Chemical Analysis Report

CEN-DIST-2019-05-24-02

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

Event Description: **LVI**
Request ID: **RQ-2019-05-20-25**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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3319 Maguire Blvd., Suite 232
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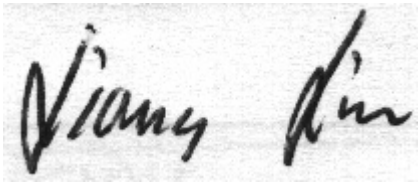
Date Certified: 07-JUN-2019 14:52



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: Cow Creek at Osteen-Maytown road **Collection Date/Time: 05/23/2019 10:40**

Field ID: G2CE0086 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2089023	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P364537	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P364738	
		Sulfate	0.20	I	mg SO4/L	P364739	
	SM 2120 B	Color (true)	570		PCU	P364528	
	SM 2320 B-97	Total Alkalinity	8.1		mg CaCO3/L	P364859	
	SM 2540 C-97	TDS	156		mg/L	P364972	
	SM 2540 D-97	TSS	5	I	mg/L	P364967	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P364863	
2089024	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P364913	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.9		mg N/L	P364909	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P364650	
	EPA 365.1 Rev. 2.0	Total-P	0.056		mg P/L	P364872	
	SM 5310 B-00	Organic Carbon	51		mg C/L	P364798	
2089025	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P364533	

Ref. Method and Comment:
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: P364537

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364738

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364739

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364913

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364909

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364650

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364872

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364533

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

Reference Method: SM 2120 B
Batch ID: P364528

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P364859

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

Reference Method: SM 2540 C-97
Batch ID: P364972

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P364967

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P364863

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P364798

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: P364738

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364739

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364913

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364909

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: P364650

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: P364872

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364533

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.9		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P364528

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

Reference Method: SM 2320 B-97
Batch ID: P364859

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P364863

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.4		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P364798

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364738

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088941	Chloride	98.2		P	90 - 110
2089070	Chloride	95.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364739

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088941	Sulfate	99.0		P	90 - 110
2089070	Sulfate	94.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364913

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089024	Ammonia-N	98.0	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364650

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088960	NO2NO3-N	96.7	96.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364872

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089041	Total-P	98.1	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364533

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089044	O-Phosphate-P	94.2	96.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P364863

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089037	Fluoride	101	102	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P364798

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089040	Organic Carbon	106	106	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P364537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088962	Turbidity	0.204	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364738

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089070	Chloride	0.244	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364739

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089070	Sulfate	0.172	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364913

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089024	Ammonia-N	3.50	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364909

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088964	Kjeldahl Nitrogen	2.18	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088960	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364872

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089041	Total-P	3.31	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364533

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089044	O-Phosphate-P	1.89	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P364528

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089039	Color (true)	0.823	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P364859

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089037	Total Alkalinity	0.628	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P364972

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088942	TDS	0.213	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P364967

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088942	TSS	5.88	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P364863

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089037	Fluoride	0.958	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P364798

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089040	Organic Carbon	0.259	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: A91669
Included Lab Sample IDs: 2089023

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: A91670
Included Lab Sample IDs: 2089025

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.0	96.2	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A91673
Included Lab Sample IDs: 2089023

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A91712
Included Lab Sample IDs: 2089024

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	98.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A91748
Included Lab Sample IDs: 2089023

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

Reference Method: SM 5310 B-00
Run ID: A91779
Included Lab Sample IDs: 2089024

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	106	107	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A91798
Included Lab Sample IDs: 2089023

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A91798
Included Lab Sample IDs: 2089023

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A91814
Included Lab Sample IDs: 2089024

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A91830
Included Lab Sample IDs: 2089024

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A91836
Included Lab Sample IDs: 2089024

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	104	105	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					0.204	
EPA 300.0 Rev. 2.1	Chloride	99.2	95.6	98.2		0.244	
	Sulfate	98.9	94.3	99.0		0.172	
EPA 350.1 Rev. 2.0	Ammonia-N	101	98.0	102			3.50
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105					2.18
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	96.7	96.7			0.0
EPA 365.1 Rev. 2.0	Total-P	99.7	98.1	101			3.31
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.9	94.2	96.0			1.89
SM 2120 B	Color (true)	101				0.823	
SM 2320 B-97	Total Alkalinity	104				0.628	
SM 2540 C-97	TDS					0.213	
SM 2540 D-97	TSS					5.88	
SM 4500 F-C-97	Fluoride	99.4	101	102			0.958
SM 5310 B-00	Organic Carbon	105	106	106			0.259

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2089023
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2089023
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2089023
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2089024
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2089024
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2089024
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2089024
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2089025
SM 2120 B / E31780	True Color measured at 450 nm	2089023
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2089023
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2089023
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2089023
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2089023
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2089024

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	05/24/2019			05/24/2019 14:43	Adrian Shelby	2089023
EPA 300.0 Rev. 2.1	05/24/2019			05/29/2019 18:18	Lipi Saha	2089023
EPA 350.1 Rev. 2.0	05/24/2019			05/31/2019 13:10	Ping Hua	2089024
EPA 351.2 Rev. 2.0	05/24/2019	06/03/2019 11:50	Jhamieka S. Greenwood	06/03/2019 21:46	Virginia P. Brown	2089024
EPA 353.2 Rev. 2.0	05/24/2019			05/29/2019 11:26	Beverly Y. Sanders	2089024
EPA 365.1 Rev. 2.0	05/24/2019	06/03/2019 11:05	Sima Feizi	06/04/2019 09:22	Rosalyn Ballman	2089024
EPA 365.1 Rev. 2.0 dissolved	05/24/2019			05/24/2019 16:31	Jhamieka S. Greenwood	2089025
SM 2120 B	05/24/2019			05/24/2019 16:39	Julia Storbeck	2089023
SM 2320 B-97	05/24/2019			06/01/2019 22:35	Dale L. Simmons	2089023
SM 2540 C-97	05/24/2019			05/29/2019 12:16	Yijie Li	2089023
SM 2540 D-97	05/24/2019			05/29/2019 12:16	Yijie Li	2089023
SM 4500 F-C-97	05/24/2019			06/01/2019 22:35	Dale L. Simmons	2089023
SM 5310 B-00	05/24/2019			05/31/2019 00:08	Julia Storbeck	2089024