

Chemical Analysis Report

TLH-ROC-2019-01-08-02

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-2018-12-31-32**
Customer: **TLH-ROC**
Project ID: **SMP**

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

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 28-JAN-2019 14:13

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 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: G3TLHR0004

Collection Date/Time: 01/08/2019 13:10

Field ID: G3TLHR0004

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2052713	EPA 180.1 Rev. 2.0	Turbidity	8.1	A	NTU	P356989	
	EPA 300.0 Rev. 2.1	Chloride	4.3		mg Cl/L	P357119	
		Sulfate	1.5		mg SO4/L	P357120	
	SM 2120 B	Color (true)	93		PCU	P357036	
	SM 2320 B-97	Total Alkalinity	27		mg CaCO3/L	P357389	
	SM 2540 C-97	TDS	53		mg/L	P357443	
	SM 2540 D-97	TSS	3	I	mg/L	P357571	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P357523	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.057		mg N/L	P357247	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P357342	
2052714	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P357132	
	EPA 365.1 Rev. 2.0	Total-P	0.071		mg P/L	P357165	
	SM 5310 B-00	Organic Carbon	7.9		mg C/L	P357195	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.032		mg P/L	P357033	
	dissolved						

Ref. Method and Comment:

SM 2540 D-97: 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: P356989

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357119

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357120

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357247

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357342

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357132

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357165

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357033

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

Reference Method: SM 2120 B
Batch ID: P357036

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P357389

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P357443

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P357571

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P357523

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P357195

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357119

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357120

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357247

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357342

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357132

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357165

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	107		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357033

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.3		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P357036

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	104		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P357389

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P357523

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P357195

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357119

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2052713	Chloride	97.9	95.2	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357120

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2052713	Sulfate	95.4	95.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357247

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2052700	Ammonia-N	101	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357342

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2052758	Kjeldahl Nitrogen	99.3	93.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357132

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2052699	NO2NO3-N	99.0	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357165

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2052725	Total-P	103	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357033

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2052715	O-Phosphate-P	93.9	95.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P357523

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2052880	Fluoride	101	103	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P357195

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2052186	Organic Carbon	96.8	98.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P356989

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2052713	Turbidity	1.35	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357119

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2052713	Chloride	2.39	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357120

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2052713	Sulfate	0.483	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357247

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2052700	Ammonia-N	0.851	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2052758	Kjeldahl Nitrogen	3.27	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357132

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2052699	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357165

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2052725	Total-P	2.07	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357033

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2052715	O-Phosphate-P	1.34	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
 Batch ID: P357036

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2052755	Color (true)	2.80	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P357389

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2052880	Total Alkalinity	0.752	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
 Batch ID: P357443

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2052776	TDS	3.54	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P357523

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2052880	Fluoride	1.01	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
 Batch ID: P357195

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2052186	Organic Carbon	0.635	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
 Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A88626

Included Lab Sample IDs: 2052713

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A88710

Included Lab Sample IDs: 2052713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A88720

Included Lab Sample IDs: 2052715

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.8	99.0	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A88721

Included Lab Sample IDs: 2052713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	104	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A88763

Included Lab Sample IDs: 2052714

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

Reference Method: SM 5310 B-00

Run ID: A88786

Included Lab Sample IDs: 2052714

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.0	98.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A88802

Included Lab Sample IDs: 2052714

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A88803

Included Lab Sample IDs: 2052714

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A88858
Included Lab Sample IDs: 2052713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A88871
Included Lab Sample IDs: 2052714

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

Reference Method: SM 4500 F-C-97
Run ID: A88903
Included Lab Sample IDs: 2052713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	101	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					1.35	
EPA 300.0 Rev. 2.1	Chloride	99.5	97.9	95.2			2.39
	Sulfate	97.3	95.4	95.9			0.483
EPA 350.1 Rev. 2.0	Ammonia-N	99.3	101	100			0.851
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.2	99.3	93.5			3.27
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	101	99.0	99.0			0.0
EPA 365.1 Rev. 2.0	Total-P	107	103	101			2.07
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.3	93.9	95.6			1.34
SM 2120 B	Color (true)	104				2.80	
SM 2320 B-97	Total Alkalinity	101				0.752	
SM 2540 C-97	TDS					3.54	
SM 4500 F-C-97	Fluoride	98.2	101	103			1.01
SM 5310 B-00	Organic Carbon	98.0	96.8	98.1			0.635

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2052713
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2052713
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2052713
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2052714
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2052714
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2052714
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2052714
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2052715
SM 2120 B / E31780	True Color measured at 450 nm	2052713
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2052713
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2052713
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2052713
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2052713
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2052714

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	01/08/2019			01/08/2019 17:18	Megan Treadwell	2052713
EPA 300.0 Rev. 2.1	01/08/2019			01/09/2019 15:48	Lipi Saha	2052713
EPA 350.1 Rev. 2.0	01/08/2019			01/14/2019 13:08	Ping Hua	2052714
EPA 351.2 Rev. 2.0	01/08/2019	01/16/2019 11:15	Adrian Shelby	01/17/2019 10:24	Joseph Suarez	2052714
EPA 353.2 Rev. 2.0	01/08/2019			01/11/2019 09:16	Beverly Y. Sanders	2052714
EPA 365.1 Rev. 2.0	01/08/2019	01/11/2019 12:50	Sima Feizi	01/14/2019 16:36	Rosalyn Ballman	2052714
EPA 365.1 Rev. 2.0 dissolved	01/08/2019			01/09/2019 15:11	Jhamieka S. Greenwood	2052715
SM 2120 B	01/08/2019			01/09/2019 15:30	Chelsea Hernandez	2052713
SM 2320 B-97	01/08/2019			01/16/2019 10:52	Dale L. Simmons	2052713
SM 2540 C-97	01/08/2019			01/10/2019 14:35	Yijie Li	2052713
SM 2540 D-97	01/08/2019			01/10/2019 14:35	Yijie Li	2052713
SM 4500 F-C-97	01/08/2019			01/18/2019 03:51	Dale L. Simmons	2052713
SM 5310 B-00	01/08/2019			01/11/2019 18:01	Megan Treadwell	2052714