

Chemical Analysis Report

CEN-DIST-2021-06-30-02

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

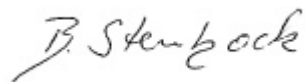
Event Description: **Apopka Spring**
Request ID: **RQ-2021-06-07-11**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Date Certified: 22-JUL-2021 18:14



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 Isabell @ Center

Collection Date/Time: 06/29/2021 11:50

Field ID: G4CE0214

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2258042	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P400433	
	EPA 300.0 Rev. 2.1	Chloride	24	A	mg Cl/L	P400719	
		Sulfate	27	A	mg SO4/L	P400721	
	SM 2120 B-2011	Color (true)	44		PCU	P400424	
	SM 2320 B-2011	Total Alkalinity	6.7		mg CaCO3/L	P400781	
	SM 2540 C-2011	TDS	140	A	mg/L	P400765	
	SM 2540 D-2011	TSS	2	IA	mg/L	P400673	
	SM 4500 F-C-2011	Fluoride	0.11		mg F/L	P400785	
2258043	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P400741	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.85		mg N/L	P400589	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P400445	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P400657	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P400822	
2258044	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P400410	

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: P400433

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400719

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400721

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400741

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400589

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400445

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400657

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P400410

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

Reference Method: SM 2120 B-2011
Batch ID: P400424

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P400781

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

Reference Method: SM 2540 C-2011
Batch ID: P400765

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P400673

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P400785

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P400822

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: P400719

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400721

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400741

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	92.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400589

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400445

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400657

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: P400410

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

Reference Method: SM 2120 B-2011
Batch ID: P400424

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.2		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P400781

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	94 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P400785

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

Reference Method: SM 5310 B-2011
Batch ID: P400822

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400719

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2258042	Chloride	97.4		P	90 - 110
2258179	Chloride	98.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400721

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2258042	Sulfate	95.6		P	90 - 110
2258179	Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400741

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2258180	Ammonia-N	96.4	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400589

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2258005	Kjeldahl Nitrogen	103	99.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400445

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2258043	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400657

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2258007	Total-P	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P400410

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2258067	O-Phosphate-P	101	100	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P400785

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2259724	Fluoride	97.2	98.4	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P400822

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2258043	Organic Carbon	100	99.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P400433

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2258003	Turbidity	6.90	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400719

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2258042	Chloride	0.430	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400721

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2258042	Sulfate	0.389	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400741

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2258180	Ammonia-N	0.367	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400589

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2258005	Kjeldahl Nitrogen	1.83	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400445

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2258043	NO2NO3-N	0.489	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400657

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2258007	Total-P	1.29	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P400410

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2258067	O-Phosphate-P	0.166	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
Batch ID: P400424

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2258002	Color (true)	2.24	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P400781

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2259724	Total Alkalinity	0.135	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P400765

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2258042	TDS	5.71	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P400785

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2259724	Fluoride	0.972	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P400822

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2258043	Organic Carbon	0.401	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: A106369

Included Lab Sample IDs: 2258044

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.3	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A106379

Included Lab Sample IDs: 2258042

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	99.7	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A106383

Included Lab Sample IDs: 2258042

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.0	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A106386

Included Lab Sample IDs: 2258043

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A106481

Included Lab Sample IDs: 2258042

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.2	98.7	P/P	90 - 110
Sulfate	99.1	98.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A106531

Included Lab Sample IDs: 2258043

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.7	96.2	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A106546

Included Lab Sample IDs: 2258042

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: A106546

Included Lab Sample IDs: 2258042

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A106557

Included Lab Sample IDs: 2258043

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.8	97.2	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A106565

Included Lab Sample IDs: 2258043

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.6	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A106580

Included Lab Sample IDs: 2258043

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.0	101	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				6.90	
EPA 300.0 Rev. 2.1	Chloride	99.5	97.4	98.4	0.430	
	Sulfate	99.4	95.6	98.2	0.389	
EPA 350.1 Rev. 2.0	Ammonia-N	92.2	96.4	97.0		0.367
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	103	99.6		1.83
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	101	102	102		0.489
EPA 365.1 Rev. 2.0	Total-P	105	102	104		1.29
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	101	100		0.166
SM 2120 B-2011	Color (true)	98.2			2.24	
SM 2320 B-2011	Total Alkalinity	103			0.135	
SM 2540 C-2011	TDS				5.71	
SM 4500 F-C-2011	Fluoride	100	97.2	98.4		0.972
SM 5310 B-2011	Organic Carbon	98.5	100	99.8		0.401

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2258042
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2258042
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2258042
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2258043
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2258043
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2258043
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2258043
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2258044
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2258042
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2258042
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2258042
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2258042
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2258042
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2258043

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	06/30/2021			06/30/2021 16:33	Sarah A Nixon	2258042
EPA 300.0 Rev. 2.1	06/30/2021			07/08/2021 15:40	Lipi Saha	2258042
EPA 350.1 Rev. 2.0	06/30/2021			07/09/2021 12:54	Roberta Tatti	2258043
EPA 351.2 Rev. 2.0	06/30/2021	07/06/2021 14:20	Benjamin T. Nordmann	07/13/2021 13:10	Letuzia M De Oliveira	2258043
EPA 353.2 Rev. 2.0	06/30/2021			07/01/2021 09:38	Beverly Y. Sanders	2258043
EPA 365.1 Rev. 2.0	06/30/2021	07/08/2021 08:43	Shengyu Ding	07/09/2021 15:06	Shengyu Ding	2258043
EPA 365.1 Rev. 2.0 dissolved	06/30/2021			06/30/2021 14:11	Ping Hua	2258044
SM 2120 B-2011	06/30/2021			06/30/2021 17:19	Sarah A Nixon	2258042
SM 2320 B-2011	06/30/2021			07/10/2021 02:35	Dale L. Simmons	2258042
SM 2540 C-2011	06/30/2021			07/01/2021 15:22	Yijie Li	2258042
SM 2540 D-2011	06/30/2021			07/01/2021 15:22	Yijie Li	2258042
SM 4500 F-C-2011	06/30/2021			07/10/2021 02:35	Dale L. Simmons	2258042
SM 5310 B-2011	06/30/2021			07/09/2021 18:50	Madeline Gruver	2258043