

Chemical Analysis Report

CEN-DIST-2023-07-28-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Citrus Blue Spring**
Request ID: **RQ-2023-07-24-14**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Matthew Bearden

For additional information please contact
Colin Wright, Ph.D.
Chris Bowen, B.S.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 16-AUG-2023 09:58

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: 07/27/2023 11:43

Field ID: G4CE0231

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2427479	DEP SOP: NU-094-1	Color (true)	2.5	U	PCU	P433183	
	EPA 180.1 Rev. 2.0	Turbidity	0.15	I	NTU	P433186	
	EPA 300.0 Rev. 2.1	Chloride	7.8		mg Cl/L	P433276	
		Sulfate	21		mg SO4/L	P433279	
	SM 2320 B-2011	Total Alkalinity	145		mg CaCO3/L	P433355	
	SM 2540 C-2015	TDS	201		mg/L	P433608	
	SM 2540 D-2015	TSS	2	U	mg/L	P433521	
	SM 4500-F- C-2011	Fluoride	0.053	I	mg F/L	P433358	
2427480	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P433462	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P433429	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.97		mg N/L	P433244	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P433212	
	SM 5310 B-2011	Organic Carbon	0.63	I	mg C/L	P433376	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries and relative percent difference are unavailable because of analytical difficulties.

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P433183

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P433186

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P433276

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P433279

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433462

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433429

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P433244

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P433212

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

Reference Method: SM 2320 B-2011
Batch ID: P433355

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: P433608

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P433521

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P433358

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P433376

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: P433183

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.0		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P433186

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	99.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P433276

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P433279

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433462

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: P433429

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: P433244

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: P433212

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

Reference Method: SM 2320 B-2011
Batch ID: P433355

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	94.9		P	92 - 105

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2540 C-2015
Batch ID: P433608

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	94.3		P	90 - 110

Reference Method: SM 2540 D-2015
Batch ID: P433521

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	94.9		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P433358

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.9		P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P433376

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: P433276

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427255	Chloride	102		P	90 - 110
2427400	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P433279

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427255	Sulfate	101		P	90 - 110
2427400	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433462

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427480	Ammonia-N	95.4	96.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P433244

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427401	NO2NO3-N	93.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P433212

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427502	Total-P	102	105	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P433358

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427387	Fluoride	101	102	P/P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P433376

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427388	Organic Carbon	92.2	93.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P433183

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427400	Color (true)	4.79	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P433186

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427400	Turbidity	1.52	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P433276

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427255	Chloride	0.445	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P433279

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427255	Sulfate	0.271	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427480	Ammonia-N	0.593	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P433244

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427401	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P433212

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427502	Total-P	1.75	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P433355

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427387	Total Alkalinity	0.00734	Sample	P	0 - 3.9

Quality Assurance Report Precision

Reference Method: SM 2540 C-2015
Batch ID: P433608

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427236	TDS	3.92	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P433358

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427387	Fluoride	0.542	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2011
Batch ID: P433376

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427388	Organic Carbon	1.78	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: DEP SOP: NU-094-1
Run ID: A120710
Included Lab Sample IDs: 2427479

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.6	99.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A120711
Included Lab Sample IDs: 2427479

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A120733
Included Lab Sample IDs: 2427480

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A120763
Included Lab Sample IDs: 2427479

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A120801
Included Lab Sample IDs: 2427480

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	102	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A120803
Included Lab Sample IDs: 2427479

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.8	94.3	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A120803
Included Lab Sample IDs: 2427479

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	102	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A120813
Included Lab Sample IDs: 2427480

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.4	95.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A120846

Included Lab Sample IDs: 2427480

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.7	97.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A120876

Included Lab Sample IDs: 2427480

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.3	102	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
DEP SOP: NU-094-1	Color (true)	98.0			4.79	
EPA 180.1 Rev. 2.0	Turbidity	99.7			1.52	
EPA 300.0 Rev. 2.1	Chloride	102	102	102	0.445	
	Sulfate	103	101	103	0.271	
EPA 350.1 Rev. 2.0	Ammonia-N	98.0	95.4	96.0		0.593
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101				
EPA 353.2 Rev. 2.0	NO2NO3-N	101	93.0			0.0
EPA 365.1 Rev. 2.0	Total-P	106	102	105		1.75
SM 2320 B-2011	Total Alkalinity	94.9			0.0073	
SM 2540 C-2015	TDS	94.3			3.92	
SM 2540 D-2015	TSS	94.9				
SM 4500-F- C-2011	Fluoride	96.9	101	102		0.542
SM 5310 B-2011	Organic Carbon	95.4	92.2	93.9		1.78

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2427479
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2427479
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2427479
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2427479
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2427480
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2427480
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2427480
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2427480
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2427479
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2427479
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2427479
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2427479
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2427480

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	07/28/2023			07/28/2023 14:09	Anna M. Plaviak	2427479
EPA 180.1 Rev. 2.0	07/28/2023			07/28/2023 12:59	Alexis Price	2427479
EPA 300.0 Rev. 2.1	07/28/2023			08/01/2023 07:45	James L Waggeberby	2427479
EPA 350.1 Rev. 2.0	07/28/2023			08/04/2023 12:42	Ping Hua	2427480
EPA 351.2 Rev. 2.0	07/28/2023	08/04/2023 10:07	Dana G. Hughes	08/07/2023 10:55	Samantha L Bates	2427480
EPA 353.2 Rev. 2.0	07/28/2023			07/31/2023 12:00	Beverly Y. Sanders	2427480
EPA 365.1 Rev. 2.0	07/28/2023	07/31/2023 10:30	Alexis Price	08/02/2023 16:49	Simonne.V. Calhoun	2427480
SM 2320 B-2011	07/28/2023			08/02/2023 11:37	Dale L. Simmons	2427479
SM 2540 C-2015	07/28/2023			07/31/2023 14:17	Yijie Li	2427479
SM 2540 D-2015	07/28/2023			07/31/2023 14:17	Yijie Li	2427479
SM 4500-F- C-2011	07/28/2023			08/02/2023 11:37	Dale L. Simmons	2427479
SM 5310 B-2011	07/28/2023			08/03/2023 00:35	Elise M. Gillis	2427480