

Chemical Analysis Report

CEN-DIST-2021-11-17-02

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

Event Description: **Lake Alma**
Request ID: **RQ-2021-11-15-55**
Customer: **CEN-DIST**
Project ID: **SMP**

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Date Certified: 07-DEC-2021 11:32



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 Alma NW of Center

Collection Date/Time: 11/16/2021 11:11

Field ID: G2CE0237

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2290137	EPA 180.1 Rev. 2.0	Turbidity	0.45		NTU	P406466	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P406747	
		Sulfate	0.20	U	mg SO4/L	P406749	
	SM 2120 B-2011	Color (true)	150		PCU	P406462	
	SM 2320 B-2011	Total Alkalinity	24		mg CaCO3/L	P406620	
	SM 2540 C-2011	TDS	86		mg/L	P406777	RPD
	SM 2540 D-2011	TSS	2	U	mg/L	P406736	
	SM 4500 F-C-2011	Fluoride	0.039	I	mg F/L	P406622	
2290138	EPA 350.1 Rev. 2.0	Ammonia-N	0.038		mg N/L	P406718	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P406823	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P406614	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P406625	
	SM 5310 B-2011	Organic Carbon	22		mg C/L	P407035	
2290139	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.011		mg P/L	P406451	

Ref. Method and Comment:

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

SM 4500 F-C-2011: 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: P406466

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406747

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406749

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406718

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406823

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406614

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406625

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406451

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

Reference Method: SM 2120 B-2011
Batch ID: P406462

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P406620

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

Reference Method: SM 2540 C-2011
Batch ID: P406777

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P406736

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P406622

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P407035

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: P406747

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	96.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P406749

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P406718

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	91.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P406823

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: P406614

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: P406625

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: P406451

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.9		P	90 - 110

Reference Method: SM 2120 B-2011
 Batch ID: P406462

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

Reference Method: SM 2320 B-2011
 Batch ID: P406620

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.6		P	94 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P406622

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

Reference Method: SM 5310 B-2011
Batch ID: P407035

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406747

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289864	Chloride	96.6		P	90 - 110
2290115	Chloride	95.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406749

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289864	Sulfate	97.1		P	90 - 110
2290115	Sulfate	99.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406718

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289708	Ammonia-N	93.6	94.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406823

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2290117	Kjeldahl Nitrogen	98.9	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406614

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2290118	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406625

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2290117	Total-P	106	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406451

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2290180	O-Phosphate-P	99.0	97.9	P/P	90 - 110

Reference Method: SM 5310 B-2011
Batch ID: P407035

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2290178	Organic Carbon	95.0	95.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P406466

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2290009	Turbidity	4.03	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P406747

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289864	Chloride	0.471	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P406749

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289864	Sulfate	0.307	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P406718

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289708	Ammonia-N	0.350	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P406823

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2290117	Kjeldahl Nitrogen	0.350	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P406614

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2290118	NO2NO3-N	0.460	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P406625

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2290117	Total-P	0.140	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P406451

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2290180	O-Phosphate-P	1.12	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
 Batch ID: P406462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2290116	Color (true)	2.58	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
 Batch ID: P406620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2290141	Total Alkalinity	1.01	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
 Batch ID: P406777

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2290141	TDS	10.0	Sample	F	0 - 10

Reference Method: SM 4500 F-C-2011
 Batch ID: P406622

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2290141	Fluoride	0.0	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
 Batch ID: P407035

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2290178	Organic Carbon	0.492	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: A108949

Included Lab Sample IDs: 2290139

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.5	99.5	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A108950

Included Lab Sample IDs: 2290137

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A108951

Included Lab Sample IDs: 2290137

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	100	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A109021

Included Lab Sample IDs: 2290138

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

Reference Method: SM 2320 B-2011

Run ID: A109022

Included Lab Sample IDs: 2290137

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.6	97.7	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A109022

Included Lab Sample IDs: 2290137

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A109059

Included Lab Sample IDs: 2290138

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	94.0	93.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A109066

Included Lab Sample IDs: 2290138

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	98.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A109104

Included Lab Sample IDs: 2290137

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	100	P/P	90 - 110
Sulfate	99.0	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A109176

Included Lab Sample IDs: 2290138

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.0	98.8	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A109206

Included Lab Sample IDs: 2290138

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.2	97.0	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					4.03	
EPA 300.0 Rev. 2.1	Chloride	96.7	96.6	95.5		0.471	
	Sulfate	97.5	97.1	99.7		0.307	
EPA 350.1 Rev. 2.0	Ammonia-N	91.6	93.6	94.0			0.350
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	98.9	98.5			0.350
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	104	104			0.460
EPA 365.1 Rev. 2.0	Total-P	104	106	106			0.140
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.9	99.0	97.9			1.12
SM 2120 B-2011	Color (true)	101				2.58	
SM 2320 B-2011	Total Alkalinity	99.6				1.01	
SM 2540 C-2011	TDS					10.0	
SM 4500 F-C-2011	Fluoride	101					0.0
SM 5310 B-2011	Organic Carbon	98.6	95.0	95.9			0.492

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2290137
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2290137
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2290137
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2290138
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2290138
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2290138
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2290138
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2290139
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2290137
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2290137
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2290137
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2290137
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2290137
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2290138

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	11/17/2021			11/17/2021 15:13	Khloe J Berg	2290137
EPA 300.0 Rev. 2.1	11/17/2021			11/22/2021 22:39	James L Waggeberby	2290137
EPA 350.1 Rev. 2.0	11/17/2021			11/23/2021 14:23	Roberta Tatti	2290138
EPA 351.2 Rev. 2.0	11/17/2021	11/30/2021 12:32	Benjamin T. Nordmann	12/02/2021 11:58	Alexandra J Mattheus	2290138
EPA 353.2 Rev. 2.0	11/17/2021			11/19/2021 11:05	Beverly Y. Sanders	2290138
EPA 365.1 Rev. 2.0	11/17/2021	11/22/2021 17:50	Simonne.V. Calhoun	11/23/2021 16:10	Sarah A Nixon	2290138
EPA 365.1 Rev. 2.0 dissolved	11/17/2021			11/17/2021 14:41	James L Waggeberby	2290139
SM 2120 B-2011	11/17/2021			11/17/2021 15:54	Benjamin T. Nordmann	2290137
SM 2320 B-2011	11/17/2021			11/18/2021 22:59	Dale L. Simmons	2290137
SM 2540 C-2011	11/17/2021			11/18/2021 15:56	Yijie Li	2290137
SM 2540 D-2011	11/17/2021			11/18/2021 15:56	Yijie Li	2290137
SM 4500 F-C-2011	11/17/2021			11/18/2021 22:59	Dale L. Simmons	2290137
SM 5310 B-2011	11/17/2021			12/01/2021 22:43	Khloe J Berg	2290138