

Chemical Analysis Report

SW-DIST-2019-03-29-01

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

Event Description: **Halls Branch**
Request ID: **RQ-2019-03-25-63**
Customer: **SW-DIST**
Project ID: **SMP**

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Date Certified: 17-APR-2019 10:56



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 by the Florida Department of Health Environmental Laboratory Certification Program 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: HALLS BRANCH @ VIRGIL HALL RD

Collection Date/Time: 03/28/2019 11:15

Field ID: G2SW0097

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2073559	EPA 180.1 Rev. 2.0	Turbidity	8.0		NTU	P361302	
	EPA 300.0 Rev. 2.1	Chloride	9.7	A	mg Cl/L	P361731	
		Sulfate	14	A	mg SO4/L	P361733	
	SM 2120 B	Color (true)	63		PCU	P361303	
	SM 2320 B-97	Total Alkalinity	97		mg CaCO3/L	P361717	
	SM 2540 C-97	TDS	157		mg/L	P361822	
	SM 2540 D-97	TSS	10	I	mg/L	P361661	
	SM 4500 F-C-97	Fluoride	0.55		mg F/L	P361719	
2073560	EPA 350.1 Rev. 2.0	Ammonia-N	0.068		mg N/L	P361540	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P361487	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.30		mg N/L	P361623	
	EPA 365.1 Rev. 2.0	Total-P	0.46		mg P/L	P361431	
	SM 5310 B-00	Organic Carbon	21		mg C/L	P361475	
2073561	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.26		mg P/L	P361308	

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: P361302

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361731

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361733

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361540

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P361487

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P361623

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P361431

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361308

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

Reference Method: SM 2120 B
Batch ID: P361303

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P361717

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

Reference Method: SM 2540 C-97
Batch ID: P361822

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P361661

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P361719

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P361475

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: P361731

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361733

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361540

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: P361487

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P361623

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P361431

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	105		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361308

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.1		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P361303

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P361717

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P361719

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.3		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P361475

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	106		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361731

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2073559	Chloride	98.2		P	90 - 110
2073865	Chloride	96.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361733

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2073559	Sulfate	97.4		P	90 - 110
2073865	Sulfate	97.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361540

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2073595	Ammonia-N	92.1	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P361487

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2073596	Kjeldahl Nitrogen	101	113	P/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P361623

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2073509	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P361431

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2073619	Total-P	99.4	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361308

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2073511	O-Phosphate-P	92.9	91.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P361719

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2073957	Fluoride	99.8	98.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P361475

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2073619	Organic Carbon	102	100	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P361302

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2073540	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361731

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2073559	Chloride	2.88	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361733

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2073559	Sulfate	2.31	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361540

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2073595	Ammonia-N	5.87	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P361487

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2073596	Kjeldahl Nitrogen	6.38	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P361623

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2073509	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P361431

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2073619	Total-P	0.762	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361308

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2073511	O-Phosphate-P	0.683	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
 Batch ID: P361303

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2073540	Color (true)	2.33	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P361717

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2073957	Total Alkalinity	0.566	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
 Batch ID: P361822

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2073594	TDS	2.16	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P361719

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2073957	Fluoride	1.00	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P361475

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2073619	Organic Carbon	1.18	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: A90329

Included Lab Sample IDs: 2073559

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

Reference Method: SM 2120 B

Run ID: A90330

Included Lab Sample IDs: 2073559

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.8	95.2	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A90332

Included Lab Sample IDs: 2073561

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	97.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90403

Included Lab Sample IDs: 2073560

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

Reference Method: SM 5310 B-00

Run ID: A90406

Included Lab Sample IDs: 2073560

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.7	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A90426

Included Lab Sample IDs: 2073560

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A90436

Included Lab Sample IDs: 2073560

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A90441

Included Lab Sample IDs: 2073560

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.3	94.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A90507
Included Lab Sample IDs: 2073559

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	99.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A90507
Included Lab Sample IDs: 2073559

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A90511
Included Lab Sample IDs: 2073559

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.6	101	P/P	90 - 110
Sulfate	100	101	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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					0.0	
EPA 300.0 Rev. 2.1	Chloride	99.6	98.2	96.6		2.88	
	Sulfate	98.6	97.4	97.4		2.31	
EPA 350.1 Rev. 2.0	Ammonia-N	102	92.1	101			5.87
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	101	113			6.38
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	101	100	100			0.0
EPA 365.1 Rev. 2.0	Total-P	105	99.4	100			0.762
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.1	92.9	91.7			0.683
SM 2120 B	Color (true)	100				2.33	
SM 2320 B-97	Total Alkalinity	101				0.566	
SM 2540 C-97	TDS					2.16	
SM 4500 F-C-97	Fluoride	99.3	99.8	98.6			1.00
SM 5310 B-00	Organic Carbon	106	102	100			1.18

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2073559
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2073559
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2073559
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2073560
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2073560
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2073560
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2073560
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2073561
SM 2120 B / E31780	True Color measured at 450 nm	2073559
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2073559
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2073559
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2073559
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2073559
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2073560

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	03/29/2019			03/29/2019 13:42	Adrian Shelby	2073559
EPA 300.0 Rev. 2.1	03/29/2019			04/05/2019 16:49	Lipi Saha	2073559
EPA 350.1 Rev. 2.0	03/29/2019			04/03/2019 13:03	Ping Hua	2073560
EPA 351.2 Rev. 2.0	03/29/2019	04/03/2019 13:00	Adrian Shelby	04/04/2019 14:34	Joseph Suarez	2073560
EPA 353.2 Rev. 2.0	03/29/2019			04/04/2019 09:21	Beverly Y. Sanders	2073560
EPA 365.1 Rev. 2.0	03/29/2019	04/02/2019 14:25	Sima Feizi	04/02/2019 19:29	Rosalyn Ballman	2073560
EPA 365.1 Rev. 2.0 dissolved	03/29/2019			03/29/2019 17:35	Jhamieka S. Greenwood	2073561
SM 2120 B	03/29/2019			03/29/2019 15:50	Blanca Fach	2073559
SM 2320 B-97	03/29/2019			04/06/2019 07:22	Dale L. Simmons	2073559
SM 2540 C-97	03/29/2019			04/03/2019 15:14	Yijie Li	2073559
SM 2540 D-97	03/29/2019			04/03/2019 15:14	Yijie Li	2073559
SM 4500 F-C-97	03/29/2019			04/06/2019 07:22	Dale L. Simmons	2073559
SM 5310 B-00	03/29/2019			04/02/2019 19:00	Julia Storbeck	2073560