8
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Chloroform	35	ug/L	0.2	0.8
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	cis-1,3-Dichloropropene	0.50 U	ug/L	0.5	2
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	trans-1,3-Dichloropropene	0.50 U	ug/L	0.5	2
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	2,4-Dichlorophenol	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Acenaphthylene	0.026 U	ug/L	0.026	0.1
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Benzo(b)fluoranthene	0.026 U	ug/L	0.026	0.1

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.026 U	ug/L	0.026	0.1
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Hexachlorobenzene	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Isophorone	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	1,1-Dichloroethene	0.20 U	ug/L	0.2	0.8
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	2,4-Dinitrophenol	10 U	ug/L	10	41
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	2-Chlorophenol	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Anthracene	0.026 U	ug/L	0.026	0.1
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Benzo(a)anthracene	0.026 U	ug/L	0.026	0.1
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Butyl benzyl phthalate	1.0 U	ug/L	1	4.1
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Fluorene	0.026 U	ug/L	0.026	0.1
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Nitrobenzene	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Pentachlorophenol	0.52 U	ug/L	0.52	2.1
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Carbon tetrachloride	0.20 U	ug/L	0.2	0.8
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Methylene chloride	1.0 U	ug/L	1	4
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Trichloroethene	0.20 U	ug/L	0.2	0.8
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Vinyl chloride	0.20 U	ug/L	0.2	0.8
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	2,6-Dinitrotoluene	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1 U	ug/L	3.1	12
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	2-Nitrophenol	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	4-Nitrophenol	10 U	ug/L	10	41
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Benzo(a)pyrene	0.026 U	ug/L	0.026	0.1
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Diethyl phthalate	2.1 U	ug/L	2.1	8.2
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1 U	ug/L	2.1	8.2
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	1,1,2-Trichloroethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	1,3-Dichlorobenzene	0.50 U	ug/L	0.5	2
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Benzene	0.20 U	ug/L	0.2	0.8
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Bromomethane	0.50 U	ug/L	0.5	2
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Ethylbenzene	0.20 U	ug/L	0.2	0.8
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Tetrachloroethene	0.20 U	ug/L	0.2	0.8

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	5.2 U	ug/L	5.2	21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Hexachlorobutadiene	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	1,2-Dichloroethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.026 U	ug/L	0.026	0.1
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Hexachloroethane	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Phenol	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Pyrene	0.10 U	ug/L	0.1	0.41
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Chloromethane	0.50 U	ug/L	0.5	2
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Toluene	0.50 U	ug/L	0.5	2
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Trichlorofluoromethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	2,4-Dimethylphenol	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Benzo(k)fluoranthene	0.026 U	ug/L	0.026	0.1
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Chrysene	0.026 U	ug/L	0.026	0.1
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Di-n-butyl phthalate	2.1 U	ug/L	2.1	8.2
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Dimethyl phthalate	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Phenanthrene	0.10 U	ug/L	0.1	0.41
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Bromodichloromethane	19	ug/L	0.2	0.8
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Acenaphthene	0.026 U	ug/L	0.026	0.1
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Benzidine	10 U	ug/L	10	41
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	Di-n-octyl phthalate	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.052 U	ug/L	0.052	0.21
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	1,1,1-Trichloroethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:50	Effluent Grab	Priority Organic Pollutants	1,2-Dichlorobenzene	0.50 U	ug/L	0.5	2
3/11/2019 9:50	Effluent Grab	Nutrients	pH	7.05			
3/11/2019 9:50	Effluent Grab	Nutrients	Specific Conductance	933	umhos/cm		
3/11/2019 9:50	Effluent Grab	Nutrients	Temperature	27.0	C		
3/11/2019 9:50	Effluent Grab	Nutrients	Dissolved Oxygen	77.7	%Sat		
3/11/2019 9:30	Blank	Priority Organic Pollutants	cis-1,3-Dichloropropene	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	Dibromochloromethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,3-Dichlorobenzene	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	Bromodichloromethane	0.20 U	ug/L	0.2	0.8

