Chemical Analysis Report

CEN-DIST-2022-10-12-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Apopka Spring**
Request ID: **RQ-2022-10-10-14**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Matthew Bearden

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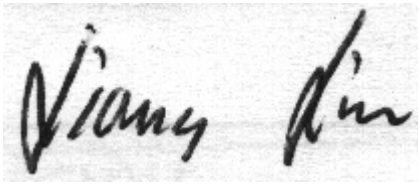
Certified by: Liang Lin, Environmental Administrator

Date Certified: 03-NOV-2022 14:25



NON-CONFORMANCE REPORT INCLUDED

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: Apopka Spring near boil **Collection Date/Time: 10/11/2022 11:20**

Field ID: G1CE0113 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2362077	DEP SOP: NU-094-1	Color (true)	29	A	PCU	P420803	
	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P420812	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P421202	
		Sulfate	11		mg SO4/L	P421205	
	SM 2320 B-2011	Total Alkalinity	101		mg CaCO3/L	P421003	
	SM 2540 C-2015	TDS	162		mg/L	P421282	
	SM 2540 D-2015	TSS	8	I	mg/L	P421278	
	SM 4500-F- C-2011	Fluoride	0.12		mg F/L	P421005	MS
2362078	EPA 350.1 Rev. 2.0	Ammonia-N	0.020	Y	mg N/L	P421165	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P420961	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.2		mg N/L	P420929	
	EPA 365.1 Rev. 2.0	Total-P	0.043		mg P/L	P420865	
	SM 5310 B-2011	Organic Carbon	4.2		mg C/L	P420995	

Ref. Method and Comment:
SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Sample stored outside of the acceptable temperature range. Please see NCR.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Non-Conformance Report

NCR ID: 9589

Event(s)	Job(s)	Sample(s)	Test(s)
CEN-DIST-2022-10-12-01	TLH-2022-10-12-96	2362078	

NCR Type: CUSTODY **NCR Category: General**

Observation: Samples stored at room temperature overnight on 10/17/2022.

Resolution: Samples placed in refrigerator on 10/18/2022 at 9:20 AM. Data generated after this time willl be qualified where appropriate.

Authorized by/Date: Patrick M. Roche 10/27/2022

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report
Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P420803

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P420812

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421202

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421205

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421165

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420961

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420929

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420865

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

Reference Method: SM 2320 B-2011
Batch ID: P421003

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 C-2015
Batch ID: P421282

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P421278

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P421005

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P420995

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P420803

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.0		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P420812

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421202

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421205

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421165

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420961

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	105		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420929

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: P420865

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

Reference Method: SM 2320 B-2011
Batch ID: P421003

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.2		P	94 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2540 C-2015
Batch ID: P421282

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	97.2		P	90 - 110

Reference Method: SM 2540 D-2015
Batch ID: P421278

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	92.3		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P421005

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P420995

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.5		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421202

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362107	Chloride	97.2		P	90 - 110
2362234	Chloride	98.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421205

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362107	Sulfate	98.4		P	90 - 110
2362234	Sulfate	99.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421165

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362078	Ammonia-N	98.4	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420929

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361989	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420865

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362078	Total-P	107	107	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P421005

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362193	Fluoride	107	108	F/F	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P420995

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362154	Organic Carbon	96.7	96.9	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P420803

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362077	Color (true)	4.60	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P420812

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361988	Turbidity	0.943	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421202

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362107	Chloride	3.15	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421205

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362107	Sulfate	1.53	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421165

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362078	Ammonia-N	1.00	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420961

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361989	Kjeldahl Nitrogen	2.81	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420929

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361989	NO2NO3-N	0.976	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420865

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362078	Total-P	0.193	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-2011
Batch ID: P421003

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362193	Total Alkalinity	0.902	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2015
Batch ID: P421282

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361981	TDS	7.78	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P421005

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362193	Fluoride	0.474	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P420995

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362154	Organic Carbon	0.161	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: DEP SOP: NU-094-1
Run ID: A115257
Included Lab Sample IDs: 2362077

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	99.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A115261
Included Lab Sample IDs: 2362077

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	99.5	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A115315
Included Lab Sample IDs: 2362078

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	101	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A115351
Included Lab Sample IDs: 2362078

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.4	97.8	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A115356
Included Lab Sample IDs: 2362077

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.9	104	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A115356
Included Lab Sample IDs: 2362077

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A115368
Included Lab Sample IDs: 2362078

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A115395
Included Lab Sample IDs: 2362077

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	96.0	101	P/P	90 - 110
Sulfate	96.7	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A115422
Included Lab Sample IDs: 2362078

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.4	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A115427
Included Lab Sample IDs: 2362078

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	102	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
DEP SOP: NU-094-1	Color (true)	98.0				4.60	
EPA 180.1 Rev. 2.0	Turbidity	101				0.943	
EPA 300.0 Rev. 2.1	Chloride	101	97.2	98.2		3.15	
	Sulfate	103	98.4	99.0		1.53	
EPA 350.1 Rev. 2.0	Ammonia-N	98.2	98.4	99.8			1.00
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105					2.81
EPA 353.2 Rev. 2.0	NO2NO3-N	102	103	102			0.976
EPA 365.1 Rev. 2.0	Total-P	108	107	107			0.193
SM 2320 B-2011	Total Alkalinity	98.2				0.902	
SM 2540 C-2015	TDS	97.2				7.78	
SM 2540 D-2015	TSS	92.3					
SM 4500-F- C-2011	Fluoride	101	107	108			0.474
SM 5310 B-2011	Organic Carbon	97.5	96.7	96.9			0.161

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2362077
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2362077
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2362077
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2362077
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2362078
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2362078
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2362078
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2362078
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2362077
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2362077
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2362077
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2362077
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2362078

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	10/12/2022			10/12/2022 15:22	Samantha L Bates	2362077
EPA 180.1 Rev. 2.0	10/12/2022			10/12/2022 14:10	Chandler E Cox	2362077
EPA 300.0 Rev. 2.1	10/12/2022			10/20/2022 07:51	Anna M. Plaviak	2362077
EPA 350.1 Rev. 2.0	10/12/2022			10/19/2022 14:02	Ping Hua	2362078
EPA 351.2 Rev. 2.0	10/12/2022	10/17/2022 12:50	Simonne.V. Calhoun	10/18/2022 14:04	Samantha L Bates	2362078
EPA 353.2 Rev. 2.0	10/12/2022			10/14/2022 12:23	Beverly Y. Sanders	2362078
EPA 365.1 Rev. 2.0	10/12/2022	10/14/2022 14:05	Adam P Silver	10/20/2022 12:05	Simonne.V. Calhoun	2362078
SM 2320 B-2011	10/12/2022			10/15/2022 00:41	Dale L. Simmons	2362077
SM 2540 C-2015	10/12/2022			10/13/2022 16:08	Yijie Li	2362077
SM 2540 D-2015	10/12/2022			10/13/2022 16:08	Yijie Li	2362077
SM 4500-F- C-2011	10/12/2022			10/15/2022 00:41	Dale L. Simmons	2362077
SM 5310 B-2011	10/12/2022			10/17/2022 17:52	Khloe J Berg	2362078