

Chemical Analysis Report

CEN-DIST-2016-12-06-02

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

Event Description: **Helena Run+HA**
Request ID: **RQ-2016-12-05-69**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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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: Helena Run 0.45 upstream of Hwy 27

Collection Date/Time: 12/05/2016 11:00

Field ID: G1CE0035

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1855160	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P316282	
	EPA 300.0 Rev. 2.1	Chloride	26		mg Cl/L	P316907	
		Sulfate	4.5		mg SO4/L	P316904	
	SM 2120 B	Color (true)	43		PCU	P316287	
	SM 2320 B-97	Total Alkalinity	108		mg CaCO3/L	P316631	
	SM 2540 C-97	TDS	207	A	mg/L	P316919	
	SM 2540 D-97	TSS	7	I	mg/L	P316837	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P316635	
1855161	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P316613	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.94		mg N/L	P316575	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P316402	
	EPA 365.1 Rev. 2.0	Total-P	0.056		mg P/L	P316497	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P316377	
1855162	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P316266	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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: P316282

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P316904

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P316907

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P316613

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P316575

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: P316402

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316497

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316266

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

Reference Method: SM 2120 B
Batch ID: P316287

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P316631

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

Reference Method: SM 2540 C-97
Batch ID: P316919

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P316837

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P316635

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P316377

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: P316904

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	95.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316907

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316613

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: P316575

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316402

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316497

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316266

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.0		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P316631

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.9		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P316635

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P316377

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316904

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855815	Sulfate	97.2		P	90 - 110
1855818	Sulfate	96.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316907

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855815	Chloride	102		P	90 - 110
1855818	Chloride	98.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316613

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855185	Ammonia-N	102	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316575

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854689	Kjeldahl Nitrogen	99.5	94.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316402

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855161	NO2NO3-N	94.2	95.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316497

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855239	Total-P	108	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316266

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855020	O-Phosphate-P	98.1	98.4	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P316635

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855003	Fluoride	99.8	101	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P316377

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855007	Organic Carbon	98.9	97.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316282

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855048	Turbidity	2.32	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316907

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855815	Chloride	0.0887	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316613

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855185	Ammonia-N	3.20	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316575

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854689	Kjeldahl Nitrogen	4.48	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316402

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855161	NO2NO3-N	0.957	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316497

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P316497

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855239	Total-P	3.47	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P316266

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855020	O-Phosphate-P	0.239	Spike	P	0 - 20

Reference Method: SM 2120 B

Batch ID: P316287

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855123	Color (true)	1.68	Sample	P	0 - 20

Reference Method: SM 2320 B-97

Batch ID: P316631

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855003	Total Alkalinity	0.107	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97

Batch ID: P316919

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855160	TDS	3.86	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97

Batch ID: P316635

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855003	Fluoride	0.953	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00

Batch ID: P316377

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855007	Organic Carbon	1.99	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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A73203

Included Lab Sample IDs: 1855162

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	98.2	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A73206

Included Lab Sample IDs: 1855160

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

Reference Method: SM 2120 B

Run ID: A73207

Included Lab Sample IDs: 1855160

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	85 - 115

Reference Method: SM 5310 B-00

Run ID: A73237

Included Lab Sample IDs: 1855161

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.8	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A73247

Included Lab Sample IDs: 1855161

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.5	95.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A73313

Included Lab Sample IDs: 1855161

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	103	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A73323

Included Lab Sample IDs: 1855160

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.0	99.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A73323

Included Lab Sample IDs: 1855160

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73336

Included Lab Sample IDs: 1855161

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	106	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A73353

Included Lab Sample IDs: 1855161

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.4	93.4	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A73375

Included Lab Sample IDs: 1855160

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	104	P/P	90 - 110
Sulfate	99.9	98.1	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				2.32	
EPA 300.0 Rev. 2.1	Chloride	101	102 98.8		0.0887	
	Sulfate	95.9	97.2 96.7			
EPA 350.1 Rev. 2.0	Ammonia-N	101	102 98.6			3.20
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.9	99.5 94.0			4.48
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	94.2 95.2			0.957
EPA 365.1 Rev. 2.0	Total-P	107	108 104			3.47
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.0	98.1 98.4			0.239
SM 2120 B	Color (true)				1.68	
SM 2320 B-97	Total Alkalinity	98.9			0.107	
SM 2540 C-97	TDS				3.86	
SM 4500 F-C-97	Fluoride	98.3	99.8 101			0.953
SM 5310 B-00	Organic Carbon	96.8	98.9 97.0			1.99

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1855160
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1855160
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1855160

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1855161
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1855161
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1855161
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1855161
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1855162
SM 2120 B / E31780	True Color measured at 450 nm	1855160
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1855160
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1855160
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1855160
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1855160
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1855161

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	12/06/2016			12/06/2016 15:54	Sima Feizi	1855160
EPA 300.0 Rev. 2.1	12/06/2016			12/16/2016	Ping Hua	1855160
EPA 350.1 Rev. 2.0	12/06/2016			12/09/2016	Sofia Elnemr	1855161
EPA 351.2 Rev. 2.0	12/06/2016	12/12/2016	Martin Acosta	12/13/2016	Joseph Suarez	1855161
EPA 353.2 Rev. 2.0	12/06/2016			12/08/2016	Beverly Y. Sanders	1855161
EPA 365.1 Rev. 2.0	12/06/2016	12/09/2016	Vijayalakshmi Reddy	12/12/2016	Lipi Saha	1855161
EPA 365.1 Rev. 2.0 dissolved	12/06/2016			12/06/2016 15:04	Julia Storbeck	1855162
SM 2120 B	12/06/2016			12/06/2016 17:25	Jared I. Manley	1855160
SM 2320 B-97	12/06/2016			12/09/2016	Dale L. Simmons	1855160
SM 2540 C-97	12/06/2016			12/09/2016	Yijie Li	1855160
SM 2540 D-97	12/06/2016			12/09/2016	Yijie Li	1855160
SM 4500 F-C-97	12/06/2016			12/09/2016	Dale L. Simmons	1855160
SM 5310 B-00	12/06/2016			12/08/2016	Julie Michelle Frank	1855161