

Chemical Analysis Report

SO-DIST-2018-03-20-02

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

Event Description: **SCI: SMP - Bobcat Creek**
Request ID: **RQ-2018-03-19-71**
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
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Certified by: Colin Wright, Program Administrator

Date Certified: 04-APR-2018 12:36

A handwritten signature in black ink, appearing to read "Colin Wright", is placed over a light gray rectangular 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: BobcatCreek in Preserve

Collection Date/Time: 03/19/2018 14:40

Field ID: G3SD0131

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1975978	EPA 180.1 Rev. 2.0	Turbidity	20	A	NTU	P341855	
	EPA 300.0 Rev. 2.1	Chloride	36		mg Cl/L	P342135	
		Sulfate	10		mg SO4/L	P342139	
	SM 2120 B	Color (true)	34	A	PCU	P341860	
	SM 2320 B-97	Total Alkalinity	114		mg CaCO3/L	P342404	
	SM 2540 C-97	TDS	224	A	mg/L	P342114	
	SM 2540 D-97	TSS	21	A	mg/L	P342385	
	SM 4500 F-C-97	Fluoride	0.53		mg F/L	P342405	MS, RPD
1975979	EPA 350.1 Rev. 2.0	Ammonia-N	0.050		mg N/L	P342303	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P341983	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.042		mg N/L	P341995	
	EPA 365.1 Rev. 2.0	Total-P	0.98		mg P/L	P342034	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P342440	
1975980	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.51		mg P/L	P341871	

Ref. Method and Comment:

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P341855

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P342135

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P342139

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P342303

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P341983

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: P341995

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342034

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341871

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

Reference Method: SM 2120 B
Batch ID: P341860

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P342404

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

Reference Method: SM 2540 C-97
Batch ID: P342114

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P342385

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P342405

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P342440

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: P342135

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342139

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342303

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341983

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341995

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: P342034

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341871

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

Reference Method: SM 2320 B-97
Batch ID: P342404

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.9		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P342405

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.3		P	91 - 105

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P342440

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342135

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975943	Chloride	97.5		P	90 - 110
1976039	Chloride	97.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342139

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975943	Sulfate	101		P	90 - 110
1976039	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342303

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975944	Ammonia-N	100	99.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341983

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975950	Kjeldahl Nitrogen	102	92.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341995

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975979	NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341871

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975876	O-Phosphate-P	98.1	99.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P342405

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976044	Fluoride	133	95.9	F/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P342440

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1975979	Organic Carbon	97.3	98.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P341855

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975978	Turbidity	1.49	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975943	Chloride	1.27	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342139

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975943	Sulfate	1.74	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342303

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975944	Ammonia-N	0.323	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341983

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975950	Kjeldahl Nitrogen	8.07	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341995

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975979	NO2NO3-N	0.409	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342034

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975979	Total-P	3.76	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341871

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975876	O-Phosphate-P	0.665	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P341860

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975978	Color (true)	9.55	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P342404

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976044	Total Alkalinity	0.0545	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P342114

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975978	TDS	6.71	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P342385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975978	TSS	5.71	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P342405

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976044	Fluoride	25.7	Spike	F	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P342440

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975979	Organic Carbon	0.792	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 180.1 Rev. 2.0

Run ID: A82739

Included Lab Sample IDs: 1975978

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

Reference Method: SM 2120 B

Run ID: A82740

Included Lab Sample IDs: 1975978

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A82742

Included Lab Sample IDs: 1975980

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A82750

Included Lab Sample IDs: 1975978

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	94.7	93.9	P/P	90 - 110
Sulfate	96.5	94.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A82782

Included Lab Sample IDs: 1975979

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A82813

Included Lab Sample IDs: 1975979

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82848

Included Lab Sample IDs: 1975979

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.0	96.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82889

Included Lab Sample IDs: 1975979

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	102	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A82926

Included Lab Sample IDs: 1975978

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.4	98.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82926

Included Lab Sample IDs: 1975978

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.6	98.6	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A82941

Included Lab Sample IDs: 1975979

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.4	98.3	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				1.49	
EPA 300.0 Rev. 2.1	Chloride	99.4	97.5	97.9	1.27	
	Sulfate	103	101	102	1.74	
EPA 350.1 Rev. 2.0	Ammonia-N	96.5	100	99.6		0.323
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.7	102	92.5		8.07
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	101	102		0.409
EPA 365.1 Rev. 2.0	Total-P	99.1				3.76
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.0	98.1	99.2		0.665
SM 2120 B	Color (true)				9.55	
SM 2320 B-97	Total Alkalinity	98.9			0.0545	
SM 2540 C-97	TDS				6.71	
SM 2540 D-97	TSS				5.71	
SM 4500 F-C-97	Fluoride	95.3	133	95.9		25.7
SM 5310 B-00	Organic Carbon	98.2	97.3	98.6		0.792

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1975978
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1975978
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1975978
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1975979
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1975979
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1975979
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1975979
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1975980
SM 2120 B / E31780	True Color measured at 450 nm	1975978
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1975978
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1975978
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1975978
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1975978
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1975979

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	03/20/2018			03/20/2018 15:18	DeAsia Armster	1975978
EPA 300.0 Rev. 2.1	03/20/2018			03/22/2018	Julia Storbeck	1975978
EPA 350.1 Rev. 2.0	03/20/2018			03/27/2018	Ping Hua	1975979
EPA 351.2 Rev. 2.0	03/20/2018	03/22/2018	Adrian Shelby	03/23/2018	Joseph Suarez	1975979
EPA 353.2 Rev. 2.0	03/20/2018			03/22/2018	Beverly Y. Sanders	1975979
EPA 365.1 Rev. 2.0	03/20/2018	03/22/2018	Sima Feizi	03/23/2018	Lipi Saha	1975979
EPA 365.1 Rev. 2.0 dissolved	03/20/2018			03/20/2018 16:03	Megan Treadwell	1975980
SM 2120 B	03/20/2018			03/20/2018 15:37	Tanya Welborn	1975978
SM 2320 B-97	03/20/2018			03/28/2018	Dale L. Simmons	1975978
SM 2540 C-97	03/20/2018			03/21/2018	Yijie Li	1975978
SM 2540 D-97	03/20/2018			03/21/2018	Yijie Li	1975978
SM 4500 F-C-97	03/20/2018			03/28/2018	Dale L. Simmons	1975978
SM 5310 B-00	03/20/2018			03/27/2018	Megan Treadwell	1975979