Chemical Analysis Report

CEN-DIST-2020-04-01-01

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

Event Description: **Faulk / Flo / Horse X2**
Request ID: **RQ-2020-03-23-10**
Customer: **CEN-DIST**
Project ID: **SMP**

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This Report replaces the previous Report Serial Number: 0122204

Revision certified by: Thekkekalathil Chandrasekhar, Chemist

Date Certified: 23-APR-2020 12:50

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: Florence Lake @ Center **Collection Date/Time: 03/31/2020 10:50**

Field ID: G3CE0012 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2169093	EPA 300.0 Rev. 2.1	Chloride	490		mg Cl/L	P381993	
		Sulfate	180		mg SO4/L	P381999	
	SM 2320 B-2011	Total Alkalinity	129		mg CaCO3/L	P381922	
	SM 2540 C-2011	TDS	1.27E+03		mg/L	P382031	
	SM 2540 D-2011	TSS	40		mg/L	P382025	
	SM 4500 F-C-2011	Fluoride	0.21		mg F/L	P381926	
2169094	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P381755	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.9		mg N/L	P381725	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P381663	
	EPA 365.1 Rev. 2.0	Total-P	0.18		mg P/L	P381739	
	SM 5310 B-2011	Organic Carbon	25		mg C/L	P381808	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Faulk Canal @ 50m upstream of Fiske Blvd. **Collection Date/Time: 03/31/2020 11:28**

Field ID: G3CE0016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2169091	EPA 300.0 Rev. 2.1	Chloride	230		mg Cl/L	P381993	
		Sulfate	59		mg SO4/L	P381999	
	SM 2320 B-2011	Total Alkalinity	84		mg CaCO3/L	P381922	
	SM 2540 C-2011	TDS	595		mg/L	P382031	
	SM 2540 D-2011	TSS	6	I	mg/L	P382025	
	SM 4500 F-C-2011	Fluoride	0.089	I	mg F/L	P381926	
2169092	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P381755	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.87		mg N/L	P381725	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P381663	
	EPA 365.1 Rev. 2.0	Total-P	0.042		mg P/L	P381739	
	SM 5310 B-2011	Organic Carbon	17		mg C/L	P381808	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381993

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381999

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P381755

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P381725

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P381663

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P381739

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

Reference Method: SM 2320 B-2011
Batch ID: P381922

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

Reference Method: SM 2540 C-2011
Batch ID: P382031

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P382025

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-2011
Batch ID: P381926

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P381808

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: P381993

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381999

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P381755

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P381725

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P381663

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	96.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P381739

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

Reference Method: SM 2320 B-2011
Batch ID: P381922

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.2		P	98 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P381926

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	104		P	92 - 104

Reference Method: SM 5310 B-2011
Batch ID: P381808

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.5		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381993

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2169120	Chloride	99.8		P	90 - 110
2169169	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381999

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2169120	Sulfate	101		P	90 - 110
2169169	Sulfate	101		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P381725

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2169122	Kjeldahl Nitrogen	99.6	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P381663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2169056	NO2NO3-N	98.8	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P381739

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2169056	Total-P	108	105	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P381926

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2169398	Fluoride	103	102	P/P	91 - 105

Reference Method: SM 5310 B-2011
Batch ID: P381808

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2169030	Organic Carbon	97.2	99.2	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381993

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2169120	Chloride	1.33	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381999

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2169120	Sulfate	0.882	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P381755

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2169122	Ammonia-N	0.0603	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P381725

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2169122	Kjeldahl Nitrogen	2.07	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P381663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2169056	NO2NO3-N	0.704	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P381739

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2169056	Total-P	2.24	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P381922

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2169398	Total Alkalinity	0.298	Sample	P	0 - 3.3

Reference Method: SM 2540 C-2011
Batch ID: P382031

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2169064	TDS	5.10	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P381926

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2169398	Fluoride	1.40	Spike	P	0 - 2.0

Reference Method: SM 5310 B-2011
Batch ID: P381808

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2169030	Organic Carbon	1.09	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A98582
Included Lab Sample IDs: 2169092, 2169094

