

Chemical Analysis Report

CEN-DIST-2016-08-10-02

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

Event Description: **C-54 1A+Meter**
Request ID: **RQ-2016-08-08-43**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 25-AUG-2016 10:51



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 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: C-54 Canal 1mi Upstream of I-95

Collection Date/Time: 08/09/2016 12:05

Field ID: G5CE0052

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1822923	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P309511	
	EPA 300.0 Rev. 2.1	Chloride	57		mg Cl/L	P309870	
		Sulfate	13		mg SO4/L	P309873	
	SM 2120 B	Color (true)	140		PCU	P309523	
	SM 2320 B-97	Total Alkalinity	111		mg CaCO3/L	P309623	
	SM 2540 C-97	TDS	262		mg/L	P310094	
	SM 2540 D-97	TSS	4	I	mg/L	P309998	
	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P309626	
1822924	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P309589	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P309785	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P310020	
	EPA 365.1 Rev. 2.0	Total-P	0.092		mg P/L	P309792	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P310047	
1822925	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.027		mg P/L	P309518	

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P309511

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P309870

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P309873

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P309589

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P309785

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310020

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309792

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309518

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

Reference Method: SM 2120 B
Batch ID: P309523

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P309623

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

Reference Method: SM 2540 C-97
Batch ID: P310094

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P309998

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P309626

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P310047

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: P309870

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309873

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P309589

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309785

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310020

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: P309792

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309518

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

Reference Method: SM 2320 B-97
Batch ID: P309623

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P309626

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.4		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
 Batch ID: P310047

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P309870

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822641	Chloride	99.0		P	90 - 110
1822780	Chloride	98.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P309873

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822641	Sulfate	95.9		P	90 - 110
1822780	Sulfate	93.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P309589

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822924	Ammonia-N	94.8	95.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P309785

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822763	Kjeldahl Nitrogen	105	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P310020

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823209	NO2NO3-N	96.0	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P309792

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822931	Total-P	99.4	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P309518

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822819	O-Phosphate-P	100	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P309626

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822753	Fluoride	98.9	99.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P310047

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822503	Organic Carbon	102		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P309511

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822772	Turbidity	1.37	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309870

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822780	Chloride	0.00100	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309873

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822780	Sulfate	0.389	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P309589

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822924	Ammonia-N	0.982	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309785

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822763	Kjeldahl Nitrogen	1.98	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310020

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310020

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823209	NO2NO3-N	0.608	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309792

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822931	Total-P	1.12	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309518

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822819	O-Phosphate-P	1.27	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P309523

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822753	Color (true)	1.31	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P309623

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822753	Total Alkalinity	0.684	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P310094

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822817	TDS	5.54	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P309998

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822817	TSS	5.71	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P309626

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822753	Fluoride	0.463	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P310047

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822503	Organic Carbon	0.0967	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: EPA 180.1 Rev. 2.0
Run ID: A71054
Included Lab Sample IDs: 1822923

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A71057
Included Lab Sample IDs: 1822925

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.8	100	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A71058
Included Lab Sample IDs: 1822923

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.0	97.8	P/P	90 - 115

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A71081
Included Lab Sample IDs: 1822924

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.0	97.5	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A71090
Included Lab Sample IDs: 1822923

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A71090
Included Lab Sample IDs: 1822923

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A71177

Included Lab Sample IDs: 1822923

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Sulfate	96.3	96.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A71179

Included Lab Sample IDs: 1822924

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A71192

Included Lab Sample IDs: 1822924

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71229

Included Lab Sample IDs: 1822924

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.5	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A71236

Included Lab Sample IDs: 1822924

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.1	97.1	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 SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				1.37	
EPA 300.0 Rev. 2.1	Chloride	99.6	98.3 99.0		0.0010	
	Sulfate	94.3	93.5 95.9		0.389	
EPA 350.1 Rev. 2.0	Ammonia-N	96.6	94.8 95.8			0.982
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	105 102			1.98
EPA 353.2 Rev. 2.0	NO2NO3-N	101	96.0 97.0			0.608
EPA 365.1 Rev. 2.0	Total-P	98.2	99.4 101			1.12
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104	100 102			1.27
SM 2120 B	Color (true)				1.31	
SM 2320 B-97	Total Alkalinity	103			0.684	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
SM 2540 C-97	TDS				5.54	
SM 2540 D-97	TSS				5.71	
SM 4500 F-C-97	Fluoride	97.4	98.9 99.6			0.463
SM 5310 B-00	Organic Carbon	96.0	102			0.0967

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1822923
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1822923
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1822923
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1822924
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1822924
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1822924
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1822924
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1822925
SM 2120 B / E31780	True Color measured at 450 nm	1822923
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1822923
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1822923
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1822923
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1822923
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1822924

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	08/10/2016			08/10/2016 14:56	Sima Feizi	1822923
EPA 300.0 Rev. 2.1	08/10/2016			08/17/2016	Ping Hua	1822923
EPA 350.1 Rev. 2.0	08/10/2016			08/11/2016	Joseph Suarez	1822924
EPA 351.2 Rev. 2.0	08/10/2016	08/16/2016	Sofia Elnemr	08/17/2016	Christopher Armour	1822924
EPA 353.2 Rev. 2.0	08/10/2016			08/19/2016	Beverly Y. Sanders	1822924
EPA 365.1 Rev. 2.0	08/10/2016	08/16/2016	Vijayalakshmi Reddy	08/17/2016	Lipi Saha	1822924
EPA 365.1 Rev. 2.0 dissolved	08/10/2016			08/10/2016 16:45	Julia Storbeck	1822925
SM 2120 B	08/10/2016			08/10/2016 17:24	Rochelle Y Jackson	1822923
SM 2320 B-97	08/10/2016			08/11/2016	Dale L. Simmons	1822923
SM 2540 C-97	08/10/2016			08/11/2016	Yijie Li	1822923
SM 2540 D-97	08/10/2016			08/11/2016	Yijie Li	1822923
SM 4500 F-C-97	08/10/2016			08/11/2016	Dale L. Simmons	1822923
SM 5310 B-00	08/10/2016			08/19/2016	Sofia Elnemr	1822924