

Chemical Analysis Report

CEN-DIST-2021-11-09-01

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

Event Description: **Adelaide/Tiger Lake**
Request ID: **RQ-2021-07-12-44**
Customer: **CEN-DIST**
Project ID: **SMP**

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Date Certified: 30-NOV-2021 11:05



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: Tiger Lake near Center

Collection Date/Time: 11/08/2021 11:56

Field ID: G4CE0206

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2288799	EPA 180.1 Rev. 2.0	Turbidity	16		NTU	P406208	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P406346	
		Sulfate	12		mg SO4/L	P406349	
	SM 2120 B-2011	Color (true)	39	J	PCU	P406205	
	SM 2320 B-2011	Total Alkalinity	31		mg CaCO3/L	P406328	
	SM 2540 C-2011	TDS	104		mg/L	P406558	
	SM 2540 D-2011	TSS	28		mg/L	P406564	
	SM 4500 F-C-2011	Fluoride	0.092	I	mg F/L	P406330	
2288800	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P406590	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P406566	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P406233	
	EPA 365.1 Rev. 2.0	Total-P	0.17		mg P/L	P406152	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P406276	
2288801	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P406201	

Ref. Method and Comment:

SM 2120 B-2011: The result may be biased high because of matrix interference.

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: P406208

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406346

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406349

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406590

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406566

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406233

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406152

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406201

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

Reference Method: SM 2120 B-2011
Batch ID: P406205

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P406328

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

Reference Method: SM 2540 C-2011
Batch ID: P406558

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P406564

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P406330

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P406276

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: P406346

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406349

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406590

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406566

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406233

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: P406152

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: P406201

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.1		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P406205

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.7		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P406328

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.4		P	94 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P406330

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.6		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P406276

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406346

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2288354	Chloride	100		P	90 - 110
2288799	Chloride	97.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406349

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2288354	Sulfate	107		P	90 - 110
2288799	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406590

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2288722	Ammonia-N	95.0	97.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406566

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2288723	Kjeldahl Nitrogen	97.0	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406233

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2288809	NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406152

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2288512	Total-P	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406201

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2288728	O-Phosphate-P	98.8	96.7	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P406330

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2288808	Fluoride	96.6	96.6	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P406276

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2288722	Organic Carbon	96.4	97.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P406208

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288784	Turbidity	1.51	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406346

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288354	Chloride	1.76	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P406349

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288354	Sulfate	1.82	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406590

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288722	Ammonia-N	2.57	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406566

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288723	Kjeldahl Nitrogen	4.29	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288809	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406152

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288512	Total-P	1.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406201

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288728	O-Phosphate-P	1.61	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
Batch ID: P406205

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288717	Color (true)	2.45	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P406328

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288808	Total Alkalinity	0.672	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P406558

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288720	TDS	3.83	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P406330

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288808	Fluoride	0.0	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P406276

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288722	Organic Carbon	0.643	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A108806

Included Lab Sample IDs: 2288801

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	98.9	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A108807

Included Lab Sample IDs: 2288799

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	96.3	99.8	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A108808

Included Lab Sample IDs: 2288799

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108827

Included Lab Sample IDs: 2288800

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	104	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A108861

Included Lab Sample IDs: 2288800

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.9	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108889

Included Lab Sample IDs: 2288800

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	98.6	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A108893

Included Lab Sample IDs: 2288799

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.9	98.8	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A108893

Included Lab Sample IDs: 2288799

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A108907

Included Lab Sample IDs: 2288799

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.0	99.5	P/P	90 - 110
Sulfate	98.2	99.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A109005

Included Lab Sample IDs: 2288800

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.4	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A109032

Included Lab Sample IDs: 2288800

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	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	MS
EPA 180.1 Rev. 2.0	Turbidity				1.51	
EPA 300.0 Rev. 2.1	Chloride	97.7	100	97.2	1.76	
	Sulfate	98.6	107	102	1.82	
EPA 350.1 Rev. 2.0	Ammonia-N	96.2	95.0	97.6		2.57
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	97.0	102		4.29
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	103	103		0.0
EPA 365.1 Rev. 2.0	Total-P	102	104	103		1.02
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.1	98.8	96.7		1.61
SM 2120 B-2011	Color (true)	99.7			2.45	
SM 2320 B-2011	Total Alkalinity	98.4			0.672	
SM 2540 C-2011	TDS				3.83	
SM 4500 F-C-2011	Fluoride	99.6	96.6	96.6		0.0
SM 5310 B-2011	Organic Carbon	98.6	96.4	97.2		0.643

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2288799
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2288799
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2288799
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2288800
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2288800
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2288800
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2288800
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2288801
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2288799
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2288799
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2288799
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2288799
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2288799
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2288800

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	11/09/2021			11/09/2021 16:05	Khloe J Berg	2288799
EPA 300.0 Rev. 2.1	11/09/2021			11/12/2021 17:51	James L Waggeberby	2288799
EPA 350.1 Rev. 2.0	11/09/2021			11/19/2021 13:14	Ping Hua	2288800
EPA 351.2 Rev. 2.0	11/09/2021	11/19/2021 12:30	Benjamin T. Nordmann	11/22/2021 10:12	Alexandra J Mattheus	2288800
EPA 353.2 Rev. 2.0	11/09/2021			11/10/2021 10:42	Beverly Y. Sanders	2288800
EPA 365.1 Rev. 2.0	11/09/2021	11/10/2021 14:25	Simonne.V. Calhoun	11/12/2021 13:24	Sarah A Nixon	2288800
EPA 365.1 Rev. 2.0 dissolved	11/09/2021			11/09/2021 14:36	James L Waggeberby	2288801
SM 2120 B-2011	11/09/2021			11/09/2021 16:08	Benjamin T. Nordmann	2288799
SM 2320 B-2011	11/09/2021			11/10/2021 19:51	Dale L. Simmons	2288799
SM 2540 C-2011	11/09/2021			11/10/2021 13:21	Yijie Li	2288799
SM 2540 D-2011	11/09/2021			11/10/2021 13:21	Yijie Li	2288799
SM 4500 F-C-2011	11/09/2021			11/10/2021 19:51	Dale L. Simmons	2288799
SM 5310 B-2011	11/09/2021			11/10/2021 20:36	Khloe J Berg	2288800