

Chemical Analysis Report

CEN-DIST-2023-05-25-01

Florida DEP Laboratory
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DOH Accreditation E31780

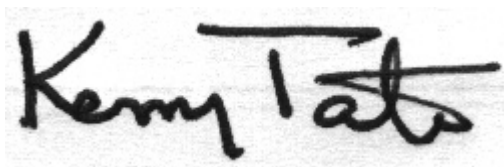
Event Description: **Citrus Blue Spring**
Request ID: **RQ-2023-05-08-30**
Customer: **CEN-DIST**
Project ID: **SMP**

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

Date Certified: 12-JUN-2023 10:35

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line extending from the end of the name.

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: CITRUS BLUE SPRING

Collection Date/Time: 05/24/2023 11:30

Field ID: G4CE0231

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2412791	DEP SOP: NU-094-1	Color (true)	2.5	U	PCU	P430429	
	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P430426	
	EPA 300.0 Rev. 2.1	Chloride	7.8	A	mg Cl/L	P430619	
		Sulfate	21	A	mg SO4/L	P430621	
	SM 2320 B-2011	Total Alkalinity	147	A	mg CaCO3/L	P430654	
	SM 2540 C-2015	TDS	205		mg/L	P430773	
	SM 2540 D-2015	TSS	2	U	mg/L	P430568	
	SM 4500-F- C-2011	Fluoride	0.053	I	mg F/L	P430664	
2412792	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P430811	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20	I	mg N/L	P430667	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.0		mg N/L	P430805	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P430543	
	SM 5310 B-2011	Organic Carbon	0.51	I	mg C/L	P430578	

Quality Assurance Report

Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P430429

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P430426

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430619

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430621

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430811

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430667

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430805

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P430543

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

Reference Method: SM 2320 B-2011
Batch ID: P430654

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2015
Batch ID: P430773

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P430568

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P430664

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P430578

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P430429

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P430426

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	98.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430619

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430621

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430811

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430667

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430805

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P430543

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

Reference Method: SM 2320 B-2011
Batch ID: P430654

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	95.1		P	92 - 105

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2540 C-2015
Batch ID: P430773

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	98.3		P	90 - 110

Reference Method: SM 2540 D-2015
Batch ID: P430568

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	93.3		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P430664

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

Reference Method: SM 5310 B-2011
Batch ID: P430578

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430619

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2412791	Chloride	100		P	90 - 110
2412930	Chloride	96.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430621

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2412791	Sulfate	96.2		P	90 - 110
2412930	Sulfate	95.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430811

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2412711	Ammonia-N	95.6	97.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430667

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2413224	Kjeldahl Nitrogen	105	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430805

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2412929	NO2NO3-N	97.0	97.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P430543

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2412713	Total-P	103	105	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P430664

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2412791	Fluoride	103	101	P/P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P430578

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2412585	Organic Carbon	95.9	99.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P430429

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412750	Color (true)	3.53	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P430426

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412654	Turbidity	13.3	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412791	Chloride	2.19	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412791	Sulfate	2.32	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430811

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412711	Ammonia-N	1.42	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430667

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2413224	Kjeldahl Nitrogen	4.32	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430805

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412929	NO2NO3-N	0.160	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P430543

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412713	Total-P	2.09	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P430654

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412791	Total Alkalinity	2.29	Sample	P	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P430773

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412653	TDS	1.32	Sample	P	0 - 10

Reference Method: SM 2540 D-2015
Batch ID: P430568

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412653	TSS	4.71	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P430664

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412791	Fluoride	1.52	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2011
Batch ID: P430578

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412585	Organic Carbon	2.91	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A119415
Included Lab Sample IDs: 2412791

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

Reference Method: DEP SOP: NU-094-1
Run ID: A119416
Included Lab Sample IDs: 2412791

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.9	99.3	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A119479
Included Lab Sample IDs: 2412792

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.1	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A119491
Included Lab Sample IDs: 2412792

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	98.2	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A119496
Included Lab Sample IDs: 2412791

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	98.5	P/P	90 - 110
Sulfate	98.5	97.1	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A119510
Included Lab Sample IDs: 2412791

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.3	95.2	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A119510
Included Lab Sample IDs: 2412791

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A119573
Included Lab Sample IDs: 2412792

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	107	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A119575

Included Lab Sample IDs: 2412792

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	105	106	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A119578

Included Lab Sample IDs: 2412792

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.9	98.7	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	SMP	MS
DEP SOP: NU-094-1	Color (true)	100				3.53	
EPA 180.1 Rev. 2.0	Turbidity	98.9				13.3	
EPA 300.0 Rev. 2.1	Chloride	100	100	96.3		2.19	
	Sulfate	98.2	96.2	95.5		2.32	
EPA 350.1 Rev. 2.0	Ammonia-N	98.0	95.6	97.2			1.42
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	105	100			4.32
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	104	97.0	97.2			0.160
EPA 365.1 Rev. 2.0	Total-P	102	103	105			2.09
SM 2320 B-2011	Total Alkalinity	95.1				2.29	
SM 2540 C-2015	TDS	98.3				1.32	
SM 2540 D-2015	TSS	93.3				4.71	
SM 4500-F- C-2011	Fluoride	102	103	101			1.52
SM 5310 B-2011	Organic Carbon	97.0	95.9	99.3			2.91

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2412791
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2412791
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2412791
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2412791
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2412792
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2412792
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2412792
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2412792
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2412791
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2412791
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2412791
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2412791
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2412792

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	05/25/2023			05/25/2023 15:00	Chandler E Cox	2412791
EPA 180.1 Rev. 2.0	05/25/2023			05/25/2023 14:13	Alexis Price	2412791
EPA 300.0 Rev. 2.1	05/25/2023			05/31/2023 02:41	James L Waggerby	2412791
EPA 350.1 Rev. 2.0	05/25/2023			06/05/2023 11:14	Khloe J Berg	2412792
EPA 351.2 Rev. 2.0	05/25/2023	06/02/2023 10:00	Dana G. Hughes	06/05/2023 10:26	Samantha L Bates	2412792
EPA 353.2 Rev. 2.0	05/25/2023			06/05/2023 12:00	Beverly Y. Sanders	2412792
EPA 365.1 Rev. 2.0	05/25/2023	05/30/2023 12:20	Alexis Price	05/31/2023 14:32	James L Waggerby	2412792
SM 2320 B-2011	05/25/2023			06/01/2023 02:51	Dale L. Simmons	2412791
SM 2540 C-2015	05/25/2023			05/26/2023 12:49	Dana G. Hughes	2412791
SM 2540 D-2015	05/25/2023			05/26/2023 12:49	Dana G. Hughes	2412791
SM 4500-F- C-2011	05/25/2023			06/01/2023 02:40	Dale L. Simmons	2412791
SM 5310 B-2011	05/25/2023			05/31/2023 04:21	Elise M. Gillis	2412792