Chemical Analysis Report

CEN-DIST-2018-03-22-01

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

Event Description: **Little Haw (2630C)+SCI**
Request ID: **RQ-2018-03-19-62**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
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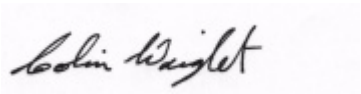
Certified by: Colin Wright, Program Administrator

Date Certified: 12-APR-2018 09:05



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: LITTLE HAW CREEK @ 25M DS OF SR40 **Collection Date/Time: 03/21/2018 11:21**

Field ID: G2CE0128 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976517	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P342046	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P342138	
		Sulfate	0.53		mg SO4/L	P342142	
	SM 2120 B	Color (true)	410		PCU	P342027	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P342475	
	SM 2540 C-97	TDS	126		mg/L	P342379	
	SM 2540 D-97	TSS	2	U	mg/L	P342220	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P342297	
1976518	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P342526	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P342066	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P342161	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P342109	
	SM 5310 B-00	Organic Carbon	38		mg C/L	P342276	
1976519	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P342084	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
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: P342046

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342138

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342142

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342526

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342066

Component	Result	Code	Units

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342066

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342161

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342109

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342084

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

Reference Method: SM 2120 B
Batch ID: P342027

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P342475

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

Reference Method: SM 2540 C-97
Batch ID: P342379

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P342220

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P342297

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P342276

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: P342138

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342142

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	108		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342526

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: P342066

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.9		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342161

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342109

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342084

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.9		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P342475

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P342475

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.1		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P342297

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	93.9		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P342276

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342138

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976465	Chloride	105		P	90 - 110
1976634	Chloride	106		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342142

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976465	Sulfate	108		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342526

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976518	Ammonia-N	100	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342066

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976527	Kjeldahl Nitrogen	98.4	96.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342161

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976534	NO2NO3-N	102	103	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342109

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976536	Total-P	101	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976519	O-Phosphate-P	97.2	97.8	P/P	90 - 110

Reference Method: SM 5310 B-00
Batch ID: P342276

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975393	Organic Carbon	104	104	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P342046

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976465	Turbidity	1.01	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342138

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976634	Chloride	0.00215	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976634	Sulfate	0.252	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342526

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976518	Ammonia-N	0.726	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342066

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976527	Kjeldahl Nitrogen	1.39	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342161

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976534	NO2NO3-N	0.458	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976536	Total-P	1.69	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976519	O-Phosphate-P	0.615	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P342027

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976437	Color (true)	0.348	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P342475

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976526	Total Alkalinity	0.0786	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P342379

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976631	TDS	1.10	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P342297

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976526	Fluoride	0.974	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P342276

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975393	Organic Carbon	0.429	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: A82750
Included Lab Sample IDs: 1976517

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.0	97.9	P/P	90 - 110
Sulfate	97.4	97.8	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A82789
Included Lab Sample IDs: 1976517

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A82792
Included Lab Sample IDs: 1976517

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A82801
Included Lab Sample IDs: 1976519

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.2	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A82832
Included Lab Sample IDs: 1976518

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A82837
Included Lab Sample IDs: 1976518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A82864
Included Lab Sample IDs: 1976518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.2	107	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A82877
Included Lab Sample IDs: 1976518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	102	99.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A82888
Included Lab Sample IDs: 1976517

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.1	98.1	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A82950
Included Lab Sample IDs: 1976517

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	97.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A82966
Included Lab Sample IDs: 1976518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	104	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					1.01	
EPA 300.0 Rev. 2.1	Chloride	105	106	105		0.0021	
	Sulfate	108	108			0.252	
EPA 350.1 Rev. 2.0	Ammonia-N	97.2	100	101			0.726
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.9	98.4	96.8			1.39
EPA 353.2 Rev. 2.0	NO2NO3-N	103	102	103			0.458
EPA 365.1 Rev. 2.0	Total-P	102	101	103			1.69
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.9	97.2	97.8			0.615
SM 2120 B	Color (true)					0.348	
SM 2320 B-97	Total Alkalinity	99.1				0.0786	
SM 2540 C-97	TDS					1.10	
SM 4500 F-C-97	Fluoride	93.9					0.974
SM 5310 B-00	Organic Carbon	101	104	104			0.429

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	1976517
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1976517
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1976517
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1976518
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1976518
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1976518
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1976518
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1976519
SM 2120 B / E31780	True Color measured at 450 nm	1976517
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1976517
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1976517
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1976517
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1976517
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1976518

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	03/22/2018			03/22/2018 16:28	DeAsia Armster	1976517
EPA 300.0 Rev. 2.1	03/22/2018			03/23/2018	Julia Storbeck	1976517
EPA 350.1 Rev. 2.0	03/22/2018			03/30/2018	Ping Hua	1976518
EPA 351.2 Rev. 2.0	03/22/2018	03/23/2018	Adrian Shelby	03/27/2018	Joseph Suarez	1976518
EPA 353.2 Rev. 2.0	03/22/2018			03/23/2018	Beverly Y. Sanders	1976518
EPA 365.1 Rev. 2.0	03/22/2018	03/23/2018	Sima Feizi	03/26/2018	Beverly Y. Sanders	1976518
EPA 365.1 Rev. 2.0 dissolved	03/22/2018			03/22/2018 14:52	Megan Treadwell	1976519
SM 2120 B	03/22/2018			03/22/2018 13:13	Tanya Welborn	1976517
SM 2320 B-97	03/22/2018			03/30/2018	Dale L. Simmons	1976517
SM 2540 C-97	03/22/2018			03/23/2018	DeAsia Armster	1976517
SM 2540 D-97	03/22/2018			03/23/2018	DeAsia Armster	1976517
SM 4500 F-C-97	03/22/2018			03/27/2018	Dale L. Simmons	1976517
SM 5310 B-00	03/22/2018			03/27/2018	Julia Storbeck	1976518