

Chemical Analysis Report

CEN-DIST-2021-09-09-01

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

Event Description: **Ruth Lake and Roberts Branch**
Request ID: **RQ-2021-09-13-38**
Customer: **CEN-DIST**
Project ID: **SMP**

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Date Certified: 30-SEP-2021 11:51



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: Roberts Branch @ Curryville Rd.

Collection Date/Time: 09/08/2021 14:25

Field ID: G3CE0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2274770	EPA 180.1 Rev. 2.0	Turbidity	50		NTU	P403552	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P403615	
		Sulfate	4.7		mg SO4/L	P403616	
		Color (true)	290	J	PCU	P403555	
	SM 2320 B-2011	Total Alkalinity	7.8		mg CaCO3/L	P403655	
	SM 2540 C-2011	TDS	78		mg/L	P403685	
	SM 2540 D-2011	TSS	71		mg/L	P403829	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P403659	
2274771	EPA 350.1 Rev. 2.0	Ammonia-N	0.14		mg N/L	P403832	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	3.2		mg N/L	P403628	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.039		mg N/L	P403577	
	EPA 365.1 Rev. 2.0	Total-P	0.32		mg P/L	P403671	
	SM 5310 B-2011	Organic Carbon	29		mg C/L	P403748	
2274772	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.091		mg P/L	P403526	

Ref. Method and Comment:

SM 2120 B-2011: The result may be biased high because of matrix interference.

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: P403552

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P403615

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P403616

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403832

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403628

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403577

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403671

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403526

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

Reference Method: SM 2120 B-2011
Batch ID: P403555

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P403655

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

Reference Method: SM 2540 C-2011
Batch ID: P403685

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P403829

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P403659

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P403748

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: P403615

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P403616

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403832

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: P403628

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403577

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: P403671

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: P403526

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

Reference Method: SM 2120 B-2011
Batch ID: P403555

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

Reference Method: SM 2320 B-2011
Batch ID: P403655

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	94 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P403659

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P403748

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P403615

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2274153	Chloride	98.4		P	90 - 110
2274983	Chloride	99.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P403616

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2274153	Sulfate	96.2		P	90 - 110
2274983	Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403832

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2275266	Ammonia-N	98.6	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403628

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2274943	Kjeldahl Nitrogen	90.2	97.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403577

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2274605	NO2NO3-N	100	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403671

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2274984	Total-P	107	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403526

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2274982	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P403659

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2274983	Fluoride	99.6	99.1	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P403748

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2275250	Organic Carbon	101		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P403552

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2274621	Turbidity	4.04	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P403615

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2274153	Chloride	0.635	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P403616

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2274153	Sulfate	1.30	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403832

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2275266	Ammonia-N	0.717	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403628

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2274943	Kjeldahl Nitrogen	4.06	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403577

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2274605	NO2NO3-N	0.501	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403671

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2274984	Total-P	0.905	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403526

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2274982	O-Phosphate-P	0.394	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
Batch ID: P403555

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2274983	Color (true)	0.245	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P403655

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2274983	Total Alkalinity	0.789	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P403685

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2274983	TDS	1.16	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P403659

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2274983	Fluoride	0.479	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P403748

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2275250	Organic Carbon	0.413	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A107690

Included Lab Sample IDs: 2274770

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.6	100	P/P	90 - 110
Sulfate	99.3	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A107698

Included Lab Sample IDs: 2274772

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A107705

Included Lab Sample IDs: 2274770

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

Reference Method: SM 2120 B-2011

Run ID: A107709

Included Lab Sample IDs: 2274770

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	101	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A107728

Included Lab Sample IDs: 2274771

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

Reference Method: SM 2320 B-2011

Run ID: A107760

Included Lab Sample IDs: 2274770

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A107760

Included Lab Sample IDs: 2274770

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A107775

Included Lab Sample IDs: 2274771

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	104	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-2011

Run ID: A107799

Included Lab Sample IDs: 2274771

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	96.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A107802

Included Lab Sample IDs: 2274771

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A107830

Included Lab Sample IDs: 2274771

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	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				4.04	
EPA 300.0 Rev. 2.1	Chloride	98.1	99.4	98.4	0.635	
	Sulfate	96.6	96.2	98.2	1.30	
EPA 350.1 Rev. 2.0	Ammonia-N	101	98.6	97.8		0.717
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.5	90.2	97.6		4.06
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.0	100	99.5		0.501
EPA 365.1 Rev. 2.0	Total-P	105	107	106		0.905
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	101	102		0.394
SM 2120 B-2011	Color (true)	101			0.245	
SM 2320 B-2011	Total Alkalinity	104			0.789	
SM 2540 C-2011	TDS				1.16	
SM 4500 F-C-2011	Fluoride	100	99.6	99.1		0.479
SM 5310 B-2011	Organic Carbon	95.4	101			0.413

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2274770
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2274770
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2274770
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2274771
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2274771
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2274771
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2274771
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2274772
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2274770
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2274770
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2274770
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2274770
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2274770
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2274771

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	09/09/2021			09/09/2021 15:33	Sarah A Nixon	2274770
EPA 300.0 Rev. 2.1	09/09/2021			09/10/2021 14:04	Roberta Tatti	2274770
EPA 350.1 Rev. 2.0	09/09/2021			09/16/2021 13:14	Ping Hua	2274771
EPA 351.2 Rev. 2.0	09/09/2021	09/13/2021 12:00	Benjamin T. Nordmann	09/14/2021 11:34	Alexandra J Mattheus	2274771
EPA 353.2 Rev. 2.0	09/09/2021			09/10/2021 10:30	Beverly Y. Sanders	2274771
EPA 365.1 Rev. 2.0	09/09/2021	09/14/2021 14:32	Simonne.V. Calhoun	09/15/2021 11:34	Shengyu Ding	2274771
EPA 365.1 Rev. 2.0 dissolved	09/09/2021			09/09/2021 12:58	James L Waggerby	2274772
SM 2120 B-2011	09/09/2021			09/09/2021 16:43	Sarah A Nixon	2274770
SM 2320 B-2011	09/09/2021			09/13/2021 23:28	Dale L. Simmons	2274770
SM 2540 C-2011	09/09/2021			09/10/2021 14:25	Simonne.V. Calhoun	2274770
SM 2540 D-2011	09/09/2021			09/10/2021 14:25	Simonne.V. Calhoun	2274770
SM 4500 F-C-2011	09/09/2021			09/13/2021 23:28	Dale L. Simmons	2274770
SM 5310 B-2011	09/09/2021			09/14/2021 22:23	Touraj Touran	2274771