Chemical Analysis Report

CEN-DIST-2023-01-19-01

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

Event Description: **Citrus Blue Spring**
Request ID: **RQ-2023-01-16-53**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Date Certified: 06-FEB-2023 11:41

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: 01/18/2023 11:39**

Field ID: G4CE0231 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2381693	DEP SOP: NU-094-1	Color (true)	2.5	U	PCU	P424740	
	EPA 180.1 Rev. 2.0	Turbidity	0.35	I	NTU	P424749	
	EPA 300.0 Rev. 2.1	Chloride	7.6		mg Cl/L	P425013	
		Sulfate	19		mg SO4/L	P425175	
	SM 2320 B-2011	Total Alkalinity	152		mg CaCO3/L	P425140	
	SM 2540 C-2015	TDS	206		mg/L	P425210	
	SM 2540 D-2015	TSS	3	I	mg/L	P425038	
	SM 4500-F- C-2011	Fluoride	0.054	I	mg F/L	P425150	
2381694	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P425215	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.32		mg N/L	P425193	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.85		mg N/L	P425029	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P424974	
	SM 5310 B-2011	Organic Carbon	0.85	I	mg C/L	P425084	

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

Quality Assurance Report
Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P424740

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P424749

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P425013

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P425175

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425215

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P425193

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P425029

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424974

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

Reference Method: SM 2320 B-2011
Batch ID: P425140

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: P425210

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P425038

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P425150

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P425084

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: P424740

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P424749

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P425013

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	94.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P425175

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425215

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P425193

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P425029

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424974

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

Reference Method: SM 2320 B-2011
Batch ID: P425140

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	95.9		P	94 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2540 C-2015
Batch ID: P425210

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

Reference Method: SM 2540 D-2015
Batch ID: P425038

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	94.8		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P425150

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P425084

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P425013

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2381222	Chloride	94.5		P	90 - 110
2381223	Chloride	94.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P425175

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2382066	Sulfate	92.2		P	90 - 110
2382155	Sulfate	96.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425215

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2381647	Ammonia-N	99.4	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P425193

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2381650	Kjeldahl Nitrogen	92.4	97.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P425029

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2381685	NO2NO3-N	99.8	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424974

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2381673	Total-P	106	106	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P425150

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2382200	Fluoride	104	101	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P425084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2381999	Organic Carbon	89.0	99.4	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P424740

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2381646	Color (true)	2.78	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P424749

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2381602	Turbidity	3.27	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P425013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2381222	Chloride	0.294	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P425175

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2382066	Sulfate	2.81	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425215

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2381647	Ammonia-N	2.05	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P425193

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2381650	Kjeldahl Nitrogen	3.88	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P425029

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2381685	NO2NO3-N	0.458	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424974

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2381673	Total-P	0.389	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-2011
Batch ID: P425140

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2382200	Total Alkalinity	0.844	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2015
Batch ID: P425210

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2381422	TDS	4.77	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P425150

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2382200	Fluoride	1.50	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P425084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2381999	Organic Carbon	8.58	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: A116984
Included Lab Sample IDs: 2381693

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A116988
Included Lab Sample IDs: 2381693

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A117051
Included Lab Sample IDs: 2381693

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.1	98.2	P/P	90 - 110
Sulfate	98.8	97.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A117114
Included Lab Sample IDs: 2381694

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A117119
Included Lab Sample IDs: 2381694

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	97.2	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A117136
Included Lab Sample IDs: 2381694

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.2	105	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A117157
Included Lab Sample IDs: 2381693

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.1	95.2	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A117157
Included Lab Sample IDs: 2381693

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	103	104	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A117185
Included Lab Sample IDs: 2381694

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.2	98.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A117207
Included Lab Sample IDs: 2381694

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.0	96.3	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)	102				2.78	
EPA 180.1 Rev. 2.0	Turbidity	101				3.27	
EPA 300.0 Rev. 2.1	Chloride	94.1	94.5	94.3		0.294	
	Sulfate	101	92.2	96.8		2.81	
EPA 350.1 Rev. 2.0	Ammonia-N	98.6	99.4	102			2.05
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	92.4	97.0			3.88
EPA 353.2 Rev. 2.0	NO2NO3-N	100	99.8	99.2			0.458
EPA 365.1 Rev. 2.0	Total-P	106	106	106			0.389
SM 2320 B-2011	Total Alkalinity	95.9				0.844	
SM 2540 C-2015	TDS	103				4.77	
SM 2540 D-2015	TSS	94.8					
SM 4500-F- C-2011	Fluoride	101	104	101			1.50
SM 5310 B-2011	Organic Carbon	99.0	89.0	99.4			8.58

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2381693
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2381693
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2381693
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2381693
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2381694
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2381694
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2381694
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2381694
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2381693
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2381693
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2381693
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2381693
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2381694

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	01/19/2023			01/19/2023 13:51	Alexis Price	2381693
EPA 180.1 Rev. 2.0	01/19/2023			01/19/2023 13:16	Chandler E Cox	2381693
EPA 300.0 Rev. 2.1	01/19/2023			01/24/2023 21:08	Anna M. Plaviak	2381693
	01/19/2023			01/27/2023 13:59	Anna M. Plaviak	2381693
EPA 350.1 Rev. 2.0	01/19/2023			01/31/2023 10:43	Judith K. Clark	2381694
EPA 351.2 Rev. 2.0	01/19/2023	01/31/2023 12:30	Simonne.V. Calhoun	02/01/2023 13:17	Judith K. Clark	2381694
EPA 353.2 Rev. 2.0	01/19/2023			01/26/2023 11:22	Beverly Y. Sanders	2381694
EPA 365.1 Rev. 2.0	01/19/2023	01/25/2023 13:55	Adam P Silver	01/26/2023 13:41	James L Waggerby	2381694
SM 2320 B-2011	01/19/2023			01/28/2023 05:55	Dale L. Simmons	2381693
SM 2540 C-2015	01/19/2023			01/23/2023 16:20	Yijie Li	2381693
SM 2540 D-2015	01/19/2023			01/23/2023 16:20	Yijie Li	2381693
SM 4500-F- C-2011	01/19/2023			01/28/2023 05:55	Dale L. Simmons	2381693
SM 5310 B-2011	01/19/2023			01/26/2023 20:51	Khloe J Berg	2381694