

Chemical Analysis Report

NW-DIST-2021-09-28-02

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

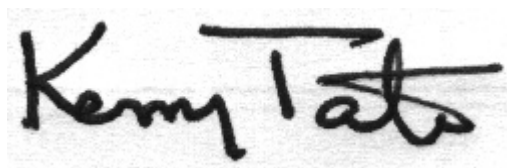
Event Description: **Project Greenshores**
Request ID: **RQ-2021-09-13-02**
Customer: **NW-DIST**
Project ID: **DISTRICT**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 208
Pensacola, FL 32502-5794
Attn: Myranda K Butler

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 22-OCT-2021 10:21

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 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 and/or the analysis did not meet established quality control criteria.
- 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).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Range Marker East of Bayou Texar

Collection Date/Time: 09/27/2021 10:52

Field ID: 1

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2278789	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P404329	
	SM 2120 B-2011	Color (true)	21	A	PCU	P404282	
	SM 2540 D-2011	TSS	4	I	mg/L	P404762	
2278803	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P404474	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28	I	mg N/L	P404452	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.033		mg N/L	P404401	
	EPA 365.1 Rev. 2.0	Total-P	0.01	I	mg P/L	P404582	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Midpoint between Bay Bridge and Muscogee Wharf

Collection Date/Time: 09/27/2021 11:06

Field ID: 2

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2278790	EPA 180.1 Rev. 2.0	Turbidity	2.2	A	NTU	P404330	
	SM 2120 B-2011	Color (true)	19		PCU	P404282	
	SM 2540 D-2011	TSS	6	I	mg/L	P404762	
2278804	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P404474	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.32	I	mg N/L	P404398	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.066		mg N/L	P404402	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P404582	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: East end of Primary Stormdrain

Collection Date/Time: 09/27/2021 11:17

Field ID: 3

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2278791	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P404330	
	SM 2120 B-2011	Color (true)	21	A	PCU	P404283	
	SM 2540 D-2011	TSS	3	I	mg/L	P404762	
2278805	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P404474	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.22	I	mg N/L	P404398	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.021		mg N/L	P404402	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P404582	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: South of Primary Stormdrain

Collection Date/Time: 09/27/2021 11:25

Field ID: 4

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2278792	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P404330	
	SM 2120 B-2011	Color (true)	21		PCU	P404283	
	SM 2540 D-2011	TSS	6	I	mg/L	P404762	
2278806	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P404474	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23	I	mg N/L	P404398	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P404402	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P404582	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: End of Chase Street

Collection Date/Time: 09/27/2021 11:45

Field ID: 5

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2278793	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P404330	
	SM 2120 B-2011	Color (true)	21		PCU	P404283	
	SM 2540 D-2011	TSS	5	I	mg/L	P404762	
2278807	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P404474	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21	I	mg N/L	P404398	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.028		mg N/L	P404402	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P404582	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Midpoint between Muscogee and Hawkshaw

Collection Date/Time: 09/27/2021 11:52

Field ID: 6

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2278794	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P404330	
	SM 2120 B-2011	Color (true)	21		PCU	P404283	
	SM 2540 D-2011	TSS	6	I	mg/L	P404762	
2278808	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P404474	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28	I	mg N/L	P404398	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P404402	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P404582	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Midpoint between Bridge and Port Spoil Pond Collection Date/Time: 09/27/2021 12:00

Field ID: 7

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2278795	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P404330	
	SM 2120 B-2011	Color (true)	21		PCU	P404283	
	SM 2540 D-2011	TSS	5	I	mg/L	P404762	
2278809	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P404478	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.35	I	mg N/L	P404452	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.035		mg N/L	P404402	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P404582	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: West of Primary Stormdrain

Collection Date/Time: 09/27/2021 11:32

Field ID: 8

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2278796	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P404330	
	SM 2120 B-2011	Color (true)	19		PCU	P404283	
	SM 2540 D-2011	TSS	6	I	mg/L	P404762	
2278810	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P404478	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P404452	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.025		mg N/L	P404402	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P404582	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: West of Hawkshaw Lagoon

