

Chemical Analysis Report

CEN-DIST-2021-07-28-02

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-2021-05-17-03**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 23-AUG-2021 10:55

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the "T" and a long horizontal stroke at the end.

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 Emerald @ Center

Collection Date/Time: 07/27/2021 10:35

Field ID: G4CE0204

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2265381	EPA 180.1 Rev. 2.0	Turbidity	6.0		NTU	P401655	
	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P401934	
		Sulfate	11		mg SO4/L	P401935	
	SM 2120 B-2011	Color (true)	27		PCU	P401659	
	SM 2320 B-2011	Total Alkalinity	58		mg CaCO3/L	P401738	
	SM 2540 C-2011	TDS	128	A	mg/L	P402089	
	SM 2540 D-2011	TSS	10		mg/L	P401832	
	SM 4500 F-C-2011	Fluoride	0.096	I	mg F/L	P401740	
2265382	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P402122	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P402523	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P401698	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P401761	
	SM 5310 B-2011	Organic Carbon	8.8		mg C/L	P402250	
2265383	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P401651	

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: EPA 180.1 Rev. 2.0
Batch ID: P401655

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401934

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401935

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P402122

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P402523

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P401698

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P401761

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P401651

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

Reference Method: SM 2120 B-2011
Batch ID: P401659

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P401738

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

Reference Method: SM 2540 C-2011
Batch ID: P402089

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P401832

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P401740

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P402250

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: P401934

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

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P401935

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P402122

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P402523

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P401698

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: P401761

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	109		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P401651

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

Reference Method: SM 2120 B-2011
 Batch ID: P401659

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

Reference Method: SM 2320 B-2011
 Batch ID: P401738

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	94 - 106

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P401740

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P402250

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401934

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265297	Chloride	98.5		P	90 - 110
2265476	Chloride	95.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P401935

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265297	Sulfate	99.5		P	90 - 110
2265476	Sulfate	98.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P402122

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265506	Ammonia-N	100	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P402523

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265365	Kjeldahl Nitrogen	104	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P401698

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265332	NO2NO3-N	99.5	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P401761

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265289	Total-P	108	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P401651

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265333	O-Phosphate-P	99.9	99.9	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P401740

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265297	Fluoride	101	98.6	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P402250

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2265289	Organic Carbon	97.0	97.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P401655

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265263	Turbidity	3.16	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P401934

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265297	Chloride	0.710	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P401935

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265297	Sulfate	1.30	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P402122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265506	Ammonia-N	1.64	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P402523

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265365	Kjeldahl Nitrogen	1.05	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P401698

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265332	NO2NO3-N	0.916	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P401761

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265289	Total-P	0.163	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P401651

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265333	O-Phosphate-P	0.0	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
Batch ID: P401659

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265364	Color (true)	5.30	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P401738

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265297	Total Alkalinity	0.188	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P402089

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265381	TDS	2.33	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P401740

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265297	Fluoride	1.88	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P402250

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2265289	Organic Carbon	0.458	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: A106883

Included Lab Sample IDs: 2265383

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	98.8	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A106884

Included Lab Sample IDs: 2265381

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

Reference Method: SM 2120 B-2011

Run ID: A106885

Included Lab Sample IDs: 2265381

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A106916

Included Lab Sample IDs: 2265382

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

Reference Method: SM 2320 B-2011

Run ID: A106931

Included Lab Sample IDs: 2265381

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	101	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A106931

Included Lab Sample IDs: 2265381

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A107025

Included Lab Sample IDs: 2265381

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	100	P/P	90 - 110
Sulfate	100	99.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A107028

Included Lab Sample IDs: 2265382

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	106	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A107098

Included Lab Sample IDs: 2265382

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.1	97.6	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A107149

Included Lab Sample IDs: 2265382

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	97.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A107302

Included Lab Sample IDs: 2265382

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	105	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				3.16	
EPA 300.0 Rev. 2.1	Chloride	99.6	98.5	95.8	0.710	
	Sulfate	101	99.5	98.0	1.30	
EPA 350.1 Rev. 2.0	Ammonia-N	102	100	98.2		1.64
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	104	106		1.05
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	99.5	98.0		0.916
EPA 365.1 Rev. 2.0	Total-P	109	108	107		0.163
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.4	99.9	99.9		0.0
SM 2120 B-2011	Color (true)	101			5.30	
SM 2320 B-2011	Total Alkalinity	102			0.188	
SM 2540 C-2011	TDS				2.33	
SM 4500 F-C-2011	Fluoride	102	101	98.6		1.88
SM 5310 B-2011	Organic Carbon	97.6	97.0	97.6		0.458

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2265381
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2265381
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2265381
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2265382
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2265382
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2265382
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2265382
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2265383
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2265381
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2265381
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2265381
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2265381
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2265381
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2265382

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	07/28/2021			07/28/2021 16:34	Sarah A Nixon	2265381
EPA 300.0 Rev. 2.1	07/28/2021			08/03/2021 00:43	Lipi Saha	2265381
EPA 350.1 Rev. 2.0	07/28/2021			08/06/2021 13:44	Roberta Tatti	2265382
EPA 351.2 Rev. 2.0	07/28/2021	08/16/2021 13:00	Benjamin T. Nordmann	08/17/2021 09:21	Virginia P. Brown	2265382
EPA 353.2 Rev. 2.0	07/28/2021			07/29/2021 10:24	Beverly Y. Sanders	2265382
EPA 365.1 Rev. 2.0	07/28/2021	07/30/2021 15:31	Simonne.V. Calhoun	08/02/2021 10:03	Shengyu Ding	2265382
EPA 365.1 Rev. 2.0 dissolved	07/28/2021			07/28/2021 15:02	Ping Hua	2265383
SM 2120 B-2011	07/28/2021			07/28/2021 17:03	Benjamin T. Nordmann	2265381
SM 2320 B-2011	07/28/2021			07/29/2021 21:21	Sarah A Nixon	2265381
SM 2540 C-2011	07/28/2021			07/30/2021 15:15	Yijie Li	2265381
SM 2540 D-2011	07/28/2021			07/30/2021 15:15	Yijie Li	2265381
SM 4500 F-C-2011	07/28/2021			07/29/2021 21:21	Sarah A Nixon	2265381
SM 5310 B-2011	07/28/2021			08/10/2021 03:23	Madeline Gruver	2265382