Chemical Analysis Report

SW-DIST-2018-09-26-01

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

Event Description: **Pinellas-Cedar Creek 1556A-resample A-kit**
Request ID: **RQ-2018-09-24-67**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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Date Certified: 23-OCT-2018 14:26

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: CEDAR CREEK @ PINEHURST (PC 09-02) **Collection Date/Time: 09/25/2018 14:30**

Field ID: G5SW0129 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2028415	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P352393	
	EPA 300.0 Rev. 2.1	Chloride	100		mg Cl/L	P352628	
		Sulfate	23		mg SO4/L	P352631	
	SM 2120 B	Color (true)	62		PCU	P352318	
	SM 2320 B-97	Total Alkalinity	95		mg CaCO3/L	P352645	
	SM 2540 C-97	TDS	350		mg/L	P352741	
	SM 2540 D-97	TSS	3	I	mg/L	P352592	
	SM 4500 F-C-97	Fluoride	0.38		mg F/L	P352650	
2028416	EPA 350.1 Rev. 2.0	Ammonia-N	0.061		mg N/L	P352716	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P352587	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.37		mg N/L	P352490	
	EPA 365.1 Rev. 2.0	Total-P	0.19		mg P/L	P352456	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P352511	
2028417	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.15		mg P/L	P352314	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P352393

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352628

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352631

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P352716

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352587

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352490

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352456

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352314

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

Reference Method: SM 2120 B
Batch ID: P352318

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P352645

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

Reference Method: SM 2540 C-97
Batch ID: P352741

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P352592

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P352650

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P352511

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: P352628

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352631

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P352716

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352587

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352490

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352456

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: P352314

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

Reference Method: SM 2120 B
Batch ID: P352318

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.9		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P352645

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P352650

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.6		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P352511

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.1		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352628

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028248	Chloride	97.3		P	90 - 110
2028432	Chloride	94.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352631

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028248	Sulfate	95.4		P	90 - 110
2028432	Sulfate	96.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P352716

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028252	Ammonia-N	99.1	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352587

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028312	Kjeldahl Nitrogen	103	99.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352490

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028306	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352456

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028306	Total-P	98.6	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352314

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028313	O-Phosphate-P	97.5	98.6	P/P	90 - 110

Reference Method: SM 5310 B-00
Batch ID: P352511

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028416	Organic Carbon	94.4	93.6	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P352393

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028248	Turbidity	1.85	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352628

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028248	Chloride	0.103	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352631

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028248	Sulfate	2.62	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P352716

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028252	Ammonia-N	2.05	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352587

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028312	Kjeldahl Nitrogen	2.61	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352490

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028306	NO2NO3-N	0.499	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352456

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028306	Total-P	4.30	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352314

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028313	O-Phosphate-P	1.12	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P352318

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028542	Color (true)	0.470	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P352645

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028706	Total Alkalinity	0.0871	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P352741

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028248	TDS	5.85	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P352650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028706	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P352511

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028416	Organic Carbon	0.471	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 365.1 Rev. 2.0 dissolved
Run ID: A86732
Included Lab Sample IDs: 2028417

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.3	98.3	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A86733
Included Lab Sample IDs: 2028415

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.1	97.7	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A86757
Included Lab Sample IDs: 2028415

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	102	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A86790
Included Lab Sample IDs: 2028416

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

Reference Method: SM 5310 B-00
Run ID: A86811
Included Lab Sample IDs: 2028416

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.1	91.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A86833
Included Lab Sample IDs: 2028416

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A86839
Included Lab Sample IDs: 2028415

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

Reference Method: SM 2320 B-97
Run ID: A86860
Included Lab Sample IDs: 2028415

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	105	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A86860
Included Lab Sample IDs: 2028415

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.6	99.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A86893
Included Lab Sample IDs: 2028416

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A86944
Included Lab Sample IDs: 2028416

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.8	94.0	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					1.85	
EPA 300.0 Rev. 2.1	Chloride	99.2	97.3	94.3		0.103	
	Sulfate	97.1	95.4	96.2		2.62	
EPA 350.1 Rev. 2.0	Ammonia-N	97.2	99.1	102			2.05
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	103	99.4			2.61
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	100	100			0.499
EPA 365.1 Rev. 2.0	Total-P	99.6	98.6	103			4.30
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	97.5	98.6			1.12
SM 2120 B	Color (true)	98.9				0.470	
SM 2320 B-97	Total Alkalinity	103				0.0871	
SM 2540 C-97	TDS					5.85	
SM 4500 F-C-97	Fluoride	96.6					0.0
SM 5310 B-00	Organic Carbon	97.1	94.4	93.6			0.471

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2028415
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2028415
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2028415
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2028416
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2028416
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2028416
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2028416
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2028417
SM 2120 B / E31780	True Color measured at 450 nm	2028415
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2028415
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2028415
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2028415
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2028415
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2028416

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	09/26/2018			09/26/2018 16:41	Megan Treadwell	2028415
EPA 300.0 Rev. 2.1	09/26/2018			10/02/2018 20:03	Lipi Saha	2028415
EPA 350.1 Rev. 2.0	09/26/2018			10/02/2018 12:32	Ping Hua	2028416
EPA 351.2 Rev. 2.0	09/26/2018	10/02/2018 15:30	Adrian Shelby	10/05/2018 13:10	Joseph Suarez	2028416
EPA 353.2 Rev. 2.0	09/26/2018			09/28/2018 13:42	Lauren Bottorf	2028416
EPA 365.1 Rev. 2.0	09/26/2018	09/28/2018 12:15	Sima Feizi	10/01/2018 08:48	Beverly Y. Sanders	2028416
EPA 365.1 Rev. 2.0 dissolved	09/26/2018			09/26/2018 15:41	Julia Storbeck	2028417
SM 2120 B	09/26/2018			09/26/2018 15:47	DeAsia Armster	2028415
SM 2320 B-97	09/26/2018			10/02/2018 20:19	Dale L. Simmons	2028415
SM 2540 C-97	09/26/2018			09/28/2018 15:48	Yijie Li	2028415
SM 2540 D-97	09/26/2018			09/28/2018 15:48	Yijie Li	2028415
SM 4500 F-C-97	09/26/2018			10/02/2018 20:19	Dale L. Simmons	2028415
SM 5310 B-00	09/26/2018			09/28/2018 02:42	Megan Treadwell	2028416