

Chemical Analysis Report

TLH-ROC-2021-05-19-01

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

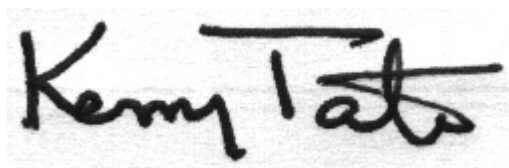
Event Description: **Run 5**
Request ID: **RQ-2021-05-24-22**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Michael Eckles

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: 07-JUN-2021 10:47

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: Fenholloway River ENCOC

Collection Date/Time: 05/19/2021 10:50

Field ID: G1TLHR0120

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2248528	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P398466	
	SM 2320 B-2011	Total Alkalinity	167		mg CaCO3/L	P398762	
	SM 2540 D-2011	TSS	4	I	mg/L	P398608	
	SM 4500 F-C-2011	Fluoride	0.44		mg F/L	P398907	
2248530	EPA 350.1 Rev. 2.0	Ammonia-N	0.070		mg N/L	P398928	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.65		mg N/L	P398616	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.063		mg N/L	P398444	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P398580	
	SM 5310 B-2011	Organic Carbon	27		mg C/L	P398808	
2248532	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.033		mg P/L	P398456	

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: Aucilla River @ Mouth

Collection Date/Time: 05/19/2021 09:35

Field ID: G1TLHR0091

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2248529	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P398466	
	SM 2320 B-2011	Total Alkalinity	115	A	mg CaCO3/L	P398762	
	SM 2540 D-2011	TSS	5	I	mg/L	P398608	
	SM 4500 F-C-2011	Fluoride	0.54		mg F/L	P398907	
2248531	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P398928	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P398717	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.032		mg N/L	P398444	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P398580	
	SM 5310 B-2011	Organic Carbon	7.6		mg C/L	P398808	
2248533	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.015		mg P/L	P398456	

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: P398466

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398928

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398616

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398717

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398444

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398580

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398456

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: SM 2320 B-2011
Batch ID: P398762

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2540 D-2011
Batch ID: P398608

Component	Result	Code	Units
TSS	3	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500 F-C-2011
Batch ID: P398907

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P398808

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398928

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: P398616

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398717

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398444

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	103		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398580

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398456

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.3		P	90 - 110

Reference Method: SM 2320 B-2011
Batch ID: P398762

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P398907

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.8		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P398808

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398928

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2250204	Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398616

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2247832	Kjeldahl Nitrogen	99.5	107	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398717

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248278	Kjeldahl Nitrogen	97.1	96.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398444

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2247831	NO2NO3-N	106	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398580

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2247939	Total-P	97.2	97.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398456

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248533	O-Phosphate-P	96.6	98.9	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P398907

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249294	Fluoride	96.9	98.3	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P398808

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2247022	Organic Carbon	98.5	98.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P398466

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248489	Turbidity	10.7	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398928

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2250204	Ammonia-N	0.375	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398616

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247832	Kjeldahl Nitrogen	5.84	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398717

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248278	Kjeldahl Nitrogen	0.293	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398444

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247831	NO2NO3-N	0.939	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398580

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247939	Total-P	0.487	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398456

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248533	O-Phosphate-P	2.03	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P398762

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248529	Total Alkalinity	1.10	Sample	P	0 - 5.2

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P398907

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249294	Fluoride	0.960	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P398808

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247022	Organic Carbon	0.234	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A105533

Included Lab Sample IDs: 2248530, 2248531

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A105535

Included Lab Sample IDs: 2248532, 2248533

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A105537

Included Lab Sample IDs: 2248528, 2248529

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.0	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A105612

Included Lab Sample IDs: 2248530

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A105619

Included Lab Sample IDs: 2248530

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A105637

Included Lab Sample IDs: 2248531

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

Reference Method: SM 2320 B-2011

Run ID: A105656

Included Lab Sample IDs: 2248528, 2248529

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	98.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A105666

Included Lab Sample IDs: 2248531

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.8	99.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-2011

Run ID: A105673

Included Lab Sample IDs: 2248530, 2248531

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

Reference Method: SM 4500 F-C-2011

Run ID: A105721

Included Lab Sample IDs: 2248528, 2248529

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A105732

Included Lab Sample IDs: 2248530, 2248531

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.1	98.2	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		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					10.7	
EPA 350.1 Rev. 2.0	Ammonia-N	97.4	102	102			0.375
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	99.5	107			5.84
	Kjeldahl Nitrogen	99.0	97.1	96.8			0.293
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	103	106	107			0.939
EPA 365.1 Rev. 2.0	Total-P	105	97.2	97.6			0.487
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.3	96.6	98.9			2.03
SM 2320 B-2011	Total Alkalinity	100				1.10	
SM 4500 F-C-2011	Fluoride	99.8	96.9	98.3			0.960
SM 5310 B-2011	Organic Carbon	101	98.5	98.7			0.234

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2248528, 2248529
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2248530, 2248531
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2248530, 2248531
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2248530, 2248531
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2248530, 2248531
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2248532, 2248533
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2248528, 2248529
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2248528, 2248529
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2248528, 2248529
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2248530, 2248531

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	05/19/2021			05/19/2021 16:40	Yen Ta	2248528, 2248529
EPA 350.1 Rev. 2.0	05/19/2021			05/27/2021 13:45	Ping Hua	2248530
	05/19/2021			05/27/2021 13:46	Ping Hua	2248531
EPA 351.2 Rev. 2.0	05/19/2021	05/21/2021 13:15	Benjamin T. Nordmann	05/24/2021 12:00	Virginia P. Brown	2248530
	05/19/2021	05/25/2021 12:46	Benjamin T. Nordmann	05/26/2021 12:08	Virginia P. Brown	2248531
EPA 353.2 Rev. 2.0	05/19/2021			05/19/2021 15:49	Touraj Touran	2248530
	05/19/2021			05/19/2021 15:50	Touraj Touran	2248531
EPA 365.1 Rev. 2.0	05/19/2021	05/21/2021 13:27	Yen Ta	05/24/2021 10:33	Shengyu Ding	2248530
	05/19/2021	05/21/2021 13:27	Yen Ta	05/25/2021 10:37	Shengyu Ding	2248531
EPA 365.1 Rev. 2.0 dissolved	05/19/2021			05/19/2021 16:17	Blanca Fach	2248533
	05/19/2021			05/19/2021 16:20	Blanca Fach	2248532
SM 2320 B-2011	05/19/2021			05/26/2021 01:01	Patrick M. Roche	2248529
	05/19/2021			05/26/2021 01:16	Patrick M. Roche	2248528
SM 2540 D-2011	05/19/2021			05/20/2021 15:22	Yijie Li	2248528, 2248529
SM 4500 F-C-2011	05/19/2021			05/27/2021 02:00	Dale L. Simmons	2248528
	05/19/2021			05/27/2021 03:05	Dale L. Simmons	2248529
SM 5310 B-2011	05/19/2021			05/25/2021 13:58	Madeline Gruver	2248530
	05/19/2021			05/25/2021 14:52	Madeline Gruver	2248531