Chemical Analysis Report

SO-DIST-2018-06-14-01

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

Event Description: **Drainage to Corkscrew**
Request ID: **RQ-2018-06-11-59**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
Attn: Maryann Dugan

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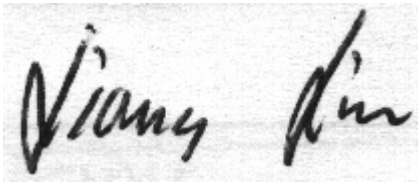
Date Certified: 09-JUL-2018 16:14



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: Drainage Ditch @ CR 850 **Collection Date/Time: 06/13/2018 13:15**

Field ID: G1SD0061 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2000711	EPA 180.1 Rev. 2.0	Turbidity	8.1	A	NTU	P346930	
	EPA 300.0 Rev. 2.1	Chloride	25		mg Cl/L	P347316	
		Sulfate	37		mg SO4/L	P347318	
	SM 2120 B	Color (true)	120	A	PCU	P346912	
	SM 2320 B-97	Total Alkalinity	194		mg CaCO3/L	P347268	RPD
	SM 2540 C-97	TDS	352		mg/L	P347170	
	SM 2540 D-97	TSS	7	I	mg/L	P347174	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P347272	
2000712	EPA 350.1 Rev. 2.0	Ammonia-N	0.071		mg N/L	P347342	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P347968	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.27		mg N/L	P347306	
	EPA 365.1 Rev. 2.0	Total-P	0.20		mg P/L	P347191	
	SM 5310 B-00	Organic Carbon	20		mg C/L	P347186	
2000713	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.046		mg P/L	P346927	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
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: P346930

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347316

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347318

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347342

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347968

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347306

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347191

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346927

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

Reference Method: SM 2120 B
Batch ID: P346912

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P347268

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

Reference Method: SM 2540 C-97
Batch ID: P347170

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P347174

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P347272

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P347186

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: P347316

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347318

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347342

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347968

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347306

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: P347191

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.1		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346927

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

Reference Method: SM 2320 B-97
Batch ID: P347268

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P347272

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.2		P	91 - 105

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P347186

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347316

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000485	Chloride	97.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347318

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000391	Sulfate	100		P	90 - 110
2000485	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347342

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000529	Ammonia-N	101	99.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347968

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000667	Kjeldahl Nitrogen	110	105	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347306

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000753	NO2NO3-N	97.7	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347191

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000664	Total-P	98.5	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346927

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000498	O-Phosphate-P	98.1	99.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P347272

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000974	Fluoride	97.0	95.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P347186

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000492	Organic Carbon	112	102	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P346930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000711	Turbidity	3.97	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347316

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000391	Chloride	1.69	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347318

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000391	Sulfate	1.66	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000529	Ammonia-N	1.24	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347968

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000667	Kjeldahl Nitrogen	4.11	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347306

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000753	NO2NO3-N	0.430	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347191

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000664	Total-P	1.31	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346927

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000498	O-Phosphate-P	0.731	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P346912

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000711	Color (true)	1.82	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P347268

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000974	Total Alkalinity	2.09	Sample	F	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P347170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000661	TDS	1.13	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P347272

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000974	Fluoride	0.953	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P347186

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000492	Organic Carbon	6.60	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: A84589
Included Lab Sample IDs: 2000711

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.1	99.8	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A84591
Included Lab Sample IDs: 2000713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.9	98.1	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A84592
Included Lab Sample IDs: 2000711

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	98.5	P/P	95 - 105

Reference Method: SM 5310 B-00
Run ID: A84709
Included Lab Sample IDs: 2000712

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.2	95.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A84742
Included Lab Sample IDs: 2000711

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	104	100	P/P	90 - 110
Sulfate	106	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A84747
Included Lab Sample IDs: 2000712

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

Reference Method: SM 2320 B-97
Run ID: A84752
Included Lab Sample IDs: 2000711

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

Reference Method: SM 4500 F-C-97
Run ID: A84752
Included Lab Sample IDs: 2000711

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A84776
Included Lab Sample IDs: 2000712

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84820
Included Lab Sample IDs: 2000712

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	104	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85040
Included Lab Sample IDs: 2000712

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.2	108	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					3.97	
EPA 300.0 Rev. 2.1	Chloride	99.3	97.9			1.69	
	Sulfate	101	100	100		1.66	
EPA 350.1 Rev. 2.0	Ammonia-N	103	101	99.1			1.24
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	110	105			4.11
EPA 353.2 Rev. 2.0	NO2NO3-N	100	97.7	98.2			0.430
EPA 365.1 Rev. 2.0	Total-P	99.1	98.5	99.9			1.31
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.3	98.1	99.3			0.731
SM 2120 B	Color (true)					1.82	
SM 2320 B-97	Total Alkalinity	101				2.09	
SM 2540 C-97	TDS					1.13	
SM 4500 F-C-97	Fluoride	96.2	97.0	95.9			0.953
SM 5310 B-00	Organic Carbon	97.2	112	102			6.60

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2000711
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2000711
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2000711
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2000712
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2000712
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2000712
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2000712
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2000713
SM 2120 B / E31780	True Color measured at 450 nm	2000711
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2000711
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2000711
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2000711
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2000711
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2000712

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	06/14/2018			06/14/2018 17:30	William L. Brown IV	2000711
EPA 300.0 Rev. 2.1	06/14/2018			06/22/2018 02:12	Irina Carbone	2000711
EPA 350.1 Rev. 2.0	06/14/2018			06/21/2018 11:57	Ping Hua	2000712
EPA 351.2 Rev. 2.0	06/14/2018	07/05/2018 09:15	Adrian Shelby	07/05/2018 16:31	Tanya Welborn	2000712
EPA 353.2 Rev. 2.0	06/14/2018			06/21/2018 09:38	Beverly Y. Sanders	2000712
EPA 365.1 Rev. 2.0	06/14/2018	06/20/2018 11:10	Sima Feizi	06/22/2018 13:34	Beverly Y. Sanders	2000712
EPA 365.1 Rev. 2.0 dissolved	06/14/2018			06/14/2018 15:19	Megan Treadwell	2000713
SM 2120 B	06/14/2018			06/14/2018 15:19	Tanya Welborn	2000711
SM 2320 B-97	06/14/2018			06/21/2018 10:48	Lauren Bottorf	2000711
SM 2540 C-97	06/14/2018			06/15/2018 15:30	William L. Brown IV	2000711
SM 2540 D-97	06/14/2018			06/15/2018 15:30	William L. Brown IV	2000711
SM 4500 F-C-97	06/14/2018			06/21/2018 10:48	Lauren Bottorf	2000711
SM 5310 B-00	06/14/2018			06/19/2018 05:21	Megan Treadwell	2000712