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/11/2019 9:30	Blank	Priority Organic Pollutants	Chlorobenzene	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	Chloroethane	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	Carbon tetrachloride	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,2-Dichloropropane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	Bromoform	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,2-Dichloroethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	Chloromethane	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,1-Dichloroethene	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,1,2-Trichloroethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	Vinyl chloride	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	Trichlorofluoromethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	Tetrachloroethene	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	Chloroform	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,2-Dichlorobenzene	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	Trichloroethene	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	Toluene	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,1,2,2-Tetrachloroethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,1,1-Trichloroethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	trans-1,3-Dichloropropene	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	Methylene chloride	1.0 U	ug/L	1	4
3/11/2019 9:30	Blank	Priority Organic Pollutants	Ethylbenzene	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	Bromomethane	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,4-Dichlorobenzene	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,1-Dichloroethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	Benzene	0.20 U	ug/L	0.2	0.8
3/11/2019 9:15	Blank	Metals	Potassium	0.30 U	mg/L	0.3	1.2
3/11/2019 9:15	Blank	Metals	Calcium	0.075 U	mg/L	0.075	0.3
3/11/2019 9:15	Blank	Metals	Aluminum	5.0 U	ug/L	5	20
3/11/2019 9:15	Blank	Metals	Chromium	0.40 U	ug/L	0.4	1.6
3/11/2019 9:15	Blank	Metals	Lead	0.20 U	ug/L	0.2	0.4
3/11/2019 9:15	Blank	Metals	Iron	30 U	ug/L	30	120
3/11/2019 9:15	Blank	Metals	Arsenic	0.050 U	ug/L	0.05	0.2
3/11/2019 9:15	Blank	Metals	Cadmium	0.020 U	ug/L	0.02	0.08
3/11/2019 9:15	Blank	Metals	Copper	0.42 I	ug/L	0.4	0.8

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/11/2019 9:15	Blank	Metals	Magnesium	0.040 U	mg/L	0.04	0.16
3/11/2019 9:15	Blank	Metals	Nickel	0.50 U	ug/L	0.5	2
3/11/2019 9:15	Blank	Metals	Sodium	0.50 U	mg/L	0.5	2
3/11/2019 9:15	Blank	Metals	Zinc	5.0 U	ug/L	5	20
3/11/2019 9:15	Blank	Metals	Selenium	0.20 U	ug/L	0.2	0.8
3/11/2019 9:15	Blank	Metals	Silver	0.010 U	ug/L	0.01	0.04
3/11/2019 9:15	Blank	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.1
3/11/2019 9:15	Blank	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
3/11/2019 9:15	Blank	Nutrients	Chloride	0.20 U	mg Cl/L	0.2	0.6
3/11/2019 9:15	Blank	Nutrients	Total Alkalinity	0.65 U	mg CaCO3/L	0.65	2.5
3/11/2019 9:15	Blank	Nutrients	Turbidity	0.10 U	NTU	0.1	0.13
3/11/2019 9:15	Blank	Nutrients	Organic Carbon	0.50 U	mg C/L	0.5	1
3/11/2019 9:15	Blank	Nutrients	Total-P	0.002 U	mg P/L	0.002	0.005
3/11/2019 9:15	Blank	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.004	0.01
3/11/2019 9:15	Blank	Nutrients	Color (true)	2.5 U	PCU	2.5	6
3/11/2019 9:15	Blank	Nutrients	Sulfate	0.20 U	mg SO4/L	0.2	0.6
3/11/2019 9:15	Blank	Nutrients	Ammonia-N	0.002 U	mg N/L	0.002	0.005
3/11/2019 9:15	Blank	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.08	0.2
3/11/2019 9:15	Blank	Overflow	HEM	1.4 U	mg/L	1.4	5.1
3/11/2019 9:15	Blank	Pesticides	Parathion Ethyl	0.021 U	ug/L	0.021	0.082
3/11/2019 9:15	Blank	Pesticides	Disulfoton	0.0051 U	ug/L	0.0051	0.021
3/11/2019 9:15	Blank	Pesticides	Demeton	0.025 U	ug/L	0.025	0.099
3/11/2019 9:15	Blank	Pesticides	Atrazine Desethyl	0.010 U	ug/L	0.01	0.041
3/11/2019 9:15	Blank	Pesticides	Ibuprofen	0.020 U	ug/L	0.02	0.08
3/11/2019 9:15	Blank	Pesticides	Prometon	0.021 UJ	ug/L	0.021	0.082
3/11/2019 9:15	Blank	Pesticides	Phorate	0.0051 U	ug/L	0.0051	0.021
3/11/2019 9:15	Blank	Pesticides	Atrazine Desisopropyl	0.010 U	ug/L	0.01	0.041
3/11/2019 9:15	Blank	Pesticides	Simazine	0.010 U	ug/L	0.01	0.041
3/11/2019 9:15	Blank	Pesticides	Mevinphos	0.010 U	ug/L	0.01	0.041
3/11/2019 9:15	Blank	Pesticides	Fenamiphos	0.031 UJ	ug/L	0.031	0.12
3/11/2019 9:15	Blank	Pesticides	Norflurazon	0.051 U	ug/L	0.051	0.21
3/11/2019 9:15	Blank	Pesticides	Metolachlor	0.12 U	ug/L	0.12	0.49
3/11/2019 9:15	Blank	Pesticides	Ethoprop	0.0051 U	ug/L	0.0051	0.021
3/11/2019 9:15	Blank	Pesticides	Ethion	0.010 U	ug/L	0.01	0.041

