

Chemical Analysis Report

CEN-DIST-2018-11-15-04

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

Event Description: **Lk Ann**
Request ID: **RQ-2018-11-12-41**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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3319 Maguire Blvd., Suite 232
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Certified by: Colin Wright, Program Administrator

Date Certified: 10-DEC-2018 11:40

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular background.

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 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 ANN @ CENTER

Collection Date/Time: 11/14/2018 13:34

Field ID: G2CE0097

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2041837	EPA 180.1 Rev. 2.0	Turbidity	5.8		NTU	P354768	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P355286	
		Sulfate	15		mg SO4/L	P355289	
	SM 2120 B	Color (true)	34	A	PCU	P354777	
	SM 2320 B-97	Total Alkalinity	27		mg CaCO3/L	P355202	RPD
	SM 2540 C-97	TDS	105		mg/L	P355135	
	SM 2540 D-97	TSS	8	I	mg/L	P354860	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P355279	
2041838	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P355067	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P354976	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P355088	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P354986	
	SM 5310 B-00	Organic Carbon	9.0		mg C/L	P354964	
2041839	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P354780	

Ref. Method and Comment:

SM 2540 D-97: 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: P354768

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355286

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355289

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355067

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354976

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355088

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354986

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P354780

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

Reference Method: SM 2120 B
Batch ID: P354777

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P355202

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

Reference Method: SM 2540 C-97
Batch ID: P355135

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P354860

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P355279

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P354964

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: P355286

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355289

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355067

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354976

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355088

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: P354986

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P354780

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

Reference Method: SM 2120 B
Batch ID: P354777

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

Reference Method: SM 2320 B-97
Batch ID: P355202

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	98 - 107

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P355279

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P354964

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355286

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2041732	Chloride	95.0		P	90 - 110
2041998	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355289

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2041732	Sulfate	99.6		P	90 - 110
2041998	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355067

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2041775	Ammonia-N	100	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354976

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042092	Kjeldahl Nitrogen	96.8	96.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355088

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2041792	NO2NO3-N	99.6	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2041683	Total-P	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P354780

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2041874	O-Phosphate-P	94.5	98.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P355279

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2041712	Fluoride	104	104	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P354964

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2041793	Organic Carbon	97.0	92.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P354768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2041732	Turbidity	0.508	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355286

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2041732	Chloride	0.484	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355289

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2041732	Sulfate	0.689	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355067

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2041775	Ammonia-N	1.16	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354976

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042092	Kjeldahl Nitrogen	0.0567	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355088

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2041792	NO2NO3-N	1.77	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2041683	Total-P	0.737	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P354780

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2041874	O-Phosphate-P	3.67	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P354777

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2041837	Color (true)	0.128	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P355202

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2041712	Total Alkalinity	2.84	Sample	F	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P355135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2041971	TDS	2.17	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P355279

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2041712	Fluoride	0.490	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P354964

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2041793	Organic Carbon	2.82	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A87801

Included Lab Sample IDs: 2041837

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A87803

Included Lab Sample IDs: 2041839

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

Reference Method: SM 2120 B

Run ID: A87804

Included Lab Sample IDs: 2041837

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	85 - 115

Reference Method: SM 5310 B-00

Run ID: A87888

Included Lab Sample IDs: 2041838

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.0	94.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A87911

Included Lab Sample IDs: 2041838

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.3	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A87925

Included Lab Sample IDs: 2041838

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A87941

Included Lab Sample IDs: 2041838

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	95.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A87948

Included Lab Sample IDs: 2041838

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A87993

Included Lab Sample IDs: 2041837

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

Reference Method: SM 2320 B-97

Run ID: A87999

Included Lab Sample IDs: 2041837

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.2	99.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A88028

Included Lab Sample IDs: 2041837

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	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		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					0.508	
EPA 300.0 Rev. 2.1	Chloride	99.8	95.0	102		0.484	
	Sulfate	98.8	99.6	101		0.689	
EPA 350.1 Rev. 2.0	Ammonia-N	101	100	98.8			1.16
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	96.8	96.7			0.0567
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	99.6	102			1.77
EPA 365.1 Rev. 2.0	Total-P	105	100	101			0.737
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	94.5	98.2			3.67
SM 2120 B	Color (true)	101				0.128	
SM 2320 B-97	Total Alkalinity	100				2.84	
SM 2540 C-97	TDS					2.17	
SM 4500 F-C-97	Fluoride	98.4	104	104			0.490
SM 5310 B-00	Organic Carbon	93.2	97.0	92.2			2.82

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2041837
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2041837
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2041837
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2041838
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2041838
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2041838
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2041838
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2041839
SM 2120 B / E31780	True Color measured at 450 nm	2041837
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2041837
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2041837
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2041837
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2041837
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2041838

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	11/15/2018			11/15/2018 16:42	Megan Treadwell	2041837
EPA 300.0 Rev. 2.1	11/15/2018			11/29/2018 00:02	Lipi Saha	2041837
EPA 350.1 Rev. 2.0	11/15/2018			11/21/2018 14:48	Adrian Shelby	2041838
EPA 351.2 Rev. 2.0	11/15/2018	11/20/2018 10:20	Adrian Shelby	11/21/2018 09:36	Joseph Suarez	2041838
EPA 353.2 Rev. 2.0	11/15/2018			11/26/2018 11:44	Lauren Bottorf	2041838
EPA 365.1 Rev. 2.0	11/15/2018	11/20/2018 12:35	Sima Feizi	11/21/2018 13:18	Beverly Y. Sanders	2041838
EPA 365.1 Rev. 2.0 dissolved	11/15/2018			11/15/2018 17:13	Jhamieka S. Greenwood	2041839
SM 2120 B	11/15/2018			11/15/2018 17:30	Chelsea Hernandez	2041837
SM 2320 B-97	11/15/2018			11/21/2018 10:35	Dale L. Simmons	2041837
SM 2540 C-97	11/15/2018			11/16/2018 17:06	Yijie Li	2041837
SM 2540 D-97	11/15/2018			11/16/2018 17:06	Yijie Li	2041837
SM 4500 F-C-97	11/15/2018			11/29/2018 05:30	Dale L. Simmons	2041837
SM 5310 B-00	11/15/2018			11/19/2018 19:17	Megan Treadwell	2041838