Chemical Analysis Report

SW-DIST-2018-12-05-01

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

Event Description: **Flint Creek - Knights Griffin**
Request ID: **RQ-2018-12-03-67**
Customer: **SW-DIST**
Project ID: **TMDL**

Send Reports to:
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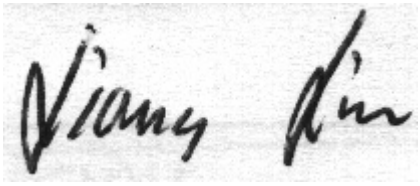
Date Certified: 27-DEC-2018 10:43



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: FLINT CREEK @ KNIGHTS GRIFFIN RD **Collection Date/Time: 12/04/2018 07:46**

Field ID: G2SW0066 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2046484	EPA 180.1 Rev. 2.0	Turbidity	7.7		NTU	P355670	
	EPA 300.0 Rev. 2.1	Chloride	22		mg Cl/L	P355911	
		Sulfate	7.7		mg SO4/L	P355913	
	SM 2120 B	Color (true)	83		PCU	P355665	
	SM 2320 B-97	Total Alkalinity	56		mg CaCO3/L	P356044	
	SM 2540 C-97	TDS	136	A	mg/L	P356113	
	SM 2540 D-97	TSS	12	A	mg/L	P356003	
	SM 4500 F-C-97	Fluoride	0.29		mg F/L	P356047	
2046485	EPA 350.1 Rev. 2.0	Ammonia-N	0.18		mg N/L	P355901	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P355882	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P355837	
	EPA 365.1 Rev. 2.0	Total-P	0.37		mg P/L	P355831	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P355855	
2046486	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.21		mg P/L	P355674	

Ref. Method and Comment:
SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355670

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355911

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355913

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355901

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355882

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355837

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355831

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355674

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

Reference Method: SM 2120 B
Batch ID: P355665

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P356044

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

Reference Method: SM 2540 C-97
Batch ID: P356113

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P356003

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P356047

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P355855

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: P355911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355913

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355901

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355882

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.6		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355837

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355831

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: P355674

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.7		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P355665

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	104		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P356044

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.3		P	98 - 107

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P356047

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.4		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P355855

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045982	Chloride	95.1		P	90 - 110
2046478	Chloride	98.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355913

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045982	Sulfate	96.6		P	90 - 110
2046478	Sulfate	97.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355901

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2046293	Ammonia-N	101	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355882

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2046485	Kjeldahl Nitrogen	99.6	99.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355837

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2046480	NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355674

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2046248	O-Phosphate-P	95.3	95.0	P/P	90 - 110

Reference Method: SM 5310 B-00
Batch ID: P355855

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2046373	Organic Carbon	102		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355670

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046510	Turbidity	0.820	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045982	Chloride	0.280	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355913

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045982	Sulfate	1.28	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355901

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046293	Ammonia-N	0.00246	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355882

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046485	Kjeldahl Nitrogen	0.127	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046480	NO2NO3-N	0.467	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355831

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046293	Total-P	0.821	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355674

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046248	O-Phosphate-P	0.315	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P355665

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046290	Color (true)	2.40	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P356044

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046603	Total Alkalinity	0.767	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P356113

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046484	TDS	6.64	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P356003

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046484	TSS	6.67	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P356047

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046603	Fluoride	0.472	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P355855

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046373	Organic Carbon	1.98	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: A88172
Included Lab Sample IDs: 2046484

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A88173
Included Lab Sample IDs: 2046484

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A88174
Included Lab Sample IDs: 2046486

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	98.3	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A88194
Included Lab Sample IDs: 2046484

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.1	100	P/P	90 - 110
Sulfate	99.1	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A88232
Included Lab Sample IDs: 2046485

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

Reference Method: SM 5310 B-00
Run ID: A88239
Included Lab Sample IDs: 2046485

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.4	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A88255
Included Lab Sample IDs: 2046485

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A88258
Included Lab Sample IDs: 2046485

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A88297
Included Lab Sample IDs: 2046485

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.1	97.9	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A88305
Included Lab Sample IDs: 2046484

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.6	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A88305
Included Lab Sample IDs: 2046484

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	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					0.820	
EPA 300.0 Rev. 2.1	Chloride	97.7	95.1	98.0		0.280	
	Sulfate	97.8	96.6	97.3		1.28	
EPA 350.1 Rev. 2.0	Ammonia-N	99.5	101	101			0.0024
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.6	99.6	99.3			0.127
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	98.5				0.467
EPA 365.1 Rev. 2.0	Total-P	104					0.821
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.7	95.3	95.0			0.315
SM 2120 B	Color (true)	104				2.40	
SM 2320 B-97	Total Alkalinity	99.3				0.767	
SM 2540 C-97	TDS					6.64	
SM 2540 D-97	TSS					6.67	
SM 4500 F-C-97	Fluoride	99.4					0.472
SM 5310 B-00	Organic Carbon	101	102				1.98

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2046484
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2046484
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2046484
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2046485
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2046485
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2046485
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2046485
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2046486
SM 2120 B / E31780	True Color measured at 450 nm	2046484
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2046484
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2046484
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2046484
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2046484
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2046485

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	12/05/2018			12/05/2018 16:10	Megan Treadwell	2046484
EPA 300.0 Rev. 2.1	12/05/2018			12/07/2018 20:35	Lipi Saha	2046484
EPA 350.1 Rev. 2.0	12/05/2018			12/07/2018 11:15	Ping Hua	2046485
EPA 351.2 Rev. 2.0	12/05/2018	12/10/2018 16:30	Adrian Shelby	12/11/2018 14:32	Joseph Suarez	2046485
EPA 353.2 Rev. 2.0	12/05/2018			12/07/2018 12:31	Lauren Bottorf	2046485
EPA 365.1 Rev. 2.0	12/05/2018	12/07/2018 13:00	Sima Feizi	12/10/2018 12:04	Beverly Y. Sanders	2046485
EPA 365.1 Rev. 2.0 dissolved	12/05/2018			12/05/2018 16:53	Jhamieka S. Greenwood	2046486
SM 2120 B	12/05/2018			12/05/2018 14:53	Chelsea Hernandez	2046484
SM 2320 B-97	12/05/2018			12/11/2018 23:54	Lauren Bottorf	2046484
SM 2540 C-97	12/05/2018			12/10/2018 14:10	Yijie Li	2046484
SM 2540 D-97	12/05/2018			12/10/2018 14:10	Yijie Li	2046484
SM 4500 F-C-97	12/05/2018			12/11/2018 23:54	Lauren Bottorf	2046484
SM 5310 B-00	12/05/2018			12/07/2018 04:27	Megan Treadwell	2046485