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.5	97.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A98623
Included Lab Sample IDs: 2169092, 2169094

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	102	P/P	90 - 110
Ammonia-N	102	103	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A98644
Included Lab Sample IDs: 2169092, 2169094

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.4	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A98648
Included Lab Sample IDs: 2169094

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A98649
Included Lab Sample IDs: 2169092

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.5	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A98650
Included Lab Sample IDs: 2169092, 2169094

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	98.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A98686
Included Lab Sample IDs: 2169091, 2169093

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.5	100	P/P	90 - 110
Sulfate	101	101	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A98694
Included Lab Sample IDs: 2169091, 2169093

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-2011
Run ID: A98694
Included Lab Sample IDs: 2169091, 2169093

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.2	99.8	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A98694
Included Lab Sample IDs: 2169091, 2169093

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	104	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 300.0 Rev. 2.1	Chloride	100	99.8	102		1.33	
	Sulfate	101	101	101		0.882	
EPA 350.1 Rev. 2.0	Ammonia-N	103					0.0603
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.6	99.6	103			2.07
EPA 353.2 Rev. 2.0	NO2NO3-N	96.5	98.8	99.8			0.704
EPA 365.1 Rev. 2.0	Total-P	101	108	105			2.24
SM 2320 B-2011	Total Alkalinity	98.2				0.298	
SM 2540 C-2011	TDS					5.10	
SM 4500 F-C-2011	Fluoride	104	103	102			1.40
SM 5310 B-2011	Organic Carbon	94.5	97.2	99.2			1.09

Reference Method Descriptions

Method	Description	Associated Samples
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2169091, 2169093
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2169091, 2169093
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2169092, 2169094
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2169092, 2169094
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2169092, 2169094
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2169092, 2169094
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2169091, 2169093
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2169091, 2169093
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2169091, 2169093
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2169091, 2169093
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2169092, 2169094

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 300.0 Rev. 2.1	04/01/2020			04/09/2020 08:44	Jhamieka S. Greenwood	2169091
	04/01/2020			04/09/2020 08:57	Jhamieka S. Greenwood	2169093
EPA 350.1 Rev. 2.0	04/01/2020			04/02/2020 14:02	Julia Storbeck	2169094
	04/01/2020			04/02/2020 18:13	Julia Storbeck	2169092
EPA 351.2 Rev. 2.0	04/01/2020	04/02/2020 14:50	Jhamieka S. Greenwood	04/03/2020 17:21	Jhamieka S. Greenwood	2169092
	04/01/2020	04/02/2020 14:50	Jhamieka S. Greenwood	04/03/2020 17:23	Jhamieka S. Greenwood	2169094
EPA 353.2 Rev. 2.0	04/01/2020			04/01/2020 16:36	Lauren Lees	2169092
	04/01/2020			04/01/2020 16:37	Lauren Lees	2169094
EPA 365.1 Rev. 2.0	04/01/2020	04/02/2020 15:18	Yen Ta	04/03/2020 15:39	Benjamin T. Nordmann	2169092
	04/01/2020	04/02/2020 15:18	Yen Ta	04/03/2020 16:17	Benjamin T. Nordmann	2169094
SM 2320 B-2011	04/01/2020			04/07/2020 15:28	Samantha Davila	2169091
	04/01/2020			04/07/2020 15:41	Samantha Davila	2169093
SM 2540 C-2011	04/01/2020			04/03/2020 14:49	Yijie Li	2169091, 2169093
SM 2540 D-2011	04/01/2020			04/03/2020 14:49	Yijie Li	2169091, 2169093
SM 4500 F-C-2011	04/01/2020			04/07/2020 15:28	Samantha Davila	2169091
	04/01/2020			04/07/2020 15:41	Samantha Davila	2169093
SM 5310 B-2011	04/01/2020			04/03/2020 04:06	Madeline Gruver	2169092
	04/01/2020			04/03/2020 04:19	Madeline Gruver	2169094