

Chemical Analysis Report

TLH-ROC-2022-07-19-03

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

Event Description: **Run 12**
Request ID: **RQ-2022-06-20-24**
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: Liang Lin, Environmental Administrator

Date Certified: 04-AUG-2022 14:36

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

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: Camp Branch @ US90

Collection Date/Time: 07/19/2022 13:00

Field ID: G3TLHR0005

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2342448	DEP SOP: NU-094-1	Color (true)	120		PCU	P416917	
	EPA 180.1 Rev. 2.0	Turbidity	7.6		NTU	P416926	
	EPA 300.0 Rev. 2.1	Chloride	4.7		mg Cl/L	P417208	
		Sulfate	0.81		mg SO4/L	P417211	
	SM 2320 B-2011	Total Alkalinity	26		mg CaCO3/L	P417216	
	SM 2540 C-2011	TDS	60		mg/L	P417298	
	SM 2540 D-2011	TSS	5	I	mg/L	P417287	
	SM 4500-F- C-2011	Fluoride	0.038	I	mg F/L	P417218	
2342449	EPA 350.1 Rev. 2.0	Ammonia-N	0.041		mg N/L	P417322	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57		mg N/L	P417159	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.075		mg N/L	P417225	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P416952	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P417151	

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: DEP SOP: NU-094-1
Batch ID: P416917

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P416926

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417208

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417211

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417322

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P417159

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417225

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P416952

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

Reference Method: SM 2320 B-2011
Batch ID: P417216

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2011
Batch ID: P417298

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P417287

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P417218

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P417151

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P416917

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

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P416926

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	94.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417208

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417211

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417322

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P417159

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.6		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417225

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P416952

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

Reference Method: SM 2320 B-2011
Batch ID: P417216

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.1		P	94 - 106

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P417218

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P417151

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417208

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2342439	Chloride	97.1		P	90 - 110
2342500	Chloride	95.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417211

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2342439	Sulfate	96.7		P	90 - 110
2342500	Sulfate	96.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417322

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2342449	Ammonia-N	97.6	99.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P417159

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2342503	Kjeldahl Nitrogen	97.6	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417225

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2342480	NO2NO3-N	99.0	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P416952

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2342449	Total-P	103	104	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P417218

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2342498	Fluoride	98.1	99.3	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P417151

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2342503	Organic Carbon	101	98.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P416917

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342497	Color (true)	0.179	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P416926

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342499	Turbidity	2.30	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417208

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342439	Chloride	0.618	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417211

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342439	Sulfate	0.438	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417322

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342449	Ammonia-N	1.10	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P417159

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342503	Kjeldahl Nitrogen	0.581	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417225

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342480	NO2NO3-N	0.137	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P416952

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342449	Total-P	0.342	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P417216

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342498	Total Alkalinity	1.27	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2011
Batch ID: P417298

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342220	TDS	2.87	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P417218

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342498	Fluoride	0.967	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P417151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342503	Organic Carbon	1.59	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: DEP SOP: NU-094-1
Run ID: A113616
Included Lab Sample IDs: 2342448

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	103	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A113620
Included Lab Sample IDs: 2342448

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.0	98.0	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A113685
Included Lab Sample IDs: 2342449

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.6	99.0	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A113701
Included Lab Sample IDs: 2342449

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.0	98.4	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A113721
Included Lab Sample IDs: 2342448

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Sulfate	99.6	99.7	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A113724
Included Lab Sample IDs: 2342448

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.6	101	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A113724
Included Lab Sample IDs: 2342448

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A113726
Included Lab Sample IDs: 2342449

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A113748

Included Lab Sample IDs: 2342449

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.7	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A113765

Included Lab Sample IDs: 2342449

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.8	98.5	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
DEP SOP: NU-094-1	Color (true)	102			0.179	
EPA 180.1 Rev. 2.0	Turbidity	94.7			2.30	
EPA 300.0 Rev. 2.1	Chloride	99.0	97.1	95.9	0.618	
	Sulfate	98.4	96.7	96.9	0.438	
EPA 350.1 Rev. 2.0	Ammonia-N	98.2	97.6	99.6		1.10
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.6	97.6	98.5		0.581
EPA 353.2 Rev. 2.0	NO2NO3-N	100	99.0	98.8		0.137
EPA 365.1 Rev. 2.0	Total-P	103	103	104		0.342
SM 2320 B-2011	Total Alkalinity	99.1			1.27	
SM 2540 C-2011	TDS				2.87	
SM 4500-F- C-2011	Fluoride	98.4	98.1	99.3		0.967
SM 5310 B-2011	Organic Carbon	97.0	101	98.1		1.59

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2342448
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2342448
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2342448
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2342448
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2342449
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2342449
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2342449
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2342449
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2342448
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2342448
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2342448
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2342448
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2342449

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	07/19/2022			07/20/2022 14:05	Samantha L Bates	2342448
EPA 180.1 Rev. 2.0	07/19/2022			07/20/2022 13:19	Anna M. Plaviak	2342448
EPA 300.0 Rev. 2.1	07/19/2022			07/26/2022 21:06	Anna M. Plaviak	2342448
EPA 350.1 Rev. 2.0	07/19/2022			07/28/2022 12:00	Judith K. Clark	2342449
EPA 351.2 Rev. 2.0	07/19/2022	07/27/2022 09:57	Simonne.V. Calhoun	07/27/2022 16:04	Samantha L Bates	2342449
EPA 353.2 Rev. 2.0	07/19/2022			07/27/2022 09:56	Beverly Y. Sanders	2342449
EPA 365.1 Rev. 2.0	07/19/2022	07/22/2022 16:03	Adam P Silver	07/25/2022 10:46	James L Waggerby	2342449
SM 2320 B-2011	07/19/2022			07/26/2022 20:53	Dale L. Simmons	2342448
SM 2540 C-2011	07/19/2022			07/22/2022 15:32	Yijie Li	2342448
SM 2540 D-2011	07/19/2022			07/22/2022 15:32	Yijie Li	2342448
SM 4500-F- C-2011	07/19/2022			07/26/2022 20:53	Dale L. Simmons	2342448
SM 5310 B-2011	07/19/2022			07/25/2022 20:11	Khloe J Berg	2342449