Chemical Analysis Report

CEN-DIST-2018-10-26-01

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

Event Description: **Lk Tony + LVI**
Request ID: **RQ-2018-10-22-65**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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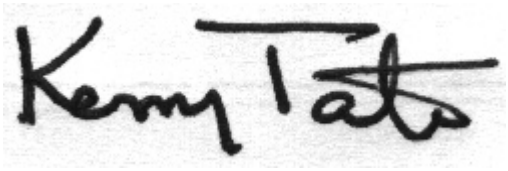
Date Certified: 19-NOV-2018 11:30



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: Lake Tony @ Center **Collection Date/Time: 10/25/2018 11:22**

Field ID: G2CE0146 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036872	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P353782	
	EPA 300.0 Rev. 2.1	Chloride	17		mg Cl/L	P354210	
		Sulfate	3.0		mg SO4/L	P354212	
	SM 2120 B	Color (true)	35	A	PCU	P353778	
	SM 2320 B-97	Total Alkalinity	30		mg CaCO3/L	P354136	
	SM 2540 C-97	TDS	85		mg/L	P354264	
	SM 2540 D-97	TSS	3	I	mg/L	P354129	
	SM 4500 F-C-97	Fluoride	0.042	I	mg F/L	P354138	
2036873	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P354176	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.69		mg N/L	P354201	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P354221	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P354060	
	SM 5310 B-00	Organic Carbon	9.6		mg C/L	P354253	
2036874	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P353784	

Ref. Method and Comment:
SM 2540 D-97: 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: P353782

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P354210

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P354212

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354176

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354201

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P354221

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354060

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353784

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

Reference Method: SM 2120 B
Batch ID: P353778

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P354136

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

Reference Method: SM 2540 C-97
Batch ID: P354264

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P354129

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P354138

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P354253

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: P354210

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P354212

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354176

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354201

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: P354221

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354060

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353784

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.8		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P353778

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

Reference Method: SM 2320 B-97
Batch ID: P354136

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P354138

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.5		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P354253

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P354210

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036716	Chloride	99.1		P	90 - 110
2036983	Chloride	99.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P354212

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036716	Sulfate	102		P	90 - 110
2036983	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354176

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036873	Ammonia-N	97.8	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354201

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036873	Kjeldahl Nitrogen	108	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P354221

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036770	NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354060

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036787	Total-P	99.6	96.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353784

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036731	O-Phosphate-P	94.4	95.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P354138

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2037336	Fluoride	98.5	97.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P354253

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036787	Organic Carbon	100	105	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P353782

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036983	Turbidity	11.7	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P354210

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036716	Chloride	0.814	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P354212

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036716	Sulfate	1.29	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354176

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036873	Ammonia-N	1.72	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354201

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036873	Kjeldahl Nitrogen	0.665	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P354221

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036770	NO2NO3-N	0.971	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354060

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036787	Total-P	2.18	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353784

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036731	O-Phosphate-P	0.907	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P353778

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036872	Color (true)	3.66	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P354136

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2037336	Total Alkalinity	1.08	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P354264

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036329	TDS	7.79	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P354138

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2037336	Fluoride	0.470	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P354253

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036787	Organic Carbon	3.04	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: SM 2120 B
Run ID: A87325
Included Lab Sample IDs: 2036872

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.8	102	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A87326
Included Lab Sample IDs: 2036872

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A87328
Included Lab Sample IDs: 2036874

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.9	97.7	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A87368
Included Lab Sample IDs: 2036872

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	103	P/P	90 - 110
Sulfate	101	101	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A87486
Included Lab Sample IDs: 2036872

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A87486
Included Lab Sample IDs: 2036872

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A87489
Included Lab Sample IDs: 2036873

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A87504
Included Lab Sample IDs: 2036873

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A87529
Included Lab Sample IDs: 2036873

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

Reference Method: SM 5310 B-00
Run ID: A87546
Included Lab Sample IDs: 2036873

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.5	97.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A87566
Included Lab Sample IDs: 2036873

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	103	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					11.7	
EPA 300.0 Rev. 2.1	Chloride	102	99.1	99.1		0.814	
	Sulfate	102	102	102		1.29	
EPA 350.1 Rev. 2.0	Ammonia-N	95.4	97.8	99.7			1.72
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	108	106			0.665
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	104			0.971
EPA 365.1 Rev. 2.0	Total-P	97.4	99.6	96.2			2.18
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.8	94.4	95.4			0.907
SM 2120 B	Color (true)	101				3.66	
SM 2320 B-97	Total Alkalinity	101				1.08	
SM 2540 C-97	TDS					7.79	
SM 4500 F-C-97	Fluoride	99.5	98.5	97.9			0.470
SM 5310 B-00	Organic Carbon	99.2	100	105			3.04

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2036872
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2036872
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2036872
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2036873
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2036873
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2036873
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2036873
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2036874
SM 2120 B / E31780	True Color measured at 450 nm	2036872
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2036872
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2036872
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2036872
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2036872
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2036873

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	10/26/2018			10/26/2018 16:32	Megan Treadwell	2036872
EPA 300.0 Rev. 2.1	10/26/2018			11/01/2018 21:59	Lipi Saha	2036872
EPA 350.1 Rev. 2.0	10/26/2018			11/02/2018 14:26	Julia Storbeck	2036873
EPA 351.2 Rev. 2.0	10/26/2018	11/05/2018 12:00	Adrian Shelby	11/06/2018 12:07	Virginia P. Brown	2036873
EPA 353.2 Rev. 2.0	10/26/2018			11/05/2018 12:43	Lauren Bottorf	2036873
EPA 365.1 Rev. 2.0	10/26/2018	11/01/2018 12:35	Sima Feizi	11/02/2018 11:59	Beverly Y. Sanders	2036873
EPA 365.1 Rev. 2.0 dissolved	10/26/2018			10/26/2018 16:33	Anthony C. Onicha	2036874
SM 2120 B	10/26/2018			10/26/2018 15:32	Chelsea Hernandez	2036872
SM 2320 B-97	10/26/2018			11/01/2018 21:57	Dale L. Simmons	2036872
SM 2540 C-97	10/26/2018			10/30/2018 14:05	Yijie Li	2036872
SM 2540 D-97	10/26/2018			10/30/2018 14:05	Yijie Li	2036872
SM 4500 F-C-97	10/26/2018			11/01/2018 21:57	Dale L. Simmons	2036872
SM 5310 B-00	10/26/2018			11/05/2018 09:04	Megan Treadwell	2036873