Chemical Analysis Report

CEN-DIST-2020-06-04-02

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

Event Description: **Mills Creek X2 / Banana / Minnie / Blue**
Request ID: **RQ-2020-03-02-62**
Customer: **CEN-DIST**
Project ID: **SMP**

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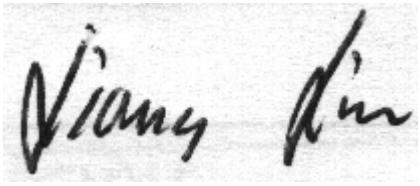
Date Certified: 23-JUN-2020 14:19



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: Lake Minnie @ Center **Collection Date/Time: 06/03/2020 12:58**

Field ID: G2CE0108 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2174656	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P382818	
	EPA 300.0 Rev. 2.1	Chloride	46		mg Cl/L	P383133	
		Sulfate	1.9		mg SO4/L	P383136	
	SM 2120 B-2011	Color (true)	170		PCU	P382823	
	SM 2320 B-2011	Total Alkalinity	43		mg CaCO3/L	P383005	
	SM 2540 C-2011	TDS	145		mg/L	P383269	
	SM 2540 D-2011	TSS	4	I	mg/L	P383236	
	SM 4500 F-C-2011	Fluoride	0.065	I	mg F/L	P382910	
2174657	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P382882	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P382835	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P382847	
	EPA 365.1 Rev. 2.0	Total-P	0.070		mg P/L	P382936	
	SM 5310 B-2011	Organic Carbon	22		mg C/L	P382890	
2174658	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P382821	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 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 180.1 Rev. 2.0
Batch ID: P382818

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383133

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383136

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P382882

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P382835

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P382847

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P382936

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382821

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

Reference Method: SM 2120 B-2011
Batch ID: P382823

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P383005

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

Reference Method: SM 2540 C-2011
Batch ID: P383269

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P383236

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P382910

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P382890

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: P383133

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383136

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P382882

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P382835

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P382847

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: P382936

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382821

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

Reference Method: SM 2120 B-2011
Batch ID: P382823

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P383005

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.4		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P382910

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.7		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P382890

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383133

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2173215	Chloride	106		P	90 - 110
2174587	Chloride	108		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383136

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2173215	Sulfate	104		P	90 - 110
2174587	Sulfate	106		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P382882

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174662	Ammonia-N	100	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P382847

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174629	NO2NO3-N	99.0	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P382936

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174603	Total-P	96.6	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382821

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174653	O-Phosphate-P	91.9	92.4	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P382910

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174661	Fluoride	97.0	97.7	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P382890

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174784	Organic Carbon	98.4	100	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P382818

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174739	Turbidity	0.930	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383133

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2173215	Chloride	0.472	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383136

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2173215	Sulfate	0.335	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P382882

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174662	Ammonia-N	0.704	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P382835

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174741	Kjeldahl Nitrogen	7.45	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P382847

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174629	NO2NO3-N	0.506	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P382936

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174603	Total-P	6.99	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382821

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174653	O-Phosphate-P	0.485	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B-2011
Batch ID: P382823

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174783	Color (true)	0.962	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P383005

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174661	Total Alkalinity	0.986	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P383269

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174661	TDS	7.11	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P382910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174661	Fluoride	0.476	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P382890

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174784	Organic Carbon	0.936	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A99168
Included Lab Sample IDs: 2174656

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	102	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A99169
Included Lab Sample IDs: 2174658

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.8	97.7	P/P	90 - 110

Reference Method: SM 2120 B-2011
Run ID: A99170
Included Lab Sample IDs: 2174656

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A99180
Included Lab Sample IDs: 2174657

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A99193
Included Lab Sample IDs: 2174657

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

Reference Method: SM 5310 B-2011
Run ID: A99196
Included Lab Sample IDs: 2174657

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.4	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A99203
Included Lab Sample IDs: 2174657

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.9	94.6	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A99205
Included Lab Sample IDs: 2174656

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A99236
Included Lab Sample IDs: 2174657

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.3	96.4	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A99239
Included Lab Sample IDs: 2174656

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.0	96.5	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A99295
Included Lab Sample IDs: 2174656

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.4	98.5	P/P	90 - 110
Sulfate	101	99.8	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					0.930	
EPA 300.0 Rev. 2.1	Chloride	100	106	108		0.472	
	Sulfate	101	104	106		0.335	
EPA 350.1 Rev. 2.0	Ammonia-N	100	100	101			0.704
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102					7.45
EPA 353.2 Rev. 2.0	NO2NO3-N	103	99.0	98.5			0.506
EPA 365.1 Rev. 2.0	Total-P	103	96.6	107			6.99
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.6	91.9	92.4			0.485
SM 2120 B-2011	Color (true)	101				0.962	
SM 2320 B-2011	Total Alkalinity	98.4				0.986	
SM 2540 C-2011	TDS					7.11	
SM 4500 F-C-2011	Fluoride	97.7	97.0	97.7			0.476
SM 5310 B-2011	Organic Carbon	98.6	98.4	100			0.936

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2174656
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2174656
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2174656
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2174657
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2174657
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2174657
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2174657
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2174658
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2174656
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2174656
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2174656
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2174656
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2174656
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2174657

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	06/04/2020			06/04/2020 15:19	Yen Ta	2174656
EPA 300.0 Rev. 2.1	06/04/2020			06/11/2020 01:17	Elliott Rodriguez	2174656
EPA 350.1 Rev. 2.0	06/04/2020			06/07/2020 10:45	Ping Hua	2174657
EPA 351.2 Rev. 2.0	06/04/2020	06/05/2020 09:20	Elliott Rodriguez	06/08/2020 10:25	Jhamieka S. Greenwood	2174657
EPA 353.2 Rev. 2.0	06/04/2020			06/05/2020 09:54	Beverly Y. Sanders	2174657
EPA 365.1 Rev. 2.0	06/04/2020	06/08/2020 17:04	Yen Ta	06/10/2020 08:59	Lipi Saha	2174657
EPA 365.1 Rev. 2.0 dissolved	06/04/2020			06/04/2020 16:04	Carlos Miranda	2174658
SM 2120 B-2011	06/04/2020			06/04/2020 16:26	Blanca Fach	2174656
SM 2320 B-2011	06/04/2020			06/09/2020 15:34	Dale L. Simmons	2174656
SM 2540 C-2011	06/04/2020			06/09/2020 12:54	Yijie Li	2174656
SM 2540 D-2011	06/04/2020			06/09/2020 12:54	Yijie Li	2174656
SM 4500 F-C-2011	06/04/2020			06/05/2020 19:57	Dale L. Simmons	2174656
SM 5310 B-2011	06/04/2020			06/05/2020 17:09	David Boose	2174657