

Chemical Analysis Report

CEN-DIST-2021-11-17-01

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

Event Description: **Turnbull + Blank**
Request ID: **RQ-2021-11-15-08**
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: 07-DEC-2021 16:30

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

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: Turnbull Bay 1.2 km S of Turnbull Bay Rd

Collection Date/Time: 11/16/2021 11:28

Field ID: G5CE0130

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2289950	EPA 180.1 Rev. 2.0	Turbidity	5.2		NTU	P406465	
	SM 2320 B-2011	Total Alkalinity	165		mg CaCO3/L	P406755	
	SM 2540 D-2011	TSS	4	I	mg/L	P406737	
	SM 4500 F-C-2011	Fluoride	0.27		mg F/L	P406757	
2289951	EPA 350.1 Rev. 2.0	Ammonia-N	0.043		mg N/L	P406803	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P406789	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.081		mg N/L	P406477	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P406649	
	SM 5310 B-2011	Organic Carbon	16		mg C/L	P407035	
2289952	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P406452	

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: P406465

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406803

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406789

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406477

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406649

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406452

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

Reference Method: SM 2320 B-2011
Batch ID: P406755

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

Reference Method: SM 2540 D-2011
Batch ID: P406737

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P406757

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P407035

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406803

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406789

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406477

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406649

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: P406452

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

Reference Method: SM 2320 B-2011
Batch ID: P406755

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.7		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P406757

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P407035

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 350.1 Rev. 2.0
Batch ID: P406803

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289727	Ammonia-N	99.4	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406789

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289891	Kjeldahl Nitrogen	96.7	95.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406477

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289890	NO2NO3-N	97.5	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406649

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289951	Total-P	103	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406452

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2290101	O-Phosphate-P	99.7	100	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P406757

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2290294	Fluoride	99.9	99.9	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P407035

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2290178	Organic Carbon	95.0	95.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P406465

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289888	Turbidity	1.68	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406803

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289727	Ammonia-N	0.731	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406789

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289891	Kjeldahl Nitrogen	1.04	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406477

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289890	NO2NO3-N	0.277	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406649

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289951	Total-P	0.412	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406452

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2290101	O-Phosphate-P	0.647	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P406755

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2290294	Total Alkalinity	1.80	Sample	P	0 - 5.2

Reference Method: SM 4500 F-C-2011
Batch ID: P406757

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2290294	Fluoride	0.0	Spike	P	0 - 2.1

Quality Assurance Report Precision

Reference Method: SM 5310 B-2011
Batch ID: P407035

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2290178	Organic Carbon	0.492	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: A108949

Included Lab Sample IDs: 2289952

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.5	99.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A108951

Included Lab Sample IDs: 2289950

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108963

Included Lab Sample IDs: 2289951

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A109064

Included Lab Sample IDs: 2289951

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

Reference Method: SM 2320 B-2011

Run ID: A109087

Included Lab Sample IDs: 2289950

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	96.7	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A109087

Included Lab Sample IDs: 2289950

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A109123

Included Lab Sample IDs: 2289951

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.5	98.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A109126

Included Lab Sample IDs: 2289951

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.7	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-2011

Run ID: A109206

Included Lab Sample IDs: 2289951

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.4	97.2	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					1.68	
EPA 350.1 Rev. 2.0	Ammonia-N	98.8	99.4	98.6			0.731
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.7	96.7	95.6			1.04
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	98.0	97.5	98.0			0.277
EPA 365.1 Rev. 2.0	Total-P	102	103	104			0.412
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	99.7	100			0.647
SM 2320 B-2011	Total Alkalinity	99.7				1.80	
SM 4500 F-C-2011	Fluoride	101	99.9	99.9			0.0
SM 5310 B-2011	Organic Carbon	98.6	95.0	95.9			0.492

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2289950
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2289951
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2289951
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2289951
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2289951
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2289952
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2289950
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2289950
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2289950
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2289951

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	11/17/2021			11/17/2021 15:13	Khloe J Berg	2289950
EPA 350.1 Rev. 2.0	11/17/2021			11/29/2021 14:46	Ping Hua	2289951
EPA 351.2 Rev. 2.0	11/17/2021	11/29/2021 13:10	Benjamin T. Nordmann	11/30/2021 11:29	Alexandra J Mattheus	2289951
EPA 353.2 Rev. 2.0	11/17/2021			11/18/2021 09:42	Beverly Y. Sanders	2289951
EPA 365.1 Rev. 2.0	11/17/2021	11/22/2021 17:50	Simonne.V. Calhoun	11/23/2021 13:04	Sarah A Nixon	2289951
EPA 365.1 Rev. 2.0 dissolved	11/17/2021			11/17/2021 14:54	James L Waggerby	2289952
SM 2320 B-2011	11/17/2021			11/24/2021 01:21	Dale L. Simmons	2289950
SM 2540 D-2011	11/17/2021			11/18/2021 15:56	Yijie Li	2289950
SM 4500 F-C-2011	11/17/2021			11/24/2021 01:21	Dale L. Simmons	2289950
SM 5310 B-2011	11/17/2021			12/01/2021 19:58	Khloe J Berg	2289951