Collection Date/Time: 09/27/2021 12:33

Field ID: 9

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2278797	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P404330	
	SM 2120 B-2011	Color (true)	21		PCU	P404283	
	SM 2540 D-2011	TSS	5	I	mg/L	P404762	
2278811	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P404478	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.35	I	mg N/L	P404452	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P404402	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P404582	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: South of Bayfront Stormdrain

Collection Date/Time: 09/27/2021 12:26

Field ID: 10

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2278798	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P404330	
	SM 2120 B-2011	Color (true)	22		PCU	P404283	
	SM 2540 D-2011	TSS	6	IA	mg/L	P404762	
2278812	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P404886	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28	I	mg N/L	P404452	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P404402	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P404463	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Seville Marina Inlet

Collection Date/Time: 09/27/2021 12:18

Field ID: 11

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2278799	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P404330	
	SM 2120 B-2011	Color (true)	19		PCU	P404283	
	SM 2540 D-2011	TSS	6	I	mg/L	P404763	
2278813	EPA 350.1 Rev. 2.0	Ammonia-N	0.032		mg N/L	P404886	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P404452	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.25		mg N/L	P404402	
	EPA 365.1 Rev. 2.0	Total-P	0.035		mg P/L	P404463	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: East of Port Spoil Pond

Collection Date/Time: 09/27/2021 12:10

Field ID: 12

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2278800	EPA 180.1 Rev. 2.0	Turbidity	2.1	A	NTU	P404333	
	SM 2120 B-2011	Color (true)	21		PCU	P404283	
	SM 2540 D-2011	TSS	5	IA	mg/L	P404763	
2278814	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P404886	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37	I	mg N/L	P404452	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.033		mg N/L	P404403	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P404463	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Hawkshaw Lagoon at Memorial Bridge

Collection Date/Time: 09/27/2021 12:43

Field ID: 13

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2278801	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P404333	
	SM 2120 B-2011	Color (true)	14		PCU	P404284	
	SM 2540 D-2011	TSS	3	I	mg/L	P404759	
2278815	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P404886	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36	I	mg N/L	P404452	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P404403	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P404463	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: 150 ft South of Hawkshaw Lagoon East Stormdrain

Collection Date/Time: 09/27/2021 12:56

Field ID: 14

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2278802	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P404333	
	SM 2120 B-2011	Color (true)	21		PCU	P404284	
	SM 2540 D-2011	TSS	4	I	mg/L	P404763	
2278816	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P404886	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.31	I	mg N/L	P404452	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.030		mg N/L	P404403	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P404463	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P404329

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P404330

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P404333

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404474

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404478

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404886

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404398

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404452

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404401

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404402

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404403

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404463

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404582

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: SM 2120 B-2011
Batch ID: P404282

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B-2011
Batch ID: P404283

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B-2011
Batch ID: P404284

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2540 D-2011
Batch ID: P404759

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P404762

Component	Result	Code	Units
TSS	3	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P404763

Component	Result	Code	Units
TSS	3	U	mg/L

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404474

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404478

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404886

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404398

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404452

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	103		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404401

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	97.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404402

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404403

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404463

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	106		P	90 - 110

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404582

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	105		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P404282

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.6		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P404283

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P404284

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404474

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278803	Ammonia-N	95.6	96.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404478

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279792	Ammonia-N	97.4	97.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404886

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278813	Ammonia-N	98.4	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404398

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278672	Kjeldahl Nitrogen	98.1	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404452

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278809	Kjeldahl Nitrogen	98.4	96.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404401

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278672	NO2NO3-N	100	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404402

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278804	NO2NO3-N	99.4	99.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404403

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278814	NO2NO3-N	98.9	98.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404463

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278816	Total-P	104	103	P/P	90 - 110

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404582

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278811	Total-P	102	103	P/P	90 - 110

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P404329

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278659	Turbidity	8.88	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P404330

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278790	Turbidity	0.893	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P404333

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278800	Turbidity	0.962	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404474

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278803	Ammonia-N	0.379	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404478

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279792	Ammonia-N	0.196	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404886

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278813	Ammonia-N	0.124	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404398

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278672	Kjeldahl Nitrogen	1.77	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404452

