

Chemical Analysis Report

NE-DIST-2018-08-24-01

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

Event Description: **Deep Creek and Trib SCI / RPS**
Request ID: **RQ-2018-08-20-42**
Customer: **NE-DIST**
Project ID: **SMP**

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 13-SEP-2018 15:07

A handwritten signature in black ink, appearing to read "Liang Lin", is shown 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: Deep creek downstream of cowpen branch rd Collection Date/Time: 08/23/2018 11:20

Field ID: G2NE1173

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2020109	EPA 180.1 Rev. 2.0	Turbidity	11		NTU	P350731	
	EPA 300.0 Rev. 2.1	Chloride	26		mg Cl/L	P350933	
		Sulfate	13		mg SO4/L	P350935	
		Color (true)	570		PCU	P350729	
	SM 2320 B-97	Total Alkalinity	11		mg CaCO3/L	P351143	
	SM 2540 C-97	TDS	165		mg/L	P351068	
	SM 2540 D-97	TSS	15		mg/L	P351030	
	SM 4500 F-C-97	Fluoride	0.072	I	mg F/L	P351052	
2020110	EPA 350.1 Rev. 2.0	Ammonia-N	0.037		mg N/L	P350916	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P350827	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.088		mg N/L	P350858	
	EPA 365.1 Rev. 2.0	Total-P	0.22		mg P/L	P350830	
	SM 5310 B-00	Organic Carbon	44		mg C/L	P350877	
2020111	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P350726	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P350731

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350933

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350935

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350916

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350827

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350858

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350830

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350726

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

Reference Method: SM 2120 B
Batch ID: P350729

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P351143

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

Reference Method: SM 2540 C-97
Batch ID: P351068

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P351030

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P351052

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P350877

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: P350933

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350935

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350916

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350827

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350858

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350830

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350726

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.9		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P350729

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	96.4		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P351143

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P351052

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.7		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P350877

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350933

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019572	Chloride	107		P	90 - 110
2019922	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350935

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019572	Sulfate	106		P	90 - 110
2019922	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350916

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019953	Ammonia-N	96.3	96.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350827

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020074	Kjeldahl Nitrogen	97.8	97.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350858

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020004	NO2NO3-N	95.0	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350830

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020074	Total-P	96.5	96.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350726

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020078	O-Phosphate-P	96.5	97.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P351052

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020073	Fluoride	98.1	98.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P350877

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019917	Organic Carbon	97.9	97.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P350731

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020076	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019572	Chloride	3.75	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350935

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019572	Sulfate	4.20	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350916

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019953	Ammonia-N	0.346	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350827

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020074	Kjeldahl Nitrogen	0.271	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350858

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020004	NO2NO3-N	2.69	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350830

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020074	Total-P	0.291	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020078	O-Phosphate-P	0.674	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P350729

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019925	Color (true)	2.73	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P351143

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020073	Total Alkalinity	0.102	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P351068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020073	TDS	4.03	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P351052

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020073	Fluoride	0.477	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P350877

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019917	Organic Carbon	0.666	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: A86105

Included Lab Sample IDs: 2020111

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	102	99.4	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A86107

Included Lab Sample IDs: 2020109

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.4	96.7	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A86108

Included Lab Sample IDs: 2020109

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	102	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A86155

Included Lab Sample IDs: 2020110

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

Reference Method: SM 5310 B-00

Run ID: A86162

Included Lab Sample IDs: 2020110

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.2	96.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86163

Included Lab Sample IDs: 2020110

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	99.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86177

Included Lab Sample IDs: 2020110

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	95.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A86185

Included Lab Sample IDs: 2020110

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 300.0 Rev. 2.1

Run ID: A86194

Included Lab Sample IDs: 2020109

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	107	P/P	90 - 110
Sulfate	102	105	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A86252

Included Lab Sample IDs: 2020109

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

Reference Method: SM 2320 B-97

Run ID: A86303

Included Lab Sample IDs: 2020109

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	101	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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					0.0	
EPA 300.0 Rev. 2.1	Chloride	107	107	104		3.75	
	Sulfate	104	106	102		4.20	
EPA 350.1 Rev. 2.0	Ammonia-N	97.0	96.3	96.8			0.346
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	97.8	97.4			0.271
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	95.0	98.0			2.69
EPA 365.1 Rev. 2.0	Total-P	96.5	96.5	96.8			0.291
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.9	96.5	97.5			0.674
SM 2120 B	Color (true)	96.4				2.73	
SM 2320 B-97	Total Alkalinity	103				0.102	
SM 2540 C-97	TDS					4.03	
SM 4500 F-C-97	Fluoride	97.7	98.1	98.3			0.477
SM 5310 B-00	Organic Carbon	95.6	97.9	97.1			0.666

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2020109
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2020109
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2020109
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2020110
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2020110
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2020110
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2020110
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2020111
SM 2120 B / E31780	True Color measured at 450 nm	2020109
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2020109
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2020109
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2020109
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2020109
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2020110

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	08/24/2018			08/24/2018 16:07	Julia Storbeck	2020109
EPA 300.0 Rev. 2.1	08/24/2018			08/30/2018 02:46	Lipi Saha	2020109
EPA 350.1 Rev. 2.0	08/24/2018			08/29/2018 12:45	Ping Hua	2020110
EPA 351.2 Rev. 2.0	08/24/2018	08/28/2018 11:00	Adrian Shelby	08/29/2018 13:24	Joseph Suarez	2020110
EPA 353.2 Rev. 2.0	08/24/2018			08/28/2018 13:47	Lauren Bottorf	2020110
EPA 365.1 Rev. 2.0	08/24/2018	08/28/2018 15:06	Sima Feizi	08/29/2018 07:50	Beverly Y. Sanders	2020110
EPA 365.1 Rev. 2.0 dissolved	08/24/2018			08/24/2018 14:18	Lipi Saha	2020111
SM 2120 B	08/24/2018			08/24/2018 16:04	Julia Storbeck	2020109
SM 2320 B-97	08/24/2018			09/05/2018 19:31	Dale L. Simmons	2020109
SM 2540 C-97	08/24/2018			08/28/2018 15:02	Yijie Li	2020109
SM 2540 D-97	08/24/2018			08/28/2018 15:02	Yijie Li	2020109
SM 4500 F-C-97	08/24/2018			08/31/2018 03:14	Dale L. Simmons	2020109
SM 5310 B-00	08/24/2018			08/29/2018 02:36	Megan Treadwell	2020110