Chemical Analysis Report

CEN-DIST-2016-01-20-01

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

Event Description: **Lake Marion Creek+HA**
Request ID: **RQ-2016-01-18-27**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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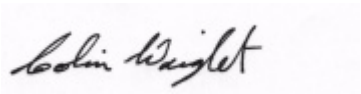
Certified by: Colin Wright, Environmental Administrator

Date Certified: 05-FEB-2016 12:04



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: Lake Marion Creek **Collection Date/Time: 01/19/2016 12:45**

Field ID: G4CE0071_01192016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1763709	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P297296	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P297477	
		Sulfate	6.9		mg SO4/L	P297480	
	SM 2120 B	Color (true)	160		PCU	P297288	
	SM 2320 B-97	Total Alkalinity	35		mg CaCO3/L	P297520	
	SM 2540 C-97	TDS	123		mg/L	P297903	
	SM 2540 D-97	TSS	2	I	mg/L	P297841	
	SM 4500 F-C-97	Fluoride	0.056	I	mg F/L	P297513	
1763710	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P297613	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.94		mg N/L	P297411	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P297488	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P297446	
	SM 5310 B-00	Organic Carbon	20		mg C/L	P297473	
1763711	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P297280	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Matrix spike recovery data for one of two spiked samples is unavailable due to high analyte concentration in the QC sample.
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P297296

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297477

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297480

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297613

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297411

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P297488

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P297446

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P297280

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

Reference Method: SM 2120 B
Batch ID: P297288

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P297520

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

Reference Method: SM 2540 C-97
Batch ID: P297903

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P297841

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P297513

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P297473

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: P297477

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297480

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297613

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297411

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P297488

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	94.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P297446

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P297280

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

Reference Method: SM 2320 B-97
Batch ID: P297520

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

Reference Method: SM 4500 F-C-97
Batch ID: P297513

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.5		P	94 - 108

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P297473

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297477

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1763709	Chloride	101	101	P/P	90 - 110
1763732	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297480

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1763709	Sulfate	96.0	97.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297613

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1763736	Ammonia-N	104	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297411

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1763690	Kjeldahl Nitrogen	98.6	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P297488

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1763722	NO2NO3-N	90.1	92.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P297446

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1763710	Total-P	98.7	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P297280

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1763791	O-Phosphate-P	98.7	99.8	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P297513

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1763980	Fluoride	96.7	97.3	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P297473

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1763646	Organic Carbon	90.4	92.2	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P297296

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763688	Turbidity	3.92	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297477

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763709	Chloride	0.208	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297480

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763709	Sulfate	1.00	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297613

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763736	Ammonia-N	0.703	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297411

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763690	Kjeldahl Nitrogen	0.838	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P297488

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P297488

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763722	NO2NO3-N	1.53	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P297446

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763710	Total-P	1.32	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P297280

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763791	O-Phosphate-P	0.919	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P297288

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763719	Color (true)	0.830	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P297520

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763980	Total Alkalinity	1.29	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P297903

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763799	TDS	4.14	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P297513

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763980	Fluoride	0.490	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P297473

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1763646	Organic Carbon	1.08	Spike	P	0 - 20

Quality Assurance Report
Precision

* 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: EPA 365.1 Rev. 2.0 dissolved
Run ID: A67175
Included Lab Sample IDs: 1763711

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.2	99.6	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A67179
Included Lab Sample IDs: 1763709

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A67181
Included Lab Sample IDs: 1763709

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

Reference Method: SM 5310 B-00
Run ID: A67237
Included Lab Sample IDs: 1763710

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	91.4	93.2	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A67241
Included Lab Sample IDs: 1763709

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Sulfate	102	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A67243
Included Lab Sample IDs: 1763710

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	94.5	92.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A67249
Included Lab Sample IDs: 1763710

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A67252
Included Lab Sample IDs: 1763709

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.0	99.0	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A67254
Included Lab Sample IDs: 1763709

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.5	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A67289
Included Lab Sample IDs: 1763710

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A67296
Included Lab Sample IDs: 1763710

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	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						3.92	
EPA 300.0 Rev. 2.1	Chloride	105	101	101	101			0.208
	Sulfate	100	96.0	97.2				1.00
EPA 350.1 Rev. 2.0	Ammonia-N	104	104	103				0.703
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.2	98.6	99.8				0.838
EPA 353.2 Rev. 2.0	NO2NO3-N	94.0	90.1	92.1				1.53
EPA 365.1 Rev. 2.0	Total-P	96.8	98.7	100				1.32
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.7	99.8				0.919
SM 2120 B	Color (true)						0.830	
SM 2320 B-97	Total Alkalinity	100					1.29	
SM 2540 C-97	TDS						4.14	
SM 4500 F-C-97	Fluoride	96.5	96.7	97.3				0.490
SM 5310 B-00	Organic Carbon	96.2	90.4	92.2				1.08

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1763709
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1763709
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1763709
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1763710
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1763710
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1763710
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1763710
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1763711
SM 2120 B / E31780	True Color measured at 450 nm	1763709
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1763709
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1763709
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1763709
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1763709
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1763710

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	01/20/2016			01/20/2016 15:14	Sima Feizi	1763709
EPA 300.0 Rev. 2.1	01/20/2016			01/22/2016	Ping Hua	1763709
EPA 350.1 Rev. 2.0	01/20/2016			01/26/2016	Diana M. Turner	1763710
EPA 351.2 Rev. 2.0	01/20/2016	01/22/2016	Christopher Armour	01/25/2016	Rochelle Y Jackson	1763710
EPA 353.2 Rev. 2.0	01/20/2016			01/25/2016	Diana M. Turner	1763710
EPA 365.1 Rev. 2.0	01/20/2016	01/22/2016	Christopher Armour	01/27/2016	Lipi Saha	1763710
EPA 365.1 Rev. 2.0 dissolved	01/20/2016			01/20/2016 13:50	Julia Storbeck	1763711
SM 2120 B	01/20/2016			01/20/2016 14:59	Rochelle Y Jackson	1763709
SM 2320 B-97	01/20/2016			01/25/2016	Dale L. Simmons	1763709
SM 2540 C-97	01/20/2016			01/22/2016	Yijie Li	1763709
SM 2540 D-97	01/20/2016			01/22/2016	Yijie Li	1763709
SM 4500 F-C-97	01/20/2016			01/25/2016	Dale L. Simmons	1763709
SM 5310 B-00	01/20/2016			01/22/2016	Sofia Elnemr	1763710