

Chemical Analysis Report

SO-DIST-2016-06-08-01

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

Event Description: **SMP: Group 4 Streams**
Request ID: **RQ-2016-05-02-37**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
Attn: Ben Paswater

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 30-JUN-2016 14:56

A handwritten signature in black ink, appearing to read "Liang Lin", 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 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: Joe Slough @ Graham Dairy Road

Collection Date/Time: 06/07/2016 10:10

Field ID: G4SD060716-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1806401	EPA 180.1 Rev. 2.0	Turbidity	9.4		NTU	P305856	
	EPA 300.0 Rev. 2.1	Chloride	57		mg Cl/L	P306258	
		Sulfate	11		mg SO4/L	P306262	
	SM 2120 B	Color (true)	170		PCU	P305877	
	SM 2320 B-97	Total Alkalinity	40	A	mg CaCO3/L	P305980	
	SM 2540 C-97	TDS	243	A	mg/L	P306518	
	SM 2540 D-97	TSS	21	A	mg/L	P306444	
	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P305983	
1806402	EPA 350.1 Rev. 2.0	Ammonia-N	0.059		mg N/L	P306126	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.0		mg N/L	P305958	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P305599	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P306149	
	SM 5310 B-00	Organic Carbon	32		mg C/L	P306322	
1806403	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.024		mg P/L	P305814	

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P305856

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P306258

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P306262

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P306126

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P305958

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: P3055991

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306149

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305814

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

Reference Method: SM 2120 B
Batch ID: P305877

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P305980

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

Reference Method: SM 2540 C-97
Batch ID: P306518

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P306444

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P305983

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P306322

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: P306258

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306262

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306126

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305958

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	108		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P3055991

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: P306149

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: P305814

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

Reference Method: SM 2320 B-97
Batch ID: P305980

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P305983

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P306322

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	105		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306258

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806407	Chloride	97.4	96.8	P/P	90 - 110
1807236	Chloride	98.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306262

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806407	Sulfate	94.7	94.1	P/P	90 - 110
1807236	Sulfate	95.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P3055991

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806386	NO2NO3-N	94.4	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306149

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806418	Total-P	99.5	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305814

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806390	O-Phosphate-P	97.4	99.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P305983

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806401	Fluoride	101	98.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P306322

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1804803	Organic Carbon	111	107	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P305856

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806381	Turbidity	1.84	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306258

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806407	Chloride	0.400	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306262

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806407	Sulfate	0.380	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306126

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806385	Ammonia-N	0.572	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305958

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806402	Kjeldahl Nitrogen	4.23	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P3055991

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806386	NO2NO3-N	1.54	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306149

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806418	Total-P	2.98	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305814

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806390	O-Phosphate-P	1.52	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P305877

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806381	Color (true)	2.37	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P305980

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806401	Total Alkalinity	1.81	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P306518

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806401	TDS	5.76	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P306444

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806401	TSS	3.85	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P305983

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806401	Fluoride	1.92	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P306322

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1804803	Organic Carbon	1.98	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 365.1 Rev. 2.0 dissolved
Run ID: A69921
Included Lab Sample IDs: 1806403

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A69934

Included Lab Sample IDs: 1806401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.0	99.5	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A69940

Included Lab Sample IDs: 1806401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.5	99.9	P/P	90 - 115

Reference Method: SM 2320 B-97

Run ID: A69968

Included Lab Sample IDs: 1806401

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

Reference Method: SM 4500 F-C-97

Run ID: A69968

Included Lab Sample IDs: 1806401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A70000

Included Lab Sample IDs: 1806402

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A70003

Included Lab Sample IDs: 1806402

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A70016

Included Lab Sample IDs: 1806402

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.4	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A70045

Included Lab Sample IDs: 1806401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	99.8	P/P	90 - 110
Sulfate	96.7	98.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A70049

Included Lab Sample IDs: 1806402

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	105	105	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A70079

Included Lab Sample IDs: 1806402

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	102	103	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				1.84	
EPA 300.0 Rev. 2.1	Chloride	98.5	97.4 96.8 98.4			0.400
	Sulfate	96.4	94.7 94.1 95.0			0.380
EPA 350.1 Rev. 2.0	Ammonia-N	99.9				0.572
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108				4.23
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	94.4 96.4			1.54
EPA 365.1 Rev. 2.0	Total-P	98.2	99.5 96.4			2.98
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	97.4 99.0			1.52
SM 2120 B	Color (true)				2.37	
SM 2320 B-97	Total Alkalinity	103			1.81	
SM 2540 C-97	TDS				5.76	
SM 2540 D-97	TSS				3.85	
SM 4500 F-C-97	Fluoride	100	101 98.6			1.92
SM 5310 B-00	Organic Carbon	105	111 107			1.98

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1806401
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1806401
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1806401
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1806402
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1806402
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1806402
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1806402

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1806403
SM 2120 B / E31780	True Color measured at 450 nm	1806401
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1806401
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1806401
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1806401
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1806401
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1806402

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	06/08/2016			06/08/2016 17:59	Rochelle Y Jackson	1806401
EPA 300.0 Rev. 2.1	06/08/2016			06/14/2016	Elisa J Lutz	1806401
EPA 350.1 Rev. 2.0	06/08/2016			06/13/2016	Diana M. Turner	1806402
EPA 351.2 Rev. 2.0	06/08/2016	06/10/2016	Sofia Elnemr	06/13/2016	Christopher Armour	1806402
EPA 353.2 Rev. 2.0	06/08/2016			06/10/2016	Beverly Y. Sanders	1806402
EPA 365.1 Rev. 2.0	06/08/2016	06/14/2016	Vijayalakshmi Reddy	06/15/2016	Lipi Saha	1806402
EPA 365.1 Rev. 2.0 dissolved	06/08/2016			06/08/2016 14:31	Julia Storbeck	1806403
SM 2120 B	06/08/2016			06/08/2016 17:35	Chrisoulla Rakowski	1806401
SM 2320 B-97	06/08/2016			06/10/2016	Dale L. Simmons	1806401
SM 2540 C-97	06/08/2016			06/10/2016	Yijie Li	1806401
SM 2540 D-97	06/08/2016			06/10/2016	Yijie Li	1806401
SM 4500 F-C-97	06/08/2016			06/10/2016	Dale L. Simmons	1806401
SM 5310 B-00	06/08/2016			06/15/2016	Sofia Elnemr	1806402