Chemical Analysis Report

NE-DIST-2016-09-01-01

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

Event Description: **Suwannee springs**
Request ID: **RQ-2016-08-29-14**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Jacksonville, FL 32256-7577
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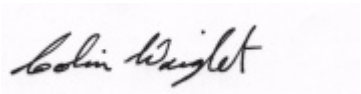
Certified by: Colin Wright, Environmental Administrator

Date Certified: 26-SEP-2016 09:09



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: SANTA FE BELOW ELIE RAYS **Collection Date/Time: 08/31/2016 11:15**

Field ID: G1NE0855 08312016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1828817	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P310768	
	EPA 300.0 Rev. 2.1	Chloride	10		mg Cl/L	P311213	
		Sulfate	28		mg SO4/L	P311217	
	SM 2120 B	Color (true)	68		PCU	P310700	
	SM 2320 B-97	Total Alkalinity	153		mg CaCO3/L	P311188	
	SM 2540 C-97	TDS	160		mg/L	P311228	
	SM 2540 D-97	TSS	4	I	mg/L	P310992	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P311193	
1828818	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P310675	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P310800	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.1		mg N/L	P311024	
	EPA 365.1 Rev. 2.0	Total-P	0.087		mg P/L	P311076	
	SM 5310 B-00	Organic Carbon	6.9		mg C/L	P311053	
1828819	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.062		mg P/L	P310678	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P310768

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311213

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311217

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310675

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310800

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: P311024

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311076

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310678

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

Reference Method: SM 2120 B
Batch ID: P310700

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P311188

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

Reference Method: SM 2540 C-97
Batch ID: P311228

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P310992

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P311193

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P311053

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: P311213

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311217

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310675

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310800

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311024

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: P311076

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310678

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

Reference Method: SM 2320 B-97
Batch ID: P311188

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P311193

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.3		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P311053

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	103		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311213

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1829086	Chloride	99.6		P	90 - 110
1829087	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311217

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1829086	Sulfate	101		P	90 - 110
1829087	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310675

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1828726	Ammonia-N	100	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310800

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1828803	Kjeldahl Nitrogen	105	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311024

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1828803	NO2NO3-N	101	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311076

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1828818	Total-P	101	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310678

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1828819	O-Phosphate-P	98.1	100	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P311193

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1829376	Fluoride	98.6	99.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P311053

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1828729	Organic Carbon	103	102	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P310768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1828709	Turbidity	1.83	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311213

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829086	Chloride	0.693	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311217

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829086	Sulfate	0.489	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310675

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1828726	Ammonia-N	0.449	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310800

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1828803	Kjeldahl Nitrogen	0.356	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311024

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: P311024

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1828803	NO2NO3-N	1.52	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311076

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1828818	Total-P	1.51	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310678

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1828819	O-Phosphate-P	1.42	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P310700

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1828709	Color (true)	0.401	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P311188

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829376	Total Alkalinity	0.261	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P311228

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1828725	TDS	3.20	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P311193

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829376	Fluoride	0.509	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P311053

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1828729	Organic Carbon	0.934	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 350.1 Rev. 2.0
Run ID: A71445
Included Lab Sample IDs: 1828818

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A71446
Included Lab Sample IDs: 1828819

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	101	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A71455
Included Lab Sample IDs: 1828817

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	94.0	96.3	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A71471
Included Lab Sample IDs: 1828817

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.5	P/P	95 - 105

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A71567
Included Lab Sample IDs: 1828818

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.4	92.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A71575
Included Lab Sample IDs: 1828818

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A71576
Included Lab Sample IDs: 1828817

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Sulfate	99.3	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A71584
Included Lab Sample IDs: 1828818

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

Reference Method: SM 2320 B-97
Run ID: A71639
Included Lab Sample IDs: 1828817

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A71639
Included Lab Sample IDs: 1828817

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A71647
Included Lab Sample IDs: 1828818

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	105	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					1.83	
EPA 300.0 Rev. 2.1	Chloride	102	99.6	101		0.693	
	Sulfate	101	101	101		0.489	
EPA 350.1 Rev. 2.0	Ammonia-N	100	100	99.7			0.449
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.6	105	106			0.356
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101	99.2			1.52
EPA 365.1 Rev. 2.0	Total-P	103	101	103			1.51
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.1	98.1	100			1.42
SM 2120 B	Color (true)					0.401	
SM 2320 B-97	Total Alkalinity	103				0.261	
SM 2540 C-97	TDS					3.20	
SM 4500 F-C-97	Fluoride	99.3	98.6	99.2			0.509
SM 5310 B-00	Organic Carbon	103	103	102			0.934

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	1828817
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1828817
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1828817
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1828818
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1828818
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1828818
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1828818
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1828819
SM 2120 B / E31780	True Color measured at 450 nm	1828817
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1828817
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1828817
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1828817
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1828817
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1828818

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	09/01/2016			09/01/2016 12:13	Blanca Fach	1828817
EPA 300.0 Rev. 2.1	09/01/2016			09/15/2016	Ping Hua	1828817
EPA 350.1 Rev. 2.0	09/01/2016			09/01/2016	Joseph Suarez	1828818
EPA 351.2 Rev. 2.0	09/01/2016	09/08/2016	Adrian Shelby	09/10/2016	Virginia P. Brown	1828818
EPA 353.2 Rev. 2.0	09/01/2016			09/12/2016	Beverly Y. Sanders	1828818
EPA 365.1 Rev. 2.0	09/01/2016	09/14/2016	Vijayalakshmi Reddy	09/15/2016	Lipi Saha	1828818
EPA 365.1 Rev. 2.0 dissolved	09/01/2016			09/01/2016 13:15	Julia Storbeck	1828819
SM 2120 B	09/01/2016			09/01/2016 13:02	Blanca Fach	1828817
SM 2320 B-97	09/01/2016			09/14/2016	Dale L. Simmons	1828817
SM 2540 C-97	09/01/2016			09/07/2016	Blanca Fach	1828817
SM 2540 D-97	09/01/2016			09/07/2016	Sima Feizi	1828817
SM 4500 F-C-97	09/01/2016			09/14/2016	Dale L. Simmons	1828817
SM 5310 B-00	09/01/2016			09/13/2016	Sofia Elnemr	1828818