Chemical Analysis Report

CEN-DIST-2017-11-14-01

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

Event Description: **Silver River + HA**
Request ID: **RQ-2017-11-13-49**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
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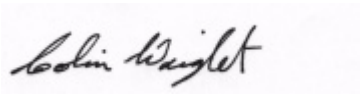
Certified by: Colin Wright, Program Administrator

Date Certified: 04-DEC-2017 17:14



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: G1CE0059 **Collection Date/Time: 11/13/2017 14:11**

Field ID: G1CE0059 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1945838	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P335266	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P335299	
		Sulfate	47		mg SO4/L	P335301	
	SM 2120 B	Color (true)	3.5	I	PCU	P335271	
	SM 2320 B-97	Total Alkalinity	183		mg CaCO3/L	P335625	
	SM 2540 C-97	TDS	273		mg/L	P335710	
	SM 2540 D-97	TSS	2	I	mg/L	P335728	
	SM 4500 F-C-97	Fluoride	0.18		mg F/L	P335629	
1945839	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P336091	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.090	I	mg N/L	P335875	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.2		mg N/L	P335700	
	EPA 365.1 Rev. 2.0	Total-P	0.041		mg P/L	P335449	
	SM 5310 B-00	Organic Carbon	0.91	I	mg C/L	P335610	
1945840	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.038		mg P/L	P335244	

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: P335266

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335299

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335301

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336091

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P335875

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: P335700

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P335449

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335244

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

Reference Method: SM 2120 B
Batch ID: P335271

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P335625

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

Reference Method: SM 2540 C-97
Batch ID: P335710

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P335728

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P335629

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P335610

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: P335299

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335301

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336091

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P335875

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	109		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335700

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P335449

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: P335244

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.4		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P335625

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P335629

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: P335610

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335299

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945930	Chloride	96.4		P	90 - 110
1945972	Chloride	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335301

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945930	Sulfate	98.9		P	90 - 110
1945972	Sulfate	98.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336091

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1944928	Ammonia-N	94.8	96.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P335875

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945803	Kjeldahl Nitrogen	105	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335700

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945824	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P335449

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945839	Total-P	98.8	96.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335244

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945779	O-Phosphate-P	94.9	96.8	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P335629

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945798	Fluoride	100	101	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P335610

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945758	Organic Carbon	100	102	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P335266

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945902	Turbidity	2.99	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335299

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945930	Chloride	0.387	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335301

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945930	Sulfate	0.510	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336091

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1944928	Ammonia-N	1.25	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P335875

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945803	Kjeldahl Nitrogen	2.42	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335700

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335700

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945824	NO2NO3-N	0.426	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P335449

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945839	Total-P	2.31	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335244

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945779	O-Phosphate-P	1.65	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P335271

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945823	Color (true)	2.26	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P335625

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945798	Total Alkalinity	0.644	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P335710

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945800	TDS	2.67	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P335629

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945798	Fluoride	0.479	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P335610

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945758	Organic Carbon	0.842	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 300.0 Rev. 2.1
Run ID: A80230
Included Lab Sample IDs: 1945838

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Sulfate	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A80251
Included Lab Sample IDs: 1945840

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	103	104	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A80257
Included Lab Sample IDs: 1945838

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

Reference Method: SM 2120 B
Run ID: A80259
Included Lab Sample IDs: 1945838

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	101	P/P	85 - 115

Reference Method: SM 5310 B-00
Run ID: A80378
Included Lab Sample IDs: 1945839

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.6	100	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A80383
Included Lab Sample IDs: 1945838

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A80383
Included Lab Sample IDs: 1945838

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A80391
Included Lab Sample IDs: 1945839

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A80428
Included Lab Sample IDs: 1945839

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A80585
Included Lab Sample IDs: 1945839

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.2	94.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A80596
Included Lab Sample IDs: 1945839

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	102	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					2.99	
EPA 300.0 Rev. 2.1	Chloride	97.6	96.4	97.7		0.387	
	Sulfate	98.9	98.9	98.7		0.510	
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	94.8	96.1			1.25
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	109	105	102			2.42
EPA 353.2 Rev. 2.0	NO2NO3-N	106	104	104			0.426
EPA 365.1 Rev. 2.0	Total-P	102	98.8	96.3			2.31
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.4	94.9	96.8			1.65
SM 2120 B	Color (true)					2.26	
SM 2320 B-97	Total Alkalinity	103				0.644	
SM 2540 C-97	TDS					2.67	
SM 4500 F-C-97	Fluoride	100	100	101			0.479
SM 5310 B-00	Organic Carbon	98.4	100	102			0.842

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1945838
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1945838
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1945838
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1945839
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1945839
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1945839
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1945839
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1945840
SM 2120 B / E31780	True Color measured at 450 nm	1945838
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1945838
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1945838
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1945838
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1945838
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1945839

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	11/14/2017			11/14/2017 16:23	DeAsia Armster	1945838
EPA 300.0 Rev. 2.1	11/14/2017			11/14/2017	Julia Storbeck	1945838
EPA 350.1 Rev. 2.0	11/14/2017			11/29/2017	Sofia Elnemr	1945839
EPA 351.2 Rev. 2.0	11/14/2017	11/27/2017	Adrian Shelby	11/28/2017	Joseph Suarez	1945839
EPA 353.2 Rev. 2.0	11/14/2017			11/21/2017	Lauren Bottorf	1945839
EPA 365.1 Rev. 2.0	11/14/2017	11/16/2017	Sima Feizi	11/20/2017	Lipi Saha	1945839
EPA 365.1 Rev. 2.0 dissolved	11/14/2017			11/14/2017 14:14	Megan Treadwell	1945840
SM 2120 B	11/14/2017			11/14/2017 15:59	Tanya Welborn	1945838
SM 2320 B-97	11/14/2017			11/18/2017	Dale L. Simmons	1945838
SM 2540 C-97	11/14/2017			11/17/2017	Yijie Li	1945838
SM 2540 D-97	11/14/2017			11/17/2017	Yijie Li	1945838
SM 4500 F-C-97	11/14/2017			11/18/2017	Dale L. Simmons	1945838
SM 5310 B-00	11/14/2017			11/18/2017	Ping Hua	1945839