Chemical Analysis Report

CEN-DIST-2021-03-11-03

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

Event Description: **Lake Emerald / Lake Giles**
Request ID: **RQ-2021-03-08-09**
Customer: **CEN-DIST**
Project ID: **SMP**

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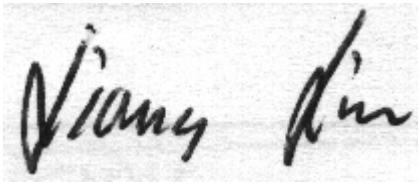
Date Certified: 31-MAR-2021 13:21



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: Lake Giles @ Center **Collection Date/Time: 03/10/2021 11:51**

Field ID: G4CE0193 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2230784	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P394840	
	EPA 300.0 Rev. 2.1	Chloride	25		mg Cl/L	P394953	
		Sulfate	16		mg SO4/L	P394957	
	SM 2120 B-2011	Color (true)	11		PCU	P394851	
	SM 2320 B-2011	Total Alkalinity	13		mg CaCO3/L	P395081	
	SM 2540 C-2011	TDS	81		mg/L	P395367	
	SM 2540 D-2011	TSS	2	I	mg/L	P395373	
	SM 4500 F-C-2011	Fluoride	0.052	I	mg F/L	P395084	
2230785	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P394999	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57		mg N/L	P395142	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P394966	
	EPA 365.1 Rev. 2.0	Total-P	0.035		mg P/L	P395099	
	SM 5310 B-2011	Organic Carbon	4.9		mg C/L	P395275	
2230786	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P394813	

Ref. Method and Comment:
SM 2120 B-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
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: P394840

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394953

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394957

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394999

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395142

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394966

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395099

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P394813

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

Reference Method: SM 2120 B-2011
Batch ID: P394851

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P395081

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

Reference Method: SM 2540 C-2011
Batch ID: P395367

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P395373

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P395084

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P395275

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: P394953

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394957

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394999

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395142

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394966

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395099

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: P394813

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

Reference Method: SM 2120 B-2011
Batch ID: P394851

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

Reference Method: SM 2320 B-2011
Batch ID: P395081

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	93 - 104

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P395084

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.2		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P395275

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394953

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230750	Chloride	104	105	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394957

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230750	Sulfate	102	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394999

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230785	Ammonia-N	96.0	96.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395142

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230713	Kjeldahl Nitrogen	109	96.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394966

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230705	NO2NO3-N	99.0	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395099

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230760	Total-P	102	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P394813

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230761	O-Phosphate-P	97.2	98.8	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P395084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2231391	Fluoride	100	99.0	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P395275

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2230760	Organic Carbon	94.7	95.1	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P394840

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230709	Turbidity	2.83	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394953

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230750	Chloride	0.760	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394957

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230750	Sulfate	0.992	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394999

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230785	Ammonia-N	0.765	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230713	Kjeldahl Nitrogen	6.41	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394966

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230705	NO2NO3-N	0.506	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395099

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230760	Total-P	4.26	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P394813

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230761	O-Phosphate-P	1.63	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-2011
Batch ID: P395081

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2231391	Total Alkalinity	0.245	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P395367

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230712	TDS	4.60	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P395084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2231391	Fluoride	0.946	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P395275

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2230760	Organic Carbon	0.285	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A104013
Included Lab Sample IDs: 2230786

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	98.6	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A104019
Included Lab Sample IDs: 2230784

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

Reference Method: SM 2120 B-2011
Run ID: A104022
Included Lab Sample IDs: 2230784

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A104057
Included Lab Sample IDs: 2230784

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	103	P/P	90 - 110
Sulfate	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A104062
Included Lab Sample IDs: 2230785

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A104072
Included Lab Sample IDs: 2230785

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.4	98.8	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A104103
Included Lab Sample IDs: 2230784

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	98.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A104103
Included Lab Sample IDs: 2230784

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A104154
Included Lab Sample IDs: 2230785

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	99.2	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A104189
Included Lab Sample IDs: 2230785

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.2	94.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A104201
Included Lab Sample IDs: 2230785

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	99.4	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					2.83	
EPA 300.0 Rev. 2.1	Chloride	105	104	105			0.760
	Sulfate	105	102	103			0.992
EPA 350.1 Rev. 2.0	Ammonia-N	99.0	96.0	96.8			0.765
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	109	96.6			6.41
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	99.0	98.5			0.506
EPA 365.1 Rev. 2.0	Total-P	104	102	107			4.26
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	97.2	98.8			1.63
SM 2120 B-2011	Color (true)	101					
SM 2320 B-2011	Total Alkalinity	101				0.245	
SM 2540 C-2011	TDS					4.60	
SM 4500 F-C-2011	Fluoride	99.2	100	99.0			0.946
SM 5310 B-2011	Organic Carbon	94.2	94.7	95.1			0.285

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2230784
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2230784
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2230784
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2230785
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2230785
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2230785
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2230785
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2230786
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2230784
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2230784
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2230784
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2230784
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2230784
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2230785

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	03/11/2021			03/11/2021 16:33	Yen Ta	2230784
EPA 300.0 Rev. 2.1	03/11/2021			03/13/2021 10:09	Lipi Saha	2230784
EPA 350.1 Rev. 2.0	03/11/2021			03/15/2021 18:01	Ping Hua	2230785
EPA 351.2 Rev. 2.0	03/11/2021	03/18/2021 12:47	Benjamin T. Nordmann	03/22/2021 15:31	Julia Storbeck	2230785
EPA 353.2 Rev. 2.0	03/11/2021			03/15/2021 10:10	Beverly Y. Sanders	2230785
EPA 365.1 Rev. 2.0	03/11/2021	03/17/2021 13:18	Yen Ta	03/18/2021 15:08	Shengyu Ding	2230785
EPA 365.1 Rev. 2.0 dissolved	03/11/2021			03/11/2021 14:06	Patrick M. Roche	2230786
SM 2120 B-2011	03/11/2021			03/11/2021 16:08	Benjamin T. Nordmann	2230784
SM 2320 B-2011	03/11/2021			03/17/2021 02:54	Dale L. Simmons	2230784
SM 2540 C-2011	03/11/2021			03/15/2021 15:01	Yijie Li	2230784
SM 2540 D-2011	03/11/2021			03/15/2021 15:01	Yijie Li	2230784
SM 4500 F-C-2011	03/11/2021			03/17/2021 02:54	Dale L. Simmons	2230784
SM 5310 B-2011	03/11/2021			03/20/2021 04:43	Madeline Gruver	2230785