Chemical Analysis Report

TLH-ROC-2019-12-09-01

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

Event Description: **Run 11**
Request ID: **RQ-2019-08-12-35**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
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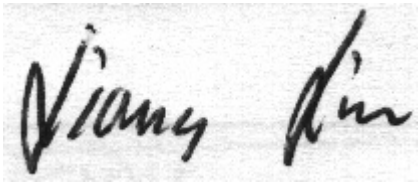
Date Certified: 23-DEC-2019 16:37



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: FORT GADSDEN @ MOUTH **Collection Date/Time: 12/09/2019 11:20**

Field ID: G2TLHR0023 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2141640	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P375623	
	EPA 300.0 Rev. 2.1	Chloride	6.2		mg Cl/L	P375657	
		Sulfate	5.8		mg SO4/L	P375660	
	SM 2120 B	Color (true)	47		PCU	P375533	
	SM 2320 B-97	Total Alkalinity	35		mg CaCO3/L	P375873	
	SM 2540 C-97	TDS	60		mg/L	P376056	
	SM 2540 D-97	TSS	2	U	mg/L	P376061	
	SM 4500 F-C-97	Fluoride	0.052	I	mg F/L	P375877	
2141641	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P375865	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.33		mg N/L	P375601	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.20		mg N/L	P375683	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P375614	
	SM 5310 B-00	Organic Carbon	5.9		mg C/L	P375830	
2141642	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P375524	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P375623

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375657

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375660

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P375865

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375601

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375683

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375614

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375524

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

Reference Method: SM 2120 B
Batch ID: P375533

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P375873

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

Reference Method: SM 2540 C-97
Batch ID: P376056

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P376061

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P375877

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P375830

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: P375657

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375660

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P375865

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375601

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.6		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375683

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375614

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375524

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

Reference Method: SM 2120 B
Batch ID: P375533

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	96.3		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P375873

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P375877

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.0		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P375830

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375657

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2141313	Chloride	106		P	90 - 110
2141479	Chloride	107		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375660

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2141313	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P375865

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2141647	Ammonia-N	100	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375601

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2141647	Kjeldahl Nitrogen	102	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375683

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2141683	NO2NO3-N	96.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375524

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2141642	O-Phosphate-P	93.2	94.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P375877

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2142132	Fluoride	98.6	97.5	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P375830

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2141641	Organic Carbon	98.5	98.5	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P375623

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2141646	Turbidity	2.77	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375657

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2141313	Chloride	0.759	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375660

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2141313	Sulfate	0.938	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P375865

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2141647	Ammonia-N	0.0459	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375601

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2141647	Kjeldahl Nitrogen	3.10	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375683

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2141683	NO2NO3-N	0.232	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375614

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2141353	Total-P	1.78	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375524

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2141642	O-Phosphate-P	1.22	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P375533

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2141674	Color (true)	2.21	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P375873

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2142132	Total Alkalinity	0.167	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P376056

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2141349	TDS	7.33	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P375877

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2142132	Fluoride	0.998	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P375830

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2141641	Organic Carbon	0.0	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A96205
Included Lab Sample IDs: 2141640

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	102	P/P	90 - 110
Sulfate	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A96226
Included Lab Sample IDs: 2141642

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.8	96.1	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A96231
Included Lab Sample IDs: 2141640

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.4	100	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A96254
Included Lab Sample IDs: 2141640

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	101	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A96284
Included Lab Sample IDs: 2141641

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A96285
Included Lab Sample IDs: 2141641

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	99.6	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A96328
Included Lab Sample IDs: 2141641

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.9	95.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A96342
Included Lab Sample IDs: 2141641

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.2	97.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A96351
Included Lab Sample IDs: 2141641

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

Reference Method: SM 2320 B-97
Run ID: A96352
Included Lab Sample IDs: 2141640

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A96352
Included Lab Sample IDs: 2141640

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	100	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	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					2.77	
EPA 300.0 Rev. 2.1	Chloride	105	106	107		0.759	
	Sulfate	101	102			0.938	
EPA 350.1 Rev. 2.0	Ammonia-N	99.4	100	100			0.0459
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.6	102	106			3.10
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	96.5				0.232
EPA 365.1 Rev. 2.0	Total-P	104					1.78
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.5	93.2	94.4			1.22
SM 2120 B	Color (true)	96.3				2.21	
SM 2320 B-97	Total Alkalinity	103				0.167	
SM 2540 C-97	TDS					7.33	
SM 4500 F-C-97	Fluoride	97.0	98.6	97.5			0.998
SM 5310 B-00	Organic Carbon	101	98.5	98.5			0.0

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2141640
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2141640
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2141640
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2141641
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2141641
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2141641
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2141641
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2141642
SM 2120 B / E31780	True Color measured at 450 nm	2141640
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2141640
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2141640
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2141640
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2141640
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2141641

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	12/09/2019			12/10/2019 16:40	Yen Ta	2141640
EPA 300.0 Rev. 2.1	12/09/2019			12/12/2019 08:02	Lipi Saha	2141640
EPA 350.1 Rev. 2.0	12/09/2019			12/13/2019 11:19	Ping Hua	2141641
EPA 351.2 Rev. 2.0	12/09/2019	12/11/2019 12:14	Sima Feizi	12/12/2019 12:52	Jhamieka S. Greenwood	2141641
EPA 353.2 Rev. 2.0	12/09/2019			12/12/2019 10:21	Beverly Y. Sanders	2141641
EPA 365.1 Rev. 2.0	12/09/2019	12/11/2019 10:23	Yen Ta	12/13/2019 16:23	Benjamin T. Nordmann	2141641
EPA 365.1 Rev. 2.0 dissolved	12/09/2019			12/10/2019 13:45	Lipi Saha	2141642
SM 2120 B	12/09/2019			12/10/2019 15:58	Madeline Funaro	2141640
SM 2320 B-97	12/09/2019			12/14/2019 03:02	Dale L. Simmons	2141640
SM 2540 C-97	12/09/2019			12/11/2019 15:32	Yijie Li	2141640
SM 2540 D-97	12/09/2019			12/11/2019 15:32	Yijie Li	2141640
SM 4500 F-C-97	12/09/2019			12/14/2019 03:02	Dale L. Simmons	2141640
SM 5310 B-00	12/09/2019			12/11/2019 16:17	Madeline Funaro	2141641