Chemical Analysis Report

CEN-DIST-2020-07-31-01

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

Event Description: **Faulk and John's Lake Outlet**
Request ID: **RQ-2020-07-20-71**
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: Johns Lake @ Conservation area dock **Collection Date/Time: 07/30/2020 10:05**

Field ID: G1CE0111 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2187548	EPA 180.1 Rev. 2.0	Turbidity	5.3		NTU	P385470	
	EPA 300.0 Rev. 2.1	Chloride	32		mg Cl/L	P385888	
		Sulfate	15		mg SO4/L	P385893	
	SM 2120 B-2011	Color (true)	140		PCU	P385454	
	SM 2320 B-2011	Total Alkalinity	45		mg CaCO3/L	P385725	
	SM 2540 C-2011	TDS	160	A	mg/L	P386001	
	SM 2540 D-2011	TSS	5	I A	mg/L	P385872	
	SM 4500 F-C-2011	Fluoride	0.12		mg F/L	P385566	
2187549	EPA 350.1 Rev. 2.0	Ammonia-N	0.028		mg N/L	P385485	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P385669	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.010		mg N/L	P385532	
	EPA 365.1 Rev. 2.0	Total-P	0.078		mg P/L	P385643	
	SM 5310 B-2011	Organic Carbon	18		mg C/L	P385840	
2187550	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.041		mg P/L	P385497	

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: P385470

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385888

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385893

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385485

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385669

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385532

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385643

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385497

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

Reference Method: SM 2120 B-2011
Batch ID: P385454

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P385725

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

Reference Method: SM 2540 C-2011
Batch ID: P386001

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P385872

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P385566

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P385840

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: P385888

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385893

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385485

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: P385669

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385532

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385643

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385497

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.8		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P385454

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P385725

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	93 - 104

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P385566

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P385840

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385888

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187492	Chloride	100		P	90 - 110
2187631	Chloride	99.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385893

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187492	Sulfate	101		P	90 - 110
2187631	Sulfate	99.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385485

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187540	Ammonia-N	97.2	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385669

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187406	Kjeldahl Nitrogen	106	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385532

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187623	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385643

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187541	Total-P	107	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385497

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187536	O-Phosphate-P	102	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P385566

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187648	Fluoride	99.7	99.1	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P385840

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187541	Organic Carbon	101	103	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P385470

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187493	Turbidity	0.766	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385888

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187631	Chloride	0.625	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385893

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187631	Sulfate	0.964	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385485

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187540	Ammonia-N	1.55	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385669

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187406	Kjeldahl Nitrogen	3.15	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385532

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187623	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385643

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187541	Total-P	2.68	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385497

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187536	O-Phosphate-P	0.294	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B-2011
Batch ID: P385454

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187606	Color (true)	2.86	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P385725

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187648	Total Alkalinity	1.26	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P386001

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187548	TDS	1.25	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P385566

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187648	Fluoride	0.519	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P385840

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187541	Organic Carbon	2.05	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2120 B-2011
Run ID: A100204
Included Lab Sample IDs: 2187548

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A100210
Included Lab Sample IDs: 2187548

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A100213
Included Lab Sample IDs: 2187549

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.8	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A100219
Included Lab Sample IDs: 2187550

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.2	98.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A100229
Included Lab Sample IDs: 2187549

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

Reference Method: SM 4500 F-C-2011
Run ID: A100241
Included Lab Sample IDs: 2187548

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

Reference Method: SM 2320 B-2011
Run ID: A100313
Included Lab Sample IDs: 2187548

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A100314
Included Lab Sample IDs: 2187549

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A100324
Included Lab Sample IDs: 2187549

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.4	105	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A100374
Included Lab Sample IDs: 2187549

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A100386
Included Lab Sample IDs: 2187548

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Sulfate	101	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					0.766	
EPA 300.0 Rev. 2.1	Chloride	99.2	99.8	100		0.625	
	Sulfate	101	99.6	101		0.964	
EPA 350.1 Rev. 2.0	Ammonia-N	100	97.2	99.0			1.55
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	109	106	102			3.15
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102			0.0
EPA 365.1 Rev. 2.0	Total-P	102	107	104			2.68
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.8	102	102			0.294
SM 2120 B-2011	Color (true)	101				2.86	
SM 2320 B-2011	Total Alkalinity	103				1.26	
SM 2540 C-2011	TDS					1.25	
SM 4500 F-C-2011	Fluoride	101	99.7	99.1			0.519
SM 5310 B-2011	Organic Carbon	100	101	103			2.05

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2187548
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2187548
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2187548
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2187549
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2187549
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2187549
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2187549
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2187550
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2187548
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2187548
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2187548
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2187548
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2187548
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2187549

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	07/31/2020			07/31/2020 15:33	Blanca Fach	2187548
EPA 300.0 Rev. 2.1	07/31/2020			08/08/2020 01:28	Julia Storbeck	2187548
EPA 350.1 Rev. 2.0	07/31/2020			08/02/2020 13:51	Ping Hua	2187549
EPA 351.2 Rev. 2.0	07/31/2020	08/05/2020 10:42	Sima Feizi	08/06/2020 17:07	Jhamieka S. Greenwood	2187549
EPA 353.2 Rev. 2.0	07/31/2020			08/03/2020 10:34	Beverly Y. Sanders	2187549
EPA 365.1 Rev. 2.0	07/31/2020	08/05/2020 10:35	Lipi Saha	08/06/2020 08:59	Benjamin T. Nordmann	2187549
EPA 365.1 Rev. 2.0 dissolved	07/31/2020			07/31/2020 15:29	Virginia P. Brown	2187550
SM 2120 B-2011	07/31/2020			07/31/2020 15:10	Benjamin T. Nordmann	2187548
SM 2320 B-2011	07/31/2020			08/05/2020 19:45	Dale L. Simmons	2187548
SM 2540 C-2011	07/31/2020			08/05/2020 15:06	Yijie Li	2187548
SM 2540 D-2011	07/31/2020			08/05/2020 15:06	Yijie Li	2187548
SM 4500 F-C-2011	07/31/2020			08/03/2020 19:58	Dale L. Simmons	2187548
SM 5310 B-2011	07/31/2020			08/07/2020 20:20	David Boose	2187549