

Chemical Analysis Report

SO-DIST-2017-07-25-03

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

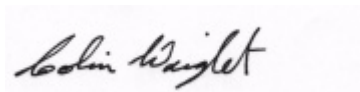
Event Description: **SMP: Wilderness WW**
Request ID: **RQ-2017-06-19-05**
Customer: **SO-DIST**
Project ID: **SMP**

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

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Certified by: Colin Wright, Program Administrator

Date Certified: 09-AUG-2017 16:40

A handwritten signature in black ink, appearing to read "Colin Wright", is placed over a light gray rectangular background.

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: ENRE9 Chatham River

Collection Date/Time: 07/24/2017 13:00

Field ID: G5SD062717-5

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1916174	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P329072	
	SM 2320 B-97	Total Alkalinity	151		mg CaCO3/L	P329183	
	SM 2540 D-97	TSS	5	I	mg/L	P329369	
	SM 4500 F-C-97	Fluoride	0.30		mg F/L	P329187	
1916176	EPA 350.1 Rev. 2.0	Ammonia-N	0.035		mg N/L	P329230	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.89		mg N/L	P329408	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.062		mg N/L	P329211	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P329224	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P329395	
1916178	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.01	I	mg P/L	P329073	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: ENRE9 Huston River

Collection Date/Time: 07/24/2017 13:20

Field ID: G5SD062717-7

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1916175	EPA 180.1 Rev. 2.0	Turbidity	5.4		NTU	P329072	
	SM 2320 B-97	Total Alkalinity	153		mg CaCO3/L	P329183	
	SM 2540 D-97	TSS	6	I	mg/L	P329369	
	SM 4500 F-C-97	Fluoride	0.29		mg F/L	P329187	
1916177	EPA 350.1 Rev. 2.0	Ammonia-N	0.035		mg N/L	P329230	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.92		mg N/L	P329408	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.059		mg N/L	P329211	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P329326	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P329395	
1916179	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P329073	

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: P329072

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P329230

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: P329408

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329211

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329224

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329326

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329073

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

Reference Method: SM 2320 B-97
Batch ID: P329183

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 D-97
Batch ID: P329369

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P329187

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P329395

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: P329230

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: P329408

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329211

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329224

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329326

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329073

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

Reference Method: SM 2320 B-97
Batch ID: P329183

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P329187

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P329395

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329230

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916007	Ammonia-N	107	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329408

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916772	Kjeldahl Nitrogen	98.0	98.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329211

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916081	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329224

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915935	Total-P	95.4	93.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329326

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916177	Total-P	98.4	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329073

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916083	O-Phosphate-P	91.8	94.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P329187

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915321	Fluoride	97.6	97.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P329395

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915916	Organic Carbon	108	109	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P329072

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916005	Turbidity	3.77	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329230

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916007	Ammonia-N	0.975	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329408

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916772	Kjeldahl Nitrogen	0.604	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329211

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916081	NO2NO3-N	0.456	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329224

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915935	Total-P	2.36	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329326

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916177	Total-P	2.42	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329073

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916083	O-Phosphate-P	3.11	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P329183

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916079	Total Alkalinity	0.465	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P329187

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915321	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P329395

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915916	Organic Carbon	0.625	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: A77936
Included Lab Sample IDs: 1916174, 1916175

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A77937
Included Lab Sample IDs: 1916178, 1916179

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.5	96.6	P/P	90 - 110
O-Phosphate-P	98.6	98.5	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A77980
Included Lab Sample IDs: 1916174, 1916175

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	99.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A77980
Included Lab Sample IDs: 1916174, 1916175

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.1	97.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A77988
Included Lab Sample IDs: 1916176, 1916177

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
 Run ID: A77993
 Included Lab Sample IDs: 1916176, 1916177

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

Reference Method: EPA 365.1 Rev. 2.0
 Run ID: A78022
 Included Lab Sample IDs: 1916176

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

Reference Method: SM 5310 B-00
 Run ID: A78052
 Included Lab Sample IDs: 1916176, 1916177

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.4	95.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Run ID: A78060
 Included Lab Sample IDs: 1916177

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Run ID: A78102
 Included Lab Sample IDs: 1916176, 1916177

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.0	97.7	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	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				3.77	
EPA 350.1 Rev. 2.0	Ammonia-N	101	107 106			0.975
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	98.0 98.7			0.604
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104 104			0.456
EPA 365.1 Rev. 2.0	Total-P	99.2	95.4 93.2			2.36
	Total-P	95.9	98.4 96.0			2.42
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	91.8 94.7			3.11
SM 2320 B-97	Total Alkalinity	104			0.465	
SM 4500 F-C-97	Fluoride	96.5	97.6 97.6			0.0
SM 5310 B-00	Organic Carbon	96.5	108 109			0.625

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1916174, 1916175
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1916176, 1916177
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1916176, 1916177
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1916176, 1916177
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1916176, 1916177
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1916178, 1916179
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1916174, 1916175
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1916174, 1916175
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1916174, 1916175
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1916176, 1916177

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	07/25/2017			07/25/2017 15:29	DeAsia Armster	1916174, 1916175
EPA 350.1 Rev. 2.0	07/25/2017			07/26/2017	Sofia Elnemr	1916176, 1916177
EPA 351.2 Rev. 2.0	07/25/2017	07/31/2017	Adrian Shelby	08/02/2017	Joseph Suarez	1916176, 1916177
EPA 353.2 Rev. 2.0	07/25/2017			07/27/2017	Beverly Y. Sanders	1916176, 1916177
EPA 365.1 Rev. 2.0	07/25/2017	07/27/2017	Adrian Shelby	07/28/2017	Lipi Saha	1916176
	07/25/2017	07/28/2017	Adrian Shelby	07/31/2017	Lipi Saha	1916177
EPA 365.1 Rev. 2.0 dissolved	07/25/2017			07/25/2017 15:20	Ping Hua	1916178
	07/25/2017			07/25/2017 15:26	Ping Hua	1916179
SM 2320 B-97	07/25/2017			07/27/2017	Dale L. Simmons	1916174, 1916175
SM 2540 D-97	07/25/2017			07/26/2017	Yijie Li	1916174, 1916175
SM 4500 F-C-97	07/25/2017			07/27/2017	Dale L. Simmons	1916174, 1916175
SM 5310 B-00	07/25/2017			07/28/2017	Sofia Elnemr	1916176, 1916177