Chemical Analysis Report

CEN-DIST-2019-12-17-01

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

Event Description: **SJR Sawgrass + HA**
Request ID: **RQ-2019-12-09-51**
Customer: **CEN-DIST**
Project ID: **SMP**

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B. Steinbock

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: SJR at inlet to Little Lake Sawgrass **Collection Date/Time: 12/16/2019 12:00**

Field ID: G3CE0017 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2144660	EPA 180.1 Rev. 2.0	Turbidity	1.8	A	NTU	P376035	
	EPA 300.0 Rev. 2.1	Chloride	99		mg Cl/L	P376563	
		Sulfate	24		mg SO4/L	P376565	
	SM 2120 B	Color (true)	150		PCU	P376093	
	SM 2320 B-97	Total Alkalinity	95		mg CaCO3/L	P376376	
	SM 2540 C-97	TDS	401	A	mg/L	P376491	
	SM 2540 D-97	TSS	3	I A	mg/L	P376496	
	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P376673	
2144661	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P376351	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P376155	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.025		mg N/L	P376245	
	EPA 365.1 Rev. 2.0	Total-P	0.051		mg P/L	P376085	
	SM 5310 B-00	Organic Carbon	25		mg C/L	P376382	
2144662	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.027		mg P/L	P375996	

Ref. Method and Comment:
SM 2540 D-97: 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: P376035

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P376563

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P376565

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P376351

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P376155

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P376245

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P376085

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375996

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

Reference Method: SM 2120 B
Batch ID: P376093

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P376376

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

Reference Method: SM 2540 C-97
Batch ID: P376491

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P376496

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P376673

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P376382

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: P376563

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P376565

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P376351

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P376155

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	108		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P376245

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: P376085

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375996

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.8		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P376093

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.8		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P376376

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P376673

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P376382

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P376563

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2143451	Chloride	95.8		P	90 - 110
2144973	Chloride	96.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P376565

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2143451	Sulfate	93.2		P	90 - 110
2144973	Sulfate	96.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P376351

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2144676	Ammonia-N	100	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P376155

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2144679	Kjeldahl Nitrogen	108	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P376245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2144676	NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P376085

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2144661	Total-P	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375996

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2144562	O-Phosphate-P	95.0	96.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P376673

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2145099	Fluoride	98.2	98.2	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P376382

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2144813	Organic Carbon	95.8	95.1	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P376035

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2144660	Turbidity	4.47	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P376563

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2143451	Chloride	1.99	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P376565

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2143451	Sulfate	0.202	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P376351

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2144676	Ammonia-N	0.906	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P376155

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2144679	Kjeldahl Nitrogen	0.411	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P376245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2144676	NO2NO3-N	0.222	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P376085

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2144661	Total-P	0.149	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375996

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2144562	O-Phosphate-P	1.15	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P376093

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2144399	Color (true)	12.3	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P376376

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2145099	Total Alkalinity	0.105	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P376491

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2144660	TDS	2.49	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P376673

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2145099	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P376382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2144813	Organic Carbon	0.685	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: A96398
Included Lab Sample IDs: 2144662

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.9	96.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A96416
Included Lab Sample IDs: 2144660

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105

Reference Method: SM 2120 B
Run ID: A96432
Included Lab Sample IDs: 2144660

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.1	101	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A96461
Included Lab Sample IDs: 2144661

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A96503
Included Lab Sample IDs: 2144661

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A96549
Included Lab Sample IDs: 2144661

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A96554
Included Lab Sample IDs: 2144661

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	109	106	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A96559
Included Lab Sample IDs: 2144660

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A96560
Included Lab Sample IDs: 2144661

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.0	95.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A96634
Included Lab Sample IDs: 2144660

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

Reference Method: SM 4500 F-C-97
Run ID: A96714
Included Lab Sample IDs: 2144660

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	102	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	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					4.47	
EPA 300.0 Rev. 2.1	Chloride	98.0	95.8	96.5		1.99	
	Sulfate	97.2	93.2	96.4		0.202	
EPA 350.1 Rev. 2.0	Ammonia-N	100	100	101			0.906
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108	108	108			0.411
EPA 353.2 Rev. 2.0	NO2NO3-N	100	98.5				0.222
EPA 365.1 Rev. 2.0	Total-P	104	104	104			0.149
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.8	95.0	96.1			1.15
SM 2120 B	Color (true)	98.8				12.3	
SM 2320 B-97	Total Alkalinity	102				0.105	
SM 2540 C-97	TDS					2.49	
SM 4500 F-C-97	Fluoride	99.9	98.2	98.2			0.0
SM 5310 B-00	Organic Carbon	99.4	95.8	95.1			0.685

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2144660
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2144660
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2144660
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2144661
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2144661
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2144661
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2144661
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2144662
SM 2120 B / E31780	True Color measured at 450 nm	2144660
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2144660
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2144660
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2144660
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2144660
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2144661

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	12/17/2019			12/17/2019 17:24	Blanca Fach	2144660
EPA 300.0 Rev. 2.1	12/17/2019			12/30/2019 21:01	Irina Carbone	2144660
EPA 350.1 Rev. 2.0	12/17/2019			12/23/2019 13:41	Ping Hua	2144661
EPA 351.2 Rev. 2.0	12/17/2019	12/19/2019 12:05	Sima Feizi	12/20/2019 19:11	Jhamieka S. Greenwood	2144661
EPA 353.2 Rev. 2.0	12/17/2019			12/20/2019 11:59	Beverly Y. Sanders	2144661
EPA 365.1 Rev. 2.0	12/17/2019	12/18/2019 14:20	Lipi Saha	12/19/2019 12:25	Benjamin T. Nordmann	2144661
EPA 365.1 Rev. 2.0 dissolved	12/17/2019			12/17/2019 15:54	Samantha Davila	2144662
SM 2120 B	12/17/2019			12/17/2019 17:42	Madeline Funaro	2144660
SM 2320 B-97	12/17/2019			12/24/2019 13:46	Dale L. Simmons	2144660
SM 2540 C-97	12/17/2019			12/19/2019 14:11	Yijie Li	2144660
SM 2540 D-97	12/17/2019			12/19/2019 14:11	Yijie Li	2144660
SM 4500 F-C-97	12/17/2019			01/07/2020 02:22	Dale L. Simmons	2144660
SM 5310 B-00	12/17/2019			12/23/2019 23:06	Madeline Funaro	2144661