

Chemical Analysis Report

SW-DIST-2016-03-02-02

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

Event Description: **WBID 1984AB**
Request ID: **RQ-2016-02-29-19**
Customer: **SW-DIST**
Project ID: **SMP**

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 21-MAR-2016 13:28



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: G3SW0034

Collection Date/Time: 03/01/2016 11:50

Field ID: G3SW0034

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776249	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P299617	
	EPA 300.0 Rev. 2.1	Chloride	96		mg Cl/L	P299992	
		Sulfate	120		mg SO4/L	P299994	
	SM 2120 B	Color (true)	150		PCU	P299605	
	SM 2320 B-97	Total Alkalinity	341		mg CaCO3/L	P300245	
	SM 2540 C-97	TDS	728		mg/L	P300374	
	SM 2540 D-97	TSS	2	U	mg/L	P300019	
	SM 4500 F-C-97	Fluoride	0.40		mg F/L	P300249	
1776250	EPA 350.1 Rev. 2.0	Ammonia-N	0.090		mg N/L	P300157	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P299904	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.068		mg N/L	P299938	
	EPA 365.1 Rev. 2.0	Total-P	0.064		mg P/L	P300006	
	SM 5310 B-00	Organic Carbon	32		mg C/L	P299917	
1776251	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.042		mg P/L	P299609	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Matrix spike recovery data for one of two spiked samples is unavailable due to high analyte concentration in the QC sample.

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P299617

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P299992

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P299994

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P300157

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P299904

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: P299938

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300006

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299609

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

Reference Method: SM 2120 B
Batch ID: P299605

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P300245

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

Reference Method: SM 2540 C-97
Batch ID: P300374

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P300019

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P300249

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P299917

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: P299992

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299994

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300157

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299904

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299938

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: P300006

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299609

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

Reference Method: SM 2320 B-97
Batch ID: P300245

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P300249

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	94 - 108

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P299917

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299992

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776219	Chloride	102		P	90 - 110
1776583	Chloride	101	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299994

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776219	Sulfate	99.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300157

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776222	Ammonia-N	94.8	98.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299904

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776220	Kjeldahl Nitrogen	97.4	98.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299938

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776250	NO2NO3-N	96.8	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300006

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776220	Total-P	95.9	97.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299609

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776110	O-Phosphate-P	96.9	97.5	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P300249

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776724	Fluoride	98.5	99.1	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P299917

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776138	Organic Carbon	96.4		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P299617

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776217	Turbidity	2.19	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299992

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776583	Chloride	0.0570	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299994

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776583	Sulfate	0.155	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300157

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776222	Ammonia-N	2.15	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299904

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776220	Kjeldahl Nitrogen	0.397	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299938

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: P299938

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776250	NO2NO3-N	1.52	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300006

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776220	Total-P	1.21	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299609

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776110	O-Phosphate-P	0.617	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P299605

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776359	Color (true)	3.40	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P300245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776724	Total Alkalinity	1.16	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P300374

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776226	TDS	7.73	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P300249

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776724	Fluoride	0.490	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P299917

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776138	Organic Carbon	0.459	Spike	P	0 - 20

Quality Assurance Report Precision

* 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: A67948
Included Lab Sample IDs: 1776249

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.4	98.5	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A67950
Included Lab Sample IDs: 1776251

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.5	99.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A67951
Included Lab Sample IDs: 1776249

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

Reference Method: SM 5310 B-00
Run ID: A68073
Included Lab Sample IDs: 1776250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.4	96.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A68079
Included Lab Sample IDs: 1776250

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A68089
Included Lab Sample IDs: 1776249

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.5	98.2	P/P	90 - 110
Sulfate	98.7	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A68121
Included Lab Sample IDs: 1776250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	104	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A68144

Included Lab Sample IDs: 1776250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.8	99.0	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A68179

Included Lab Sample IDs: 1776249

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.9	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A68179

Included Lab Sample IDs: 1776249

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A68240

Included Lab Sample IDs: 1776250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.4	95.0	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				2.19	
EPA 300.0 Rev. 2.1	Chloride	103	101 101 102			0.0570
	Sulfate	100	99.9			0.155
EPA 350.1 Rev. 2.0	Ammonia-N	97.1	94.8 98.7			2.15
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.6	97.4 98.1			0.397
EPA 353.2 Rev. 2.0	NO2NO3-N	102	96.8 98.8			1.52
EPA 365.1 Rev. 2.0	Total-P	97.2	95.9 97.1			1.21
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	96.9 97.5			0.617
SM 2120 B	Color (true)				3.40	
SM 2320 B-97	Total Alkalinity	101			1.16	
SM 2540 C-97	TDS				7.73	
SM 4500 F-C-97	Fluoride	98.4	98.5 99.1			0.490
SM 5310 B-00	Organic Carbon	94.0	96.4			0.459

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
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Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1776249
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1776249
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1776249
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1776250
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1776250
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1776250
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1776250
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1776251
SM 2120 B / E31780	True Color measured at 450 nm	1776249
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1776249
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1776249
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1776249
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1776249
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1776250

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	03/02/2016			03/02/2016 15:05	Sima Feizi	1776249
EPA 300.0 Rev. 2.1	03/02/2016			03/08/2016	Julia Storbeck	1776249
EPA 350.1 Rev. 2.0	03/02/2016			03/10/2016	Diana M. Turner	1776250
EPA 351.2 Rev. 2.0	03/02/2016	03/08/2016	Sofia Elnemr	03/14/2016	Rochelle Y Jackson	1776250
EPA 353.2 Rev. 2.0	03/02/2016			03/08/2016	Peter D. Kaus	1776250
EPA 365.1 Rev. 2.0	03/02/2016	03/09/2016	Christopher Armour	03/09/2016	Lipi Saha	1776250
EPA 365.1 Rev. 2.0 dissolved	03/02/2016			03/02/2016 15:02	Julia Storbeck	1776251
SM 2120 B	03/02/2016			03/02/2016 14:46	Rochelle Y Jackson	1776249
SM 2320 B-97	03/02/2016			03/10/2016	Dale L. Simmons	1776249
SM 2540 C-97	03/02/2016			03/07/2016	Yijie Li	1776249
SM 2540 D-97	03/02/2016			03/07/2016	Yijie Li	1776249
SM 4500 F-C-97	03/02/2016			03/10/2016	Dale L. Simmons	1776249
SM 5310 B-00	03/02/2016			03/05/2016	Sofia Elnemr	1776250