

Chemical Analysis Report

NE-DIST-2016-04-27-01

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

Event Description: **UEC SCI**
Request ID: **RQ-2016-04-25-25**
Customer: **NE-DIST**
Project ID: **SMP**

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 24-MAY-2016 16:11



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: Moses Cr @ 400m below US1

Collection Date/Time: 04/26/2016 11:40

Field ID: G5NE0015

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1793320	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P303119	
	EPA 300.0 Rev. 2.1	Chloride	66		mg Cl/L	P303580	
		Sulfate	8.4		mg SO4/L	P303584	
	SM 2120 B	Color (true)	86	A	PCU	P303142	
	SM 2320 B-97	Total Alkalinity	176	A	mg CaCO3/L	P303464	
	SM 2540 C-97	TDS	340	A	mg/L	P303762	
	SM 2540 D-97	TSS	4	I	mg/L	P303753	
	SM 4500 F-C-97	Fluoride	0.18		mg F/L	P303280	
1793321	EPA 350.1 Rev. 2.0	Ammonia-N	0.075		mg N/L	P303784	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.89	J	mg N/L	P304142	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.073		mg N/L	P303830	
	EPA 365.1 Rev. 2.0	Total-P	0.22		mg P/L	P303857	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P304636	
1793322	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.16		mg P/L	P303102	

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.

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: Refer to the narrative for an explanation of QC Codes.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P303119

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P303580

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P303584

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P303784

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: P304142

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P303830

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: P303857

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303102

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

Reference Method: SM 2120 B
Batch ID: P303142

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P303464

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

Reference Method: SM 2540 C-97
Batch ID: P303762

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P303753

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P303280

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P304636

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: P303580

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	96.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303584

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	91.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303784

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: P304142

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	106		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P303830

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: P303857

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: P303102

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

Reference Method: SM 2320 B-97
Batch ID: P303464

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P303464

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

Reference Method: SM 4500 F-C-97
Batch ID: P303280

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.8		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P304636

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 300.0 Rev. 2.1
Batch ID: P303580

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793263	Chloride	95.8		P	90 - 110
1793328	Chloride	94.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303584

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793328	Sulfate	93.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304142

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793321	Kjeldahl Nitrogen	83.0	82.3	F/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P303830

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793321	NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P303857

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793274	Total-P	100	98.8	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303102

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793334	O-Phosphate-P	103	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P303280

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793320	Fluoride	98.2	98.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P304636

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793332	Organic Carbon	97.5	98.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P303119

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793264	Turbidity	1.30	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303580

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793263	Chloride	0.00898	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303584

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793263	Sulfate	0.120	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303784

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793321	Ammonia-N	0.782	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793321	Kjeldahl Nitrogen	0.489	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P303830

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793321	NO2NO3-N	0.363	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P303857

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793274	Total-P	1.30	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303102

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793334	O-Phosphate-P	1.18	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P303142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793320	Color (true)	0.975	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P303464

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793320	Total Alkalinity	0.236	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P303762

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793320	TDS	3.82	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P303280

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793320	Fluoride	0.509	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P304636

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793332	Organic Carbon	0.272	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: A69135

Included Lab Sample IDs: 1793322

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.9	99.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A69141

Included Lab Sample IDs: 1793320

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

Reference Method: SM 2120 B

Run ID: A69151

Included Lab Sample IDs: 1793320

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.4	99.1	P/P	90 - 115

Reference Method: SM 4500 F-C-97

Run ID: A69187

Included Lab Sample IDs: 1793320

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A69217

Included Lab Sample IDs: 1793320

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Sulfate	95.2	98.7	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A69249

Included Lab Sample IDs: 1793320

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	98.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A69333

Included Lab Sample IDs: 1793321

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69353

Included Lab Sample IDs: 1793321

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69420

Included Lab Sample IDs: 1793321

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69472

Included Lab Sample IDs: 1793321

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.2	101	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A69584

Included Lab Sample IDs: 1793321

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.4	97.7	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				1.30	
EPA 300.0 Rev. 2.1	Chloride	96.0	95.8	94.6	0.0089	
	Sulfate	91.3	93.6		0.120	
EPA 350.1 Rev. 2.0	Ammonia-N	98.8				0.782
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	83.0	82.3		0.489
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	101		0.363
EPA 365.1 Rev. 2.0	Total-P	102	100	98.8		1.30
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	105	101	103		1.18
SM 2120 B	Color (true)				0.975	
SM 2320 B-97	Total Alkalinity	101			0.236	
SM 2540 C-97	TDS				3.82	
SM 4500 F-C-97	Fluoride	98.8	98.2	98.9		0.509
SM 5310 B-00	Organic Carbon	98.6	97.5	98.0		0.272

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
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Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1793320
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1793320
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1793320
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1793321
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1793321
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1793321
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1793321
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1793322
SM 2120 B / E31780	True Color measured at 450 nm	1793320
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1793320
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1793320
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1793320
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1793320
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1793321

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	04/27/2016			04/27/2016 16:13	Sima Feizi	1793320
EPA 300.0 Rev. 2.1	04/27/2016			05/04/2016	Elisa J Lutz	1793320
EPA 350.1 Rev. 2.0	04/27/2016			05/06/2016	Diana M. Turner	1793321
EPA 351.2 Rev. 2.0	04/27/2016	05/12/2016	Christopher Armour	05/13/2016	Virginia P. Brown	1793321
EPA 353.2 Rev. 2.0	04/27/2016			05/09/2016	Peter D. Kaus	1793321
EPA 365.1 Rev. 2.0	04/27/2016	05/10/2016	Vijayalakshmi Reddy	05/11/2016	Lipi Saha	1793321
EPA 365.1 Rev. 2.0 dissolved	04/27/2016			04/27/2016 15:26	Julia Storbeck	1793322
SM 2120 B	04/27/2016			04/28/2016 10:44	Rochelle Y Jackson	1793320
SM 2320 B-97	04/27/2016			05/04/2016	Dale L. Simmons	1793320
SM 2540 C-97	04/27/2016			04/29/2016	Yijie Li	1793320
SM 2540 D-97	04/27/2016			04/29/2016	Yijie Li	1793320
SM 4500 F-C-97	04/27/2016			04/30/2016	Dale L. Simmons	1793320
SM 5310 B-00	04/27/2016			05/19/2016	Diana M. Turner	1793321