Chemical Analysis Report

CEN-DIST-2020-01-30-02

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

Event Description: **Charles Lk + LVI**
Request ID: **RQ-2019-10-28-58**
Customer: **CEN-DIST**
Project ID: **SMP**

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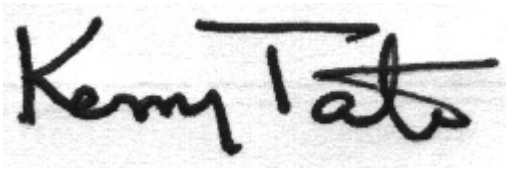
Date Certified: 19-FEB-2020 09:05



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 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 Otting @ Center of Lake **Collection Date/Time: 01/29/2020 11:45**

Field ID: G4CE0176 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2153044	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P378034	
	EPA 300.0 Rev. 2.1	Chloride	2.1		mg Cl/L	P378302	
		Sulfate	0.20	U	mg SO4/L	P378305	
	SM 2120 B-2011	Color (true)	15		PCU	P377985	
	SM 2320 B-2011	Total Alkalinity	58		mg CaCO3/L	P378419	
	SM 2540 C-2011	TDS	58		mg/L	P378433	
	SM 2540 D-2011	TSS	2	I	mg/L	P378238	
	SM 4500 F-C-2011	Fluoride	0.046	I	mg F/L	P378423	
2153045	EPA 350.1 Rev. 2.0	Ammonia-N	0.056		mg N/L	P378602	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P378408	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P378478	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P378252	
	SM 5310 B-2011	Organic Carbon	6.7		mg C/L	P378473	
2153046	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P377997	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples and relative percent difference are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-2011: 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: P378034

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P378302

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P378305

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P378602

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P378408

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P378478

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P378252

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P377997

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

Reference Method: SM 2120 B-2011
Batch ID: P377985

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P378419

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

Reference Method: SM 2540 C-2011
Batch ID: P378433

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P378238

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P378423

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P378473

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: P378302

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P378305

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P378602

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P378408

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P378478

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P378252

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: P377997

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

Reference Method: SM 2120 B-2011
Batch ID: P377985

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

Reference Method: SM 2320 B-2011
Batch ID: P378419

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P378423

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.5		P	92 - 103

Reference Method: SM 5310 B-2011
Batch ID: P378473

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P378302

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2153011	Chloride	100		P	90 - 110
2153385	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P378305

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2153011	Sulfate	99.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P378602

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2152923	Ammonia-N	100	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P378408

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2152979	Kjeldahl Nitrogen	104	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P378478

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2153039	NO2NO3-N	97.3	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P378252

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2153012	Total-P	94.9	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P377997

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2152921	O-Phosphate-P	98.4	98.2	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P378423

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2153386	Fluoride	98.1	98.8	P/P	89 - 106

Reference Method: SM 5310 B-2011
Batch ID: P378473

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2152979	Organic Carbon	105	98.6	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P378034

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2152962	Turbidity	3.51	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P378302

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2153385	Chloride	1.21	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P378602

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2152923	Ammonia-N	0.212	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P378408

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2152979	Kjeldahl Nitrogen	2.33	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P378478

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2153039	NO2NO3-N	0.399	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P378252

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2153012	Total-P	4.96	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P377997

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2152921	O-Phosphate-P	0.203	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P377985

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2153038	Color (true)	8.27	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-2011
Batch ID: P378419

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2153386	Total Alkalinity	0.663	Sample	P	0 - 2.8

Reference Method: SM 2540 C-2011
Batch ID: P378433

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2152978	TDS	0.394	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P378423

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2153386	Fluoride	0.470	Spike	P	0 - 2.5

Reference Method: SM 5310 B-2011
Batch ID: P378473

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2152979	Organic Carbon	4.31	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2120 B-2011
Run ID: A97206
Included Lab Sample IDs: 2153044

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	103	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A97207
Included Lab Sample IDs: 2153046

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.1	96.1	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A97226
Included Lab Sample IDs: 2153044

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A97327
Included Lab Sample IDs: 2153044

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

Reference Method: SM 2320 B-2011
Run ID: A97356
Included Lab Sample IDs: 2153044

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A97356
Included Lab Sample IDs: 2153044

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

Reference Method: SM 5310 B-2011
Run ID: A97368
Included Lab Sample IDs: 2153045

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A97369
Included Lab Sample IDs: 2153045

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A97378
Included Lab Sample IDs: 2153045

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.5	97.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A97415
Included Lab Sample IDs: 2153045

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A97416
Included Lab Sample IDs: 2153045

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	100	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					3.51	
EPA 300.0 Rev. 2.1	Chloride	102	101	100		1.21	
	Sulfate	101	99.9				
EPA 350.1 Rev. 2.0	Ammonia-N	99.2	100	100			0.212
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.0	104	108			2.33
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	97.3	97.8			0.399
EPA 365.1 Rev. 2.0	Total-P	102	94.9	99.8			4.96
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	98.4	98.2			0.203
SM 2120 B-2011	Color (true)	102				8.27	
SM 2320 B-2011	Total Alkalinity	102				0.663	
SM 2540 C-2011	TDS					0.394	
SM 4500 F-C-2011	Fluoride	98.5	98.1	98.8			0.470
SM 5310 B-2011	Organic Carbon	104	105	98.6			4.31

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2153044
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2153044
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2153044
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2153045
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2153045
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2153045
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2153045
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2153046
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2153044
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2153044
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2153044
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2153044
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2153044
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2153045

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	01/30/2020			01/30/2020 17:11	Yen Ta	2153044
EPA 300.0 Rev. 2.1	01/30/2020			02/04/2020 01:01	Elliott Rodriguez	2153044
EPA 350.1 Rev. 2.0	01/30/2020			02/10/2020 10:18	Ping Hua	2153045
EPA 351.2 Rev. 2.0	01/30/2020	02/06/2020 12:00	Jhamieka S. Greenwood	02/07/2020 08:23	Jhamieka S. Greenwood	2153045
EPA 353.2 Rev. 2.0	01/30/2020			02/06/2020 11:07	Beverly Y. Sanders	2153045
EPA 365.1 Rev. 2.0	01/30/2020	02/04/2020 12:34	Yen Ta	02/06/2020 15:09	Benjamin T. Nordmann	2153045
EPA 365.1 Rev. 2.0 dissolved	01/30/2020			01/30/2020 16:55	Carlos Miranda	2153046
SM 2120 B-2011	01/30/2020			01/30/2020 16:46	Madeline Funaro	2153044
SM 2320 B-2011	01/30/2020			02/05/2020 05:26	Dale L. Simmons	2153044
SM 2540 C-2011	01/30/2020			02/03/2020 17:30	Blanca Fach	2153044
SM 2540 D-2011	01/30/2020			02/03/2020 17:30	Blanca Fach	2153044
SM 4500 F-C-2011	01/30/2020			02/05/2020 05:26	Dale L. Simmons	2153044
SM 5310 B-2011	01/30/2020			02/06/2020 02:07	Madeline Funaro	2153045