

Chemical Analysis Report

CEN-DIST-2020-12-15-02

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

Event Description: **East Lake Tohopekaliga Drain**

Request ID: **RQ-2020-11-30-21**

Customer: **CEN-DIST**

Project ID: **SMP**

Send Reports to:

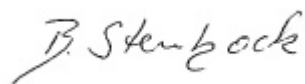
FL Dept. of Environmental Protection
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Date Certified: 05-JAN-2021 18:11



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: Boggy Creek 1100m S of Boggy Creek Road

Collection Date/Time: 12/14/2020 14:25

Field ID: G4CE0127

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2213299	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P391266	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P391347	
		Sulfate	7.1		mg SO4/L	P391349	
	SM 2120 B-2011	Color (true)	76		PCU	P391194	
	SM 2320 B-2011	Total Alkalinity	46		mg CaCO3/L	P391317	
	SM 2540 C-2011	TDS	109		mg/L	P391664	
	SM 2540 D-2011	TSS	2	U	mg/L	P391638	
	SM 4500 F-C-2011	Fluoride	0.069	I	mg F/L	P391320	
2213300	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P391489	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.47		mg N/L	P391650	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.025		mg N/L	P391333	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P391687	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P391366	
2213301	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.011		mg P/L	P391224	

Ref. Method and Comment:

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: P391266

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391347

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391349

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P391489

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P391650

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P391333

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P391687

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P391224

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

Reference Method: SM 2120 B-2011
Batch ID: P391194

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P391317

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-2011
Batch ID: P391664

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P391638

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P391320

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P391366

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: P391347

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391349

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P391489

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P391650

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P391333

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P391687

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P391224

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

Reference Method: SM 2120 B-2011
Batch ID: P391194

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

Reference Method: SM 2320 B-2011
Batch ID: P391317

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	93 - 104

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P391320

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.8		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P391366

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.7		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391347

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2213228	Chloride	100	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391349

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2213228	Sulfate	100	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P391489

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2213318	Ammonia-N	97.6	96.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P391650

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2213284	Kjeldahl Nitrogen	97.1	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P391333

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2213300	NO2NO3-N	99.6	99.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P391687

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2213284	Total-P	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P391224

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2213250	O-Phosphate-P	104	105	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P391320

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2213233	Fluoride	97.3	97.3	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P391366

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2213092	Organic Carbon	102	101	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P391266

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2213365	Turbidity	1.29	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391347

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2213228	Chloride	0.587	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391349

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2213228	Sulfate	0.489	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P391489

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2213318	Ammonia-N	1.45	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P391650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2213284	Kjeldahl Nitrogen	2.64	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P391333

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2213300	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P391687

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2213284	Total-P	0.243	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P391224

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2213250	O-Phosphate-P	0.669	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
Batch ID: P391194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2213283	Color (true)	0.599	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P391317

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2213233	Total Alkalinity	1.87	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P391664

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2213172	TDS	2.90	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P391320

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2213233	Fluoride	0.0	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P391366

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2213092	Organic Carbon	0.609	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: A102597

Included Lab Sample IDs: 2213299

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A102610

Included Lab Sample IDs: 2213301

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	98.9	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A102617

Included Lab Sample IDs: 2213299

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A102618

Included Lab Sample IDs: 2213299

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	104	104	P/P	95 - 105

Reference Method: SM 2320 B-2011

Run ID: A102634

Included Lab Sample IDs: 2213299

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.1	103	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A102634

Included Lab Sample IDs: 2213299

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A102638

Included Lab Sample IDs: 2213300

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

Reference Method: SM 5310 B-2011

Run ID: A102649

Included Lab Sample IDs: 2213300

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A102686

Included Lab Sample IDs: 2213300

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.9	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A102770

Included Lab Sample IDs: 2213300

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.8	98.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A102799

Included Lab Sample IDs: 2213300

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	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		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					1.29	
EPA 300.0 Rev. 2.1	Chloride	101	100	101			0.587
	Sulfate	101	100	101			0.489
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	97.6	96.0			1.45
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	97.1	102			2.64
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	101	99.6	99.6			0.0
EPA 365.1 Rev. 2.0	Total-P	104	101	101			0.243
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	104	105			0.669
SM 2120 B-2011	Color (true)	100				0.599	
SM 2320 B-2011	Total Alkalinity	102				1.87	
SM 2540 C-2011	TDS					2.90	
SM 4500 F-C-2011	Fluoride	97.8	97.3	97.3			0.0
SM 5310 B-2011	Organic Carbon	99.7	102	101			0.609

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2213299
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2213299
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2213299
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2213300
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2213300
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2213300
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2213300
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2213301
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2213299
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2213299
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2213299
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2213299
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2213299
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2213300

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	12/15/2020			12/15/2020 17:13	Yen Ta	2213299
EPA 300.0 Rev. 2.1	12/15/2020			12/17/2020 00:07	Lipi Saha	2213299
EPA 350.1 Rev. 2.0	12/15/2020			12/20/2020 18:04	Ping Hua	2213300
EPA 351.2 Rev. 2.0	12/15/2020	12/22/2020 14:35	David Boose	12/23/2020 17:19	Julia Storbeck	2213300
EPA 353.2 Rev. 2.0	12/15/2020			12/17/2020 09:47	Beverly Y. Sanders	2213300
EPA 365.1 Rev. 2.0	12/15/2020	12/23/2020 10:14	Yen Ta	12/28/2020 12:38	Shengyu Wang	2213300
EPA 365.1 Rev. 2.0 dissolved	12/15/2020			12/15/2020 16:42	Blanca Fach	2213301
SM 2120 B-2011	12/15/2020			12/15/2020 17:38	Julia Storbeck	2213299
SM 2320 B-2011	12/15/2020			12/16/2020 19:59	Dale L. Simmons	2213299
SM 2540 C-2011	12/15/2020			12/18/2020 15:11	Yijie Li	2213299
SM 2540 D-2011	12/15/2020			12/18/2020 15:11	Yijie Li	2213299
SM 4500 F-C-2011	12/15/2020			12/16/2020 19:59	Dale L. Simmons	2213299
SM 5310 B-2011	12/15/2020			12/16/2020 21:35	Touraj Touran	2213300