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/11/2019 9:15	Blank	Pesticides	Diazinon	0.010 U	ug/L	0.01	0.041
3/11/2019 9:15	Blank	Pesticides	Butylate	0.051 U	ug/L	0.051	0.21
3/11/2019 9:15	Blank	Pesticides	Azinphos Methyl	0.093 U	ug/L	0.093	0.37
3/11/2019 9:15	Blank	Pesticides	Prometryn	0.021 U	ug/L	0.021	0.082
3/11/2019 9:15	Blank	Pesticides	Parathion Methyl	0.010 U	ug/L	0.01	0.041
3/11/2019 9:15	Blank	Pesticides	Chlorpyrifos Methyl	0.010 U	ug/L	0.01	0.041
3/11/2019 9:15	Blank	Pesticides	Naproxen	0.0080 U	ug/L	0.008	0.032
3/11/2019 9:15	Blank	Pesticides	Sucralose	0.010 U	ug/L	0.01	0.04
3/11/2019 9:15	Blank	Pesticides	Bromacil	0.041 U	ug/L	0.041	0.16
3/11/2019 9:15	Blank	Pesticides	Alachlor	0.062 U	ug/L	0.062	0.25
3/11/2019 9:15	Blank	Pesticides	Naled	0.082 UJ	ug/L	0.082	0.33
3/11/2019 9:15	Blank	Pesticides	Metalaxyl	0.19 U	ug/L	0.19	0.74
3/11/2019 9:15	Blank	Pesticides	Hexazinone	0.072 U	ug/L	0.072	0.29
3/11/2019 9:15	Blank	Pesticides	Chlorpyrifos Ethyl	0.010 U	ug/L	0.01	0.041
3/11/2019 9:15	Blank	Pesticides	Atrazine	0.010 U	ug/L	0.01	0.041
3/11/2019 9:15	Blank	Pesticides	Metribuzin	0.051 U	ug/L	0.051	0.21
3/11/2019 9:15	Blank	Pesticides	Malathion	0.010 U	ug/L	0.01	0.041
3/11/2019 9:15	Blank	Pesticides	Fonofos	0.010 U	ug/L	0.01	0.041
3/11/2019 9:15	Blank	Pesticides	Ametryn	0.010 U	ug/L	0.01	0.041
3/11/2019 9:15	Blank	Priority Organic Pollutants	Acenaphthylene	0.026 U	ug/L	0.026	0.11
3/11/2019 9:15	Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	Butyl benzyl phthalate	1.1 U	ug/L	1.1	4.2
3/11/2019 9:15	Blank	Priority Organic Pollutants	2,4-Dinitrophenol	11 U	ug/L	11	42
3/11/2019 9:15	Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	Pentachlorophenol	0.53 U	ug/L	0.53	2.1
3/11/2019 9:15	Blank	Priority Organic Pollutants	Hexachloroethane	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	Fluoranthene	0.026 U	ug/L	0.026	0.11
3/11/2019 9:15	Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.026 U	ug/L	0.026	0.11
3/11/2019 9:15	Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	Naphthalene	0.11 U	ug/L	0.11	0.42
3/11/2019 9:15	Blank	Priority Organic Pollutants	Isophorone	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.053 U	ug/L	0.053	0.21

