Chemical Analysis Report

SO-DIST-2018-03-14-02

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

Event Description: **Wilderness Waterway**
Request ID: **RQ-2018-03-12-36**
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 33901-3381
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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: ENRE 9 **Collection Date/Time: 03/13/2018 14:00**

Field ID: G1SD0090 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1974512	EPA 180.1 Rev. 2.0	Turbidity	8.6	A	NTU	P341551	
	SM 2320 B-97	Total Alkalinity	169		mg CaCO3/L	P342151	
	SM 2540 D-97	TSS	11		mg/L	P341867	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P342288	
1974514	EPA 350.1 Rev. 2.0	Ammonia-N	0.038		mg N/L	P341887	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.67		mg N/L	P341751	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P341696	
	EPA 365.1 Rev. 2.0	Total-P	0.053		mg P/L	P341669	MS
	SM 5310 B-00	Organic Carbon	8.8		mg C/L	P342043	
1974516	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.022		mg P/L	P341578	

Sample Location: ENRE 11 at Huston Bay **Collection Date/Time: 03/13/2018 12:00**

Field ID: G5SD0026 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1974513	EPA 180.1 Rev. 2.0	Turbidity	8.5		NTU	P341552	
	SM 2320 B-97	Total Alkalinity	160		mg CaCO3/L	P342151	
	SM 2540 D-97	TSS	13	A	mg/L	P341867	
	SM 4500 F-C-97	Fluoride	0.97		mg F/L	P342288	
1974515	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P341887	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P341751	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P341696	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P341669	MS
	SM 5310 B-00	Organic Carbon	9.0		mg C/L	P342043	
1974517	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P341578	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P341551

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P341552

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341887

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341751

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341696

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341669

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341578

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

Reference Method: SM 2320 B-97
Batch ID: P342151

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

Reference Method: SM 2540 D-97
Batch ID: P341867

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P342288

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P342043

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341887

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341887

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341751

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.3		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341696

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: P341669

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341578

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	93.3		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P342151

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P342288

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P342043

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341887

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341887

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1973849	Ammonia-N	97.0	96.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341751

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974538	Kjeldahl Nitrogen	97.7	91.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341696

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974514	NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341669

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974286	Total-P	88.6	93.7	F/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341578

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974516	O-Phosphate-P	95.3	95.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P342288

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975351	Fluoride	93.9	94.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P342043

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974514	Organic Carbon	99.1	98.7	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P341551

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974512	Turbidity	0.700	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P341552

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974500	Turbidity	2.31	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341887

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1973849	Ammonia-N	0.487	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341751

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974538	Kjeldahl Nitrogen	5.72	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341696

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974514	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341669

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974286	Total-P	4.72	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341578

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974516	O-Phosphate-P	0.334	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P342151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975959	Total Alkalinity	0.163	Sample	P	0 - 1.6

Reference Method: SM 2540 D-97
Batch ID: P341867

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974513	TSS	6.25	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P342288

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975351	Fluoride	0.474	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P342043

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974514	Organic Carbon	0.289	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: EPA 180.1 Rev. 2.0
Run ID: A82609
Included Lab Sample IDs: 1974512, 1974513

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A82614
Included Lab Sample IDs: 1974516, 1974517

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	94.9	93.7	P/P	90 - 110
O-Phosphate-P	96.3	99.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A82663
Included Lab Sample IDs: 1974514, 1974515

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A82701
Included Lab Sample IDs: 1974514, 1974515

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A82730
Included Lab Sample IDs: 1974514, 1974515

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A82730
Included Lab Sample IDs: 1974514, 1974515

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.9	96.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A82746
Included Lab Sample IDs: 1974514, 1974515

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	101	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A82791
Included Lab Sample IDs: 1974514, 1974515

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.6	99.8	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A82826
Included Lab Sample IDs: 1974512, 1974513

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.8	99.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A82882
Included Lab Sample IDs: 1974512, 1974513

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.1	98.6	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					0.700	
	Turbidity					2.31	
EPA 350.1 Rev. 2.0	Ammonia-N	101	97.0	96.5			0.487
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.3	97.7	91.5			5.72
EPA 353.2 Rev. 2.0	NO2NO3-N	102	103	103			0.0
EPA 365.1 Rev. 2.0	Total-P	99.9	88.6	93.7			4.72
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	93.3	95.3	95.4			0.334
SM 2320 B-97	Total Alkalinity	105				0.163	
SM 2540 D-97	TSS					6.25	
SM 4500 F-C-97	Fluoride	98.2	93.9	94.4			0.474
SM 5310 B-00	Organic Carbon	99.0	99.1	98.7			0.289

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1974512, 1974513
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1974514, 1974515
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1974514, 1974515
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1974514, 1974515
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1974514, 1974515
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1974516, 1974517
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1974512, 1974513
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1974512, 1974513
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1974512, 1974513
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1974514, 1974515

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	03/14/2018			03/14/2018 16:12	DeAsia Armster	1974512, 1974513
EPA 350.1 Rev. 2.0	03/14/2018			03/20/2018	Ping Hua	1974514, 1974515
EPA 351.2 Rev. 2.0	03/14/2018	03/19/2018	Adrian Shelby	03/20/2018	Joseph Suarez	1974514, 1974515
EPA 353.2 Rev. 2.0	03/14/2018			03/16/2018	Beverly Y. Sanders	1974514, 1974515
EPA 365.1 Rev. 2.0	03/14/2018	03/15/2018	Lipi Saha	03/19/2018	Lipi Saha	1974514, 1974515
EPA 365.1 Rev. 2.0 dissolved	03/14/2018			03/14/2018 15:34	Lipi Saha	1974516
	03/14/2018			03/14/2018 16:15	Lipi Saha	1974517
SM 2320 B-97	03/14/2018			03/23/2018	Dale L. Simmons	1974512, 1974513
SM 2540 D-97	03/14/2018			03/17/2018	Yijie Li	1974512, 1974513
SM 4500 F-C-97	03/14/2018			03/26/2018	Dale L. Simmons	1974512, 1974513
SM 5310 B-00	03/14/2018			03/22/2018	Megan Treadwell	1974514, 1974515