Chemical Analysis Report

WQAP-2017-06-27-02

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

Event Description: **SCI Weeki Wachee**
Request ID: **RQ-2017-06-26-60**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Tampa, FL 33637
Attn: Judy Ashton

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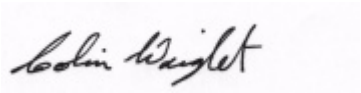
Certified by: Colin Wright, Program Administrator

Date Certified: 12-JUL-2017 17:13



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: WEEKI WACHEE **Collection Date/Time: 06/26/2017 13:25**

Field ID: G5SW0131 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909139	EPA 180.1 Rev. 2.0	Turbidity	0.40		NTU	P327593	
	EPA 300.0 Rev. 2.1	Chloride	8.8		mg Cl/L	P327720	
		Sulfate	11		mg SO4/L	P327717	
	SM 2120 B	Color (true)	3.6	I	PCU	P327580	
	SM 2320 B-97	Total Alkalinity	156	A	mg CaCO3/L	P327665	
	SM 2540 C-97	TDS	206	A	mg/L	P327837	
	SM 2540 D-97	TSS	3	IA	mg/L	P327879	
	SM 4500 F-C-97	Fluoride	0.089	I	mg F/L	P327668	
1909140	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P327678	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20		mg N/L	P327756	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.75		mg N/L	P327698	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P327629	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P327761	
1909141	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P327572	

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: P327593

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327717

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327720

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327678

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P327756

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: P327698

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P327629

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P327572

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

Reference Method: SM 2120 B
Batch ID: P327580

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P327665

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

Reference Method: SM 2540 C-97
Batch ID: P327837

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P327879

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P327668

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P327761

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: P327717

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327720

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327678

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P327756

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P327698

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: P327629

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P327572

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

Reference Method: SM 2320 B-97
Batch ID: P327665

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

Reference Method: SM 4500 F-C-97
Batch ID: P327668

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.2		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P327761

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327717

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1908922	Sulfate	99.5		P	90 - 110
1908929	Sulfate	97.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327720

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1908922	Chloride	98.3		P	90 - 110
1908929	Chloride	95.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327678

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909140	Ammonia-N	93.1	93.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P327756

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909258	Kjeldahl Nitrogen	96.2	91.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P327698

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909257	NO2NO3-N	103	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P327629

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909071	Total-P	100	99.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P327572

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909141	O-Phosphate-P	94.8	96.6	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P327668

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909139	Fluoride	97.9	97.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P327761

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909072	Organic Carbon	98.6	100	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P327593

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909051	Turbidity	3.39	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327717

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1908929	Sulfate	0.136	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327720

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1908929	Chloride	0.00329	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327678

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909140	Ammonia-N	0.727	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P327756

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909258	Kjeldahl Nitrogen	2.60	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P327698

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: P327698

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909257	NO2NO3-N	1.16	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P327629

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909071	Total-P	0.420	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P327572

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909141	O-Phosphate-P	1.77	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P327580

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909067	Color (true)	3.67	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P327665

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909139	Total Alkalinity	0.0142	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P327837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909139	TDS	2.42	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P327668

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909139	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P327761

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909072	Organic Carbon	1.12	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 300.0 Rev. 2.1
Run ID: A77352
Included Lab Sample IDs: 1909139

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.8	99.6	P/P	90 - 110
Sulfate	97.5	98.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A77374
Included Lab Sample IDs: 1909141

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.2	98.1	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A77377
Included Lab Sample IDs: 1909139

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	104	103	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A77382
Included Lab Sample IDs: 1909139

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

Reference Method: SM 2320 B-97
Run ID: A77409
Included Lab Sample IDs: 1909139

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: A77409
Included Lab Sample IDs: 1909139

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	95.6	97.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A77410
Included Lab Sample IDs: 1909140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	95.2	95.9	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A77418
Included Lab Sample IDs: 1909140

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A77422
Included Lab Sample IDs: 1909140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	97.0	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A77437
Included Lab Sample IDs: 1909140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	94.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A77490
Included Lab Sample IDs: 1909140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	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					3.39	
EPA 300.0 Rev. 2.1	Chloride	97.5	95.5	98.3		0.0032	
	Sulfate	97.3	97.4	99.5		0.136	
EPA 350.1 Rev. 2.0	Ammonia-N	102	93.1	93.9			0.727
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.2	96.2	91.4			2.60
EPA 353.2 Rev. 2.0	NO2NO3-N	104	103	105			1.16
EPA 365.1 Rev. 2.0	Total-P	99.6	100	99.7			0.420
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.5	94.8	96.6			1.77
SM 2120 B	Color (true)					3.67	
SM 2320 B-97	Total Alkalinity	103				0.0142	
SM 2540 C-97	TDS					2.42	
SM 4500 F-C-97	Fluoride	95.2	97.9	97.9			0.0
SM 5310 B-00	Organic Carbon	97.8	98.6	100			1.12

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	1909139
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1909139
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1909139
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1909140
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1909140
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1909140
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1909140
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1909141
SM 2120 B / E31780	True Color measured at 450 nm	1909139
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1909139
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1909139
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1909139
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1909139
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1909140

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	06/27/2017			06/27/2017 17:22	DeAsia Armster	1909139
EPA 300.0 Rev. 2.1	06/27/2017			06/29/2017	Ping Hua	1909139
EPA 350.1 Rev. 2.0	06/27/2017			06/28/2017	Sofia Elnemr	1909140
EPA 351.2 Rev. 2.0	06/27/2017	06/30/2017	Adrian Shelby	07/03/2017	Joseph Suarez	1909140
EPA 353.2 Rev. 2.0	06/27/2017			06/29/2017	Beverly Y. Sanders	1909140
EPA 365.1 Rev. 2.0	06/27/2017	06/28/2017	Vijayalakshmi Reddy	06/29/2017	Lipi Saha	1909140
EPA 365.1 Rev. 2.0 dissolved	06/27/2017			06/27/2017 15:01	Anthony C. Onicha	1909141
SM 2120 B	06/27/2017			06/27/2017 15:53	Tanya Welborn	1909139
SM 2320 B-97	06/27/2017			06/28/2017	Dale L. Simmons	1909139
SM 2540 C-97	06/27/2017			06/28/2017	Yijie Li	1909139
SM 2540 D-97	06/27/2017			06/28/2017	Yijie Li	1909139
SM 4500 F-C-97	06/27/2017			06/28/2017	Dale L. Simmons	1909139
SM 5310 B-00	06/27/2017			06/29/2017	Sofia Elnemr	1909140