Chemical Analysis Report

CEN-DIST-2018-06-07-01

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

Event Description: **S Grasshopper**
Request ID: **RQ-2018-06-04-60**
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 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: Grasshopper Lake South @ 325m SE of boat ramp **Collection Date/Time: 06/06/2018 11:10**

Field ID: G2CE0070 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1998514	EPA 180.1 Rev. 2.0	Turbidity	0.70		NTU	P346575	
	EPA 300.0 Rev. 2.1	Chloride	9.1		mg Cl/L	P347244	
		Sulfate	3.0		mg SO4/L	P347246	
	SM 2120 B	Color (true)	76		PCU	P346559	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P347034	RPD
	SM 2540 C-97	TDS	44		mg/L	P346824	
	SM 2540 D-97	TSS	2	U	mg/L	P346711	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P347038	
1998515	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P347105	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P347194	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P346688	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P346973	
	SM 5310 B-00	Organic Carbon	9.9		mg C/L	P346717	
1998516	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P346572	

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: P346575

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347244

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347246

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347105

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347194

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346688

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346973

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346572

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

Reference Method: SM 2120 B
Batch ID: P346559

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P347034

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

Reference Method: SM 2540 C-97
Batch ID: P346824

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P346711

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P347038

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P346717

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: P347244

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347246

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347105

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347194

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346688

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: P346973

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: P346572

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

Reference Method: SM 2320 B-97
Batch ID: P347034

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P347038

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.1		P	91 - 105

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P346717

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.1		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347244

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998514	Chloride	97.3		P	90 - 110
1998726	Chloride	96.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347246

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998514	Sulfate	98.7		P	90 - 110
1998726	Sulfate	97.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347105

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998515	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347194

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998649	Kjeldahl Nitrogen	97.6	94.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346688

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998480	NO2NO3-N	100	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346973

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998532	Total-P	97.0	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346572

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998426	O-Phosphate-P	94.8	94.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P347038

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000390	Fluoride	93.8	93.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P346717

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998244	Organic Carbon	97.8		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P346575

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998524	Turbidity	1.64	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347244

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998726	Chloride	3.95	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347246

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998726	Sulfate	5.07	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347105

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998515	Ammonia-N	0.309	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998649	Kjeldahl Nitrogen	1.98	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346688

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998480	NO2NO3-N	0.881	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346973

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998532	Total-P	2.17	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346572

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998426	O-Phosphate-P	0.0670	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P346559

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998648	Color (true)	7.83	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P347034

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000390	Total Alkalinity	9.16	Sample	F	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P346824

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998529	TDS	1.11	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P347038

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000390	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P346717

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998244	Organic Carbon	0.749	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report
Calibration Verification

Reference Method: SM 2120 B
Run ID: A84433
Included Lab Sample IDs: 1998514

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.7	99.3	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A84438
Included Lab Sample IDs: 1998516

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	98.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A84439
Included Lab Sample IDs: 1998514

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	99.0	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A84493
Included Lab Sample IDs: 1998515

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A84511
Included Lab Sample IDs: 1998515

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	97.0	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A84646
Included Lab Sample IDs: 1998514

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A84646
Included Lab Sample IDs: 1998514

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A84675
Included Lab Sample IDs: 1998515

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84706
Included Lab Sample IDs: 1998515

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A84742
Included Lab Sample IDs: 1998514

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.3	101	P/P	90 - 110
Sulfate	99.9	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A84816
Included Lab Sample IDs: 1998515

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.2	93.2	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					1.64	
EPA 300.0 Rev. 2.1	Chloride	97.8	96.7	97.3		3.95	
	Sulfate	99.2	97.5	98.7		5.07	
EPA 350.1 Rev. 2.0	Ammonia-N	105	101	102			0.309
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.5	97.6	94.4			1.98
EPA 353.2 Rev. 2.0	NO2NO3-N	100	100	99.2			0.881
EPA 365.1 Rev. 2.0	Total-P	102	97.0	99.3			2.17
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.0	94.8	94.9			0.0670
SM 2120 B	Color (true)					7.83	
SM 2320 B-97	Total Alkalinity	100				9.16	
SM 2540 C-97	TDS					1.11	
SM 4500 F-C-97	Fluoride	98.1	93.8	93.8			0.0
SM 5310 B-00	Organic Carbon	98.1	97.8				0.749

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1998514
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1998514
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1998514
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1998515
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1998515
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1998515
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1998515
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1998516
SM 2120 B / E31780	True Color measured at 450 nm	1998514
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1998514
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1998514
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1998514
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1998514
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1998515

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	06/07/2018			06/07/2018 16:41	William L. Brown IV	1998514
EPA 300.0 Rev. 2.1	06/07/2018			06/20/2018 16:04	Irina Carbone	1998514
EPA 350.1 Rev. 2.0	06/07/2018			06/18/2018 09:42	Ping Hua	1998515
EPA 351.2 Rev. 2.0	06/07/2018	06/20/2018 11:00	Adrian Shelby	06/22/2018 13:41	Tanya Welborn	1998515
EPA 353.2 Rev. 2.0	06/07/2018			06/11/2018 14:03	Lauren Bottorf	1998515
EPA 365.1 Rev. 2.0	06/07/2018	06/14/2018 12:39	Sima Feizi	06/19/2018 12:24	Beverly Y. Sanders	1998515
EPA 365.1 Rev. 2.0 dissolved	06/07/2018			06/07/2018 16:42	Megan Treadwell	1998516
SM 2120 B	06/07/2018			06/07/2018 14:59	Julia Storbeck	1998514
SM 2320 B-97	06/07/2018			06/16/2018 10:13	Dale L. Simmons	1998514
SM 2540 C-97	06/07/2018			06/08/2018 15:41	William L. Brown IV	1998514
SM 2540 D-97	06/07/2018			06/08/2018 16:15	William L. Brown IV	1998514
SM 4500 F-C-97	06/07/2018			06/16/2018 10:13	Dale L. Simmons	1998514
SM 5310 B-00	06/07/2018			06/11/2018 18:37	Megan Treadwell	1998515