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278809	Kjeldahl Nitrogen	1.75	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278672	NO2NO3-N	0.354	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404402

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278804	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404403

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278814	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404463

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278816	Total-P	1.07	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404582

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278811	Total-P	0.456	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P404282

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278789	Color (true)	3.91	Sample	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P404283

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278791	Color (true)	1.25	Sample	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P404284

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278845	Color (true)	2.75	Sample	P	0 - 20

Quality Assurance Report Precision

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B-2011

Run ID: A108034

Included Lab Sample IDs: 2278789, 2278790, 2278791, 2278792, 2278793, 2278794, 2278795, 2278796, 2278797, 2278798, 2278799, 2278800, 2278801, 2278802

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	85 - 115
Color (true)	103	103	P/P	85 - 115
Color (true)	103	101	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A108050

Included Lab Sample IDs: 2278789, 2278790, 2278791, 2278792, 2278793, 2278794, 2278795, 2278796, 2278797, 2278798, 2278799, 2278800, 2278801, 2278802

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105
Turbidity	101	100	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108076

Included Lab Sample IDs: 2278803, 2278804, 2278805, 2278806, 2278807, 2278808, 2278809, 2278810, 2278811, 2278812, 2278813, 2278814, 2278815, 2278816

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110
NO2NO3-N	102	100	P/P	90 - 110
NO2NO3-N	99.5	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A108109

Included Lab Sample IDs: 2278803, 2278804, 2278805, 2278806, 2278807, 2278808, 2278809, 2278810, 2278811

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.5	97.2	P/P	90 - 110
Ammonia-N	97.8	97.5	P/P	90 - 110
Ammonia-N	98.2	99.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A108126

Included Lab Sample IDs: 2278803, 2278809, 2278810, 2278811, 2278812, 2278813, 2278814, 2278815, 2278816

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.7	98.8	P/P	90 - 110
Kjeldahl Nitrogen	98.8	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108150

Included Lab Sample IDs: 2278812, 2278813, 2278814, 2278815, 2278816

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108173

Included Lab Sample IDs: 2278803, 2278804, 2278805, 2278806, 2278807, 2278808, 2278809, 2278810, 2278811

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	100	P/P	90 - 110
Total-P	101	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A108206

Included Lab Sample IDs: 2278804, 2278805, 2278806, 2278807, 2278808

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A108272

Included Lab Sample IDs: 2278812, 2278813, 2278814, 2278815, 2278816

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.1	98.3	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 180.1 Rev. 2.0	Turbidity				8.88	
	Turbidity				0.893	
	Turbidity				0.962	
EPA 350.1 Rev. 2.0	Ammonia-N	95.4	95.6	96.0		0.379
	Ammonia-N	95.6	97.4	97.2		0.196
	Ammonia-N	97.4	98.4	98.2		0.124
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.8	98.1	100		1.77
	Kjeldahl Nitrogen	103	98.4	96.4		1.75
EPA 353.2 Rev. 2.0	NO2NO3-N	97.5	100	99.8		0.354
	NO2NO3-N	99.0	99.4	99.4		0.0
	NO2NO3-N	98.0	98.9	98.9		0.0
EPA 365.1 Rev. 2.0	Total-P	106	104	103		1.07
	Total-P	105	102	103		0.456
SM 2120 B-2011	Color (true)	99.6			3.91	
	Color (true)	102			1.25	
	Color (true)	102			2.75	

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2278789, 2278790, 2278791, 2278792, 2278793, 2278794, 2278795, 2278796, 2278797, 2278798, 2278799, 2278800, 2278801, 2278802
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2278803, 2278804, 2278805, 2278806, 2278807, 2278808, 2278809, 2278810, 2278811, 2278812, 2278813, 2278814, 2278815, 2278816
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2278803, 2278804, 2278805, 2278806, 2278807, 2278808, 2278809, 2278810, 2278811, 2278812, 2278813, 2278814, 2278815, 2278816
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2278803, 2278804, 2278805, 2278806, 2278807, 2278808, 2278809, 2278810, 2278811, 2278812, 2278813, 2278814, 2278815, 2278816
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2278803, 2278804, 2278805, 2278806, 2278807, 2278808, 2278809, 2278810, 2278811, 2278812, 2278813, 2278814, 2278815, 2278816
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2278789, 2278790, 2278791, 2278792, 2278793, 2278794, 2278795, 2278796, 2278797, 2278798, 2278799, 2278800, 2278801, 2278802
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2278789, 2278790, 2278791, 2278792, 2278793, 2278794, 2278795, 2278796, 2278797, 2278798, 2278799, 2278800, 2278801, 2278802