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/11/2019 9:15	Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.026 U	ug/L	0.026	0.11
3/11/2019 9:15	Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.2 U	ug/L	3.2	13
3/11/2019 9:15	Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	5.3 U	ug/L	5.3	21
3/11/2019 9:15	Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	2-Chlorophenol	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	2,4-Dimethylphenol	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	Phenol	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	Nitrobenzene	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	Hexachlorobutadiene	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	Hexachlorobenzene	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	Dimethyl phthalate	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	Diethyl phthalate	2.1 U	ug/L	2.1	8.4
3/11/2019 9:15	Blank	Priority Organic Pollutants	Acenaphthene	0.026 U	ug/L	0.026	0.11
3/11/2019 9:15	Blank	Priority Organic Pollutants	2-Nitrophenol	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	Pyrene	0.11 U	ug/L	0.11	0.42
3/11/2019 9:15	Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	0.11 U	ug/L	0.11	0.42
3/11/2019 9:15	Blank	Priority Organic Pollutants	Fluorene	0.026 U	ug/L	0.026	0.11
3/11/2019 9:15	Blank	Priority Organic Pollutants	Di-n-butyl phthalate	2.1 U	ug/L	2.1	8.4
3/11/2019 9:15	Blank	Priority Organic Pollutants	Anthracene	0.026 U	ug/L	0.026	0.11
3/11/2019 9:15	Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	11 U	ug/L	11	42
3/11/2019 9:15	Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.026 U	ug/L	0.026	0.11
3/11/2019 9:15	Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.026 U	ug/L	0.026	0.11
3/11/2019 9:15	Blank	Priority Organic Pollutants	Chrysene	0.026 U	ug/L	0.026	0.11
3/11/2019 9:15	Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.026 U	ug/L	0.026	0.11
3/11/2019 9:15	Blank	Priority Organic Pollutants	4-Nitrophenol	11 U	ug/L	11	42
3/11/2019 9:15	Blank	Priority Organic Pollutants	Phenanthrene	0.11 U	ug/L	0.11	0.42
3/11/2019 9:15	Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1 U	ug/L	2.1	8.4

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
3/11/2019 9:15	Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.053 U	ug/L	0.053	0.21
3/11/2019 9:15	Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.026 U	ug/L	0.026	0.11
3/11/2019 9:15	Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.026 U	ug/L	0.026	0.11
3/11/2019 9:15	Blank	Priority Organic Pollutants	Benzidine	11 U	ug/L	11	42
3/11/2019 9:30	Blank	Priority Organic Pollutants	Vinyl chloride	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	Toluene	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,1,2,2-Tetrachloroethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	Carbon tetrachloride	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,2-Dichlorobenzene	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,3-Dichlorobenzene	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	Bromomethane	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	Chloromethane	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	Bromodichloromethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	Benzene	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,2-Dichloropropane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,2-Dichloroethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,1-Dichloroethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	Tetrachloroethene	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,1,2-Trichloroethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,1,1-Trichloroethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	cis-1,3-Dichloropropene	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,4-Dichlorobenzene	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	Chloroethane	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	Chlorobenzene	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	trans-1,3-Dichloropropene	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	Trichlorofluoromethane	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	Methylene chloride	1.0 U	ug/L	1	4
3/11/2019 9:30	Blank	Priority Organic Pollutants	Chloroform	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	Bromoform	0.50 U	ug/L	0.5	2
3/11/2019 9:30	Blank	Priority Organic Pollutants	1,1-Dichloroethene	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	Trichloroethene	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	Ethylbenzene	0.20 U	ug/L	0.2	0.8
3/11/2019 9:30	Blank	Priority Organic Pollutants	Dibromochloromethane	0.20 U	ug/L	0.2	0.8