

Chemical Analysis Report

CEN-DIST-2021-05-11-05

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-2021-05-03-10**
Customer: **CEN-DIST**
Project ID: **SMP**

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Date Certified: 27-MAY-2021 13:48



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: 05/10/2021 12:23

Field ID: G4CE0193

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2246586	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P398005	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P398646	
		Sulfate	15		mg SO4/L	P398649	
	SM 2120 B-2011	Color (true)	11		PCU	P398011	
	SM 2320 B-2011	Total Alkalinity	7.4		mg CaCO3/L	P398477	
	SM 2540 C-2011	TDS	89		mg/L	P398440	
	SM 2540 D-2011	TSS	2	I	mg/L	P398333	
	SM 4500 F-C-2011	Fluoride	0.040	I	mg F/L	P398697	
2246587	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P398431	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P398245	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P398124	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P398447	
	SM 5310 B-2011	Organic Carbon	4.7		mg C/L	P398166	
2246588	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P398025	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: 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: P398005

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398646

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398649

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398431

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398245

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398124

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398447

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398025

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

Reference Method: SM 2120 B-2011
Batch ID: P398011

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P398477

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

Reference Method: SM 2540 C-2011
Batch ID: P398440

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P398333

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P398697

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P398166

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: P398646

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398649

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398431

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: P398245

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398124

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398447

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398025

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

Reference Method: SM 2120 B-2011
Batch ID: P398011

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P398477

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.9		P	94 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P398697

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.0		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P398166

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398646

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2246525	Chloride	102		P	90 - 110
2246890	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398649

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2246525	Sulfate	101		P	90 - 110
2246890	Sulfate	107		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398431

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2246726	Ammonia-N	99.0	99.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2246526	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398447

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2246556	Total-P	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398025

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2246655	O-Phosphate-P	102	101	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P398697

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2246889	Fluoride	98.2	98.8	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P398166

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2246354	Organic Carbon	97.0	97.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P398005

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2246484	Turbidity	3.05	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398646

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2246890	Chloride	1.82	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398649

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2246890	Sulfate	1.58	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398431

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2246726	Ammonia-N	0.358	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2246482	Kjeldahl Nitrogen	1.35	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398124

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2246526	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398447

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2246556	Total-P	0.651	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398025

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2246655	O-Phosphate-P	0.494	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
Batch ID: P398011

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2246580	Color (true)	0.418	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P398477

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2246580	Total Alkalinity	0.470	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P398440

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2246524	TDS	5.76	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P398697

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2246889	Fluoride	0.479	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P398166

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2246354	Organic Carbon	0.510	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A105342

Included Lab Sample IDs: 2246586

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105

Reference Method: SM 2120 B-2011

Run ID: A105343

Included Lab Sample IDs: 2246586

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A105353

Included Lab Sample IDs: 2246588

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.7	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A105396

Included Lab Sample IDs: 2246587

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	102	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A105417

Included Lab Sample IDs: 2246587

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.9	98.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A105465

Included Lab Sample IDs: 2246587

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.8	93.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A105529

Included Lab Sample IDs: 2246587

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

Reference Method: SM 2320 B-2011

Run ID: A105548

Included Lab Sample IDs: 2246586

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.2	98.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A105550

Included Lab Sample IDs: 2246586

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Sulfate	99.7	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A105560

Included Lab Sample IDs: 2246587

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	99.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A105626

Included Lab Sample IDs: 2246586

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	99.5	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
EPA 180.1 Rev. 2.0	Turbidity				3.05	
EPA 300.0 Rev. 2.1	Chloride	104	101	102	1.82	
	Sulfate	103	107	101	1.58	
EPA 350.1 Rev. 2.0	Ammonia-N	99.4	99.0	99.4		0.358
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.3				1.35
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	100	100		0.0
EPA 365.1 Rev. 2.0	Total-P	101	102	103		0.651
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	102	101		0.494
SM 2120 B-2011	Color (true)	101			0.418	
SM 2320 B-2011	Total Alkalinity	98.9			0.470	
SM 2540 C-2011	TDS				5.76	
SM 4500 F-C-2011	Fluoride	96.0	98.2	98.8		0.479
SM 5310 B-2011	Organic Carbon	96.5	97.0	97.8		0.510

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2246586
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2246586
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2246586
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2246587
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2246587
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2246587
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2246587
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2246588
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2246586
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2246586
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2246586
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2246586
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2246586
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2246587

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	05/11/2021			05/11/2021 16:10	Yen Ta	2246586
EPA 300.0 Rev. 2.1	05/11/2021			05/21/2021 22:46	Lipi Saha	2246586
EPA 350.1 Rev. 2.0	05/11/2021			05/19/2021 13:39	Roberta Tatti	2246587
EPA 351.2 Rev. 2.0	05/11/2021	05/14/2021 17:30	Benjamin T. Nordmann	05/17/2021 11:18	Virginia P. Brown	2246587
EPA 353.2 Rev. 2.0	05/11/2021			05/13/2021 10:54	Beverly Y. Sanders	2246587
EPA 365.1 Rev. 2.0	05/11/2021	05/19/2021 14:24	Yen Ta	05/20/2021 12:46	Shengyu Ding	2246587
EPA 365.1 Rev. 2.0 dissolved	05/11/2021			05/11/2021 16:17	Blanca Fach	2246588
SM 2120 B-2011	05/11/2021			05/11/2021 16:26	Sarah A Nixon	2246586
SM 2320 B-2011	05/11/2021			05/18/2021 17:48	Dale L. Simmons	2246586
SM 2540 C-2011	05/11/2021			05/14/2021 15:25	Yijie Li	2246586
SM 2540 D-2011	05/11/2021			05/14/2021 15:25	Yijie Li	2246586
SM 4500 F-C-2011	05/11/2021			05/24/2021 19:57	Dale L. Simmons	2246586
SM 5310 B-2011	05/11/2021			05/13/2021 09:19	Madeline Gruver	2246587