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	09/28/2021			09/28/2021 16:48	Khloe J Berg	2278789, 2278790, 2278791, 2278792, 2278793, 2278794, 2278795, 2278796, 2278797, 2278798, 2278799, 2278800, 2278801, 2278802
EPA 350.1 Rev. 2.0	09/28/2021			10/01/2021 12:20	Ping Hua	2278803
	09/28/2021			10/01/2021 12:30	Ping Hua	2278804
	09/28/2021			10/01/2021 12:31	Ping Hua	2278805
	09/28/2021			10/01/2021 12:32	Ping Hua	2278806
	09/28/2021			10/01/2021 12:34	Ping Hua	2278807
	09/28/2021			10/01/2021 12:35	Ping Hua	2278808
	09/28/2021			10/01/2021 14:19	Ping Hua	2278809
	09/28/2021			10/01/2021 14:27	Ping Hua	2278810
	09/28/2021			10/01/2021 14:28	Ping Hua	2278811
	09/28/2021			10/08/2021 11:54	Ping Hua	2278813
	09/28/2021			10/08/2021 11:58	Ping Hua	2278812
	09/28/2021			10/08/2021 11:59	Ping Hua	2278814
	09/28/2021			10/08/2021 12:01	Ping Hua	2278815
	09/28/2021			10/08/2021 12:02	Ping Hua	2278816
EPA 351.2 Rev. 2.0	09/28/2021	09/29/2021 11:23	Benjamin T. Nordmann	10/07/2021 12:28	Alexandra J Mattheus	2278804
	09/28/2021	09/29/2021 11:23	Benjamin T. Nordmann	10/07/2021 12:29	Alexandra J Mattheus	2278805
	09/28/2021	09/29/2021 11:23	Benjamin T. Nordmann	10/07/2021 12:31	Alexandra J Mattheus	2278806
	09/28/2021	09/29/2021 11:23	Benjamin T. Nordmann	10/07/2021 12:33	Alexandra J Mattheus	2278807
	09/28/2021	09/29/2021 11:23	Benjamin T. Nordmann	10/07/2021 12:34	Alexandra J Mattheus	2278808
	09/28/2021	10/01/2021 12:37	Benjamin T. Nordmann	10/04/2021 11:35	Alexandra J Mattheus	2278803
	09/28/2021	10/01/2021 12:37	Benjamin T. Nordmann	10/04/2021 11:36	Alexandra J Mattheus	2278809
	09/28/2021	10/01/2021 12:37	Benjamin T. Nordmann	10/04/2021 11:41	Alexandra J Mattheus	2278810
	09/28/2021	10/01/2021 12:37	Benjamin T. Nordmann	10/04/2021 11:43	Alexandra J Mattheus	2278811
	09/28/2021	10/01/2021 12:37	Benjamin T. Nordmann	10/04/2021 11:44	Alexandra J Mattheus	2278812
	09/28/2021	10/01/2021 12:37	Benjamin T. Nordmann	10/04/2021 11:46	Alexandra J Mattheus	2278813
	09/28/2021	10/01/2021 12:37	Benjamin T. Nordmann	10/04/2021 11:51	Alexandra J Mattheus	2278814
	09/28/2021	10/01/2021 12:37	Benjamin T. Nordmann	10/04/2021 11:53	Alexandra J Mattheus	2278815
	09/28/2021	10/01/2021 12:37	Benjamin T. Nordmann	10/04/2021 11:54	Alexandra J Mattheus	2278816
EPA 353.2 Rev. 2.0	09/28/2021			09/30/2021 10:59	Beverly Y. Sanders	2278803
	09/28/2021			09/30/2021 11:06	Beverly Y. Sanders	2278804
	09/28/2021			09/30/2021 11:12	Beverly Y. Sanders	2278805
	09/28/2021			09/30/2021 11:13	Beverly Y. Sanders	2278806
	09/28/2021			09/30/2021 11:14	Beverly Y. Sanders	2278807
	09/28/2021			09/30/2021 11:15	Beverly Y. Sanders	2278808
	09/28/2021			09/30/2021 11:16	Beverly Y. Sanders	2278809
	09/28/2021			09/30/2021 11:18	Beverly Y. Sanders	2278810

