Chemical Analysis Report

SW-DIST-2016-04-06-01

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

Event Description: **8044, 1409C**
Request ID: **RQ-2016-04-04-75**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Matt Bearden

For additional information please contact
Timothy W. Fitzpatrick
Liang-Tsair Lin, Ph.D.
Colin Wright, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 25-APR-2016 17:06

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: G5SW0029 **Collection Date/Time: 04/05/2016 12:20**

Field ID: G5SW0029 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1786897	EPA 180.1 Rev. 2.0	Turbidity	1.3	A	NTU	P301753	
	SM 2320 B-97	Total Alkalinity	139		mg CaCO3/L	P301939	
	SM 2540 D-97	TSS	3	I	mg/L	P302401	
	SM 4500 F-C-97	Fluoride	0.78		mg F/L	P301938	
1786899	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P302133	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P302385	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.015		mg N/L	P302431	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P302221	
	SM 5310 B-00	Organic Carbon	6.3		mg C/L	P301990	
1786901	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P301721	

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

Sample Location: G5SW0061 **Collection Date/Time: 04/05/2016 13:00**

Field ID: G5SW0061 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1786898	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P301753	
	SM 2320 B-97	Total Alkalinity	143		mg CaCO3/L	P301939	
	SM 2540 D-97	TSS	3	U	mg/L	P302401	
	SM 4500 F-C-97	Fluoride	0.92		mg F/L	P301938	
1786900	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P302133	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56		mg N/L	P302385	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P302431	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P302221	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P301990	
1786902	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P301721	

Ref. Method and Comment:
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: P301753

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302133

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302385

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302431

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302221

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301721

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

Reference Method: SM 2320 B-97
Batch ID: P301939

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

Reference Method: SM 2540 D-97
Batch ID: P302401

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P301938

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P301990

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: P302133

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302133

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: P302385

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302431

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302221

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301721

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

Reference Method: SM 2320 B-97
Batch ID: P301939

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P301938

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.3		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P301990

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302133

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302133

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1786862	Ammonia-N	102	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302385

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1786833	Kjeldahl Nitrogen	104	96.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302431

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1786968	NO2NO3-N	98.8	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302221

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1786899	Total-P	90.5	93.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301721

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1786973	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P301938

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1786536	Fluoride	97.4	98.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P301990

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1786834	Organic Carbon	94.6	97.9	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P301753

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1786897	Turbidity	6.95	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302133

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1786862	Ammonia-N	0.675	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1786833	Kjeldahl Nitrogen	5.69	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302431

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1786968	NO2NO3-N	0.933	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302221

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1786899	Total-P	3.17	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301721

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1786973	O-Phosphate-P	0.742	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P301939

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1786536	Total Alkalinity	0.0176	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P301938

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1786536	Fluoride	0.476	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P301990

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1786834	Organic Carbon	2.71	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: EPA 365.1 Rev. 2.0 dissolved
Run ID: A68691
Included Lab Sample IDs: 1786901, 1786902

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A68705
Included Lab Sample IDs: 1786897, 1786898

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	100	P/P	95 - 105

Reference Method: SM 2320 B-97
Run ID: A68768
Included Lab Sample IDs: 1786897, 1786898

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A68768
Included Lab Sample IDs: 1786897, 1786898

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	99.0	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A68790
Included Lab Sample IDs: 1786899, 1786900

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A68841
Included Lab Sample IDs: 1786899, 1786900

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A68904
Included Lab Sample IDs: 1786899, 1786900

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	98.8	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A68930
Included Lab Sample IDs: 1786899, 1786900

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A68945
Included Lab Sample IDs: 1786899, 1786900

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.4	99.0	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		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					6.95	
EPA 350.1 Rev. 2.0	Ammonia-N	101	102	101			0.675
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	104	96.7			5.69
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	98.8	97.8			0.933
EPA 365.1 Rev. 2.0	Total-P	100	90.5	93.5			3.17
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	101	102			0.742
SM 2320 B-97	Total Alkalinity	102				0.0176	
SM 4500 F-C-97	Fluoride	98.3	97.4	98.1			0.476
SM 5310 B-00	Organic Carbon	101	94.6	97.9			2.71

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1786897, 1786898
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1786899, 1786900
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1786899, 1786900
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1786899, 1786900
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1786899, 1786900
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1786901, 1786902
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1786897, 1786898
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1786897, 1786898
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1786897, 1786898
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1786899, 1786900

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	04/06/2016			04/06/2016 16:24	Sima Feizi	1786897, 1786898
EPA 350.1 Rev. 2.0	04/06/2016			04/12/2016	Diana M. Turner	1786899, 1786900
EPA 351.2 Rev. 2.0	04/06/2016	04/18/2016	Sofia Elnemr	04/19/2016	Rochelle Y Jackson	1786899, 1786900
EPA 353.2 Rev. 2.0	04/06/2016			04/18/2016	Diana M. Turner	1786899, 1786900
EPA 365.1 Rev. 2.0	04/06/2016	04/14/2016	Christopher Armour	04/15/2016	Lipi Saha	1786899, 1786900
EPA 365.1 Rev. 2.0 dissolved	04/06/2016			04/06/2016 15:23	Julia Storbeck	1786901
	04/06/2016			04/06/2016 15:24	Julia Storbeck	1786902
SM 2320 B-97	04/06/2016			04/08/2016	Dale L. Simmons	1786897, 1786898
SM 2540 D-97	04/06/2016			04/11/2016	Yijie Li	1786897, 1786898
SM 4500 F-C-97	04/06/2016			04/08/2016	Dale L. Simmons	1786897, 1786898
SM 5310 B-00	04/06/2016			04/09/2016	Sofia Elnemr	1786899, 1786900