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 353.2 Rev. 2.0	09/28/2021			09/30/2021 11:19	Beverly Y. Sanders	2278811
	09/28/2021			09/30/2021 11:20	Beverly Y. Sanders	2278812
	09/28/2021			09/30/2021 11:21	Beverly Y. Sanders	2278813
	09/28/2021			09/30/2021 11:28	Beverly Y. Sanders	2278814
	09/28/2021			09/30/2021 11:34	Beverly Y. Sanders	2278815
	09/28/2021			09/30/2021 11:35	Beverly Y. Sanders	2278816
EPA 365.1 Rev. 2.0	09/28/2021	10/01/2021 14:15	Simonne.V. Calhoun	10/05/2021 12:33	Lipi Saha	2278812
	09/28/2021	10/01/2021 14:15	Simonne.V. Calhoun	10/05/2021 12:34	Lipi Saha	2278813
	09/28/2021	10/01/2021 14:15	Simonne.V. Calhoun	10/05/2021 12:35	Lipi Saha	2278814
	09/28/2021	10/01/2021 14:15	Simonne.V. Calhoun	10/05/2021 12:36	Lipi Saha	2278815
	09/28/2021	10/01/2021 14:15	Simonne.V. Calhoun	10/05/2021 12:37	Lipi Saha	2278816
	09/28/2021	10/05/2021 13:20	Simonne.V. Calhoun	10/06/2021 12:39	Lipi Saha	2278811
	09/28/2021	10/05/2021 13:20	Simonne.V. Calhoun	10/06/2021 12:40	Lipi Saha	2278803
	09/28/2021	10/05/2021 13:20	Simonne.V. Calhoun	10/06/2021 12:48	Lipi Saha	2278804
	09/28/2021	10/05/2021 13:20	Simonne.V. Calhoun	10/06/2021 12:49	Lipi Saha	2278805, 2278806
	09/28/2021	10/05/2021 13:20	Simonne.V. Calhoun	10/06/2021 12:50	Lipi Saha	2278807
	09/28/2021	10/05/2021 13:20	Simonne.V. Calhoun	10/06/2021 12:51	Lipi Saha	2278808
	09/28/2021	10/05/2021 13:20	Simonne.V. Calhoun	10/06/2021 12:52	Lipi Saha	2278809
	09/28/2021	10/05/2021 13:20	Simonne.V. Calhoun	10/06/2021 12:53	Lipi Saha	2278810
SM 2120 B-2011	09/28/2021			09/28/2021 14:56	Benjamin T. Nordmann	2278789
	09/28/2021			09/28/2021 14:57	Benjamin T. Nordmann	2278790
	09/28/2021			09/28/2021 15:01	Benjamin T. Nordmann	2278791, 2278792
	09/28/2021			09/28/2021 15:02	Benjamin T. Nordmann	2278793
	09/28/2021			09/28/2021 15:03	Benjamin T. Nordmann	2278794, 2278795
	09/28/2021			09/28/2021 15:04	Benjamin T. Nordmann	2278796
	09/28/2021			09/28/2021 15:05	Benjamin T. Nordmann	2278797, 2278798
	09/28/2021			09/28/2021 15:06	Benjamin T. Nordmann	2278799, 2278800
SM 2540 D-2011	09/28/2021			09/28/2021 15:10	Benjamin T. Nordmann	2278801, 2278802
	09/28/2021			09/30/2021 15:26	Yijie Li	2278789, 2278790, 2278791, 2278792, 2278793, 2278794, 2278795, 2278796, 2278797, 2278798, 2278799, 2278800, 2278801, 2278802