Chemical Analysis Report

SO-DIST-2016-05-04-01

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

Event Description: **SMP: Bobcat Cr, Unnamed Ditches**
Request ID: **RQ-2016-04-25-05**
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
Attn: Ben Paswater

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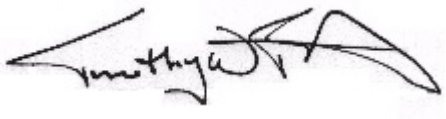
Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 31-MAY-2016 15:04



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: 2028 SITE 3 **Collection Date/Time: 05/03/2016 09:30**

Field ID: G3SD050316-1 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1795621	EPA 180.1 Rev. 2.0	Turbidity	12		NTU	P303540	
	EPA 300.0 Rev. 2.1	Chloride	36		mg Cl/L	P304194	
		Sulfate	9.6		mg SO4/L	P304198	
	SM 2120 B	Color (true)	100		PCU	P303559	
	SM 2320 B-97	Total Alkalinity	88		mg CaCO3/L	P304329	
	SM 2540 C-97	TDS	191	A	mg/L	P304339	
	SM 2540 D-97	TSS	4	I	mg/L	P304170	
	SM 4500 F-C-97	Fluoride	0.61		mg F/L	P304123	
1795622	EPA 350.1 Rev. 2.0	Ammonia-N	0.037		mg N/L	P304088	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P304498	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.055		mg N/L	P304160	
	EPA 365.1 Rev. 2.0	Total-P	1.3		mg P/L	P304533	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P304748	
1795623	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.93		mg P/L	P303553	

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P303540

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304194

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304198

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304088

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304498

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: P304160

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304533

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303553

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

Reference Method: SM 2120 B
Batch ID: P303559

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P304329

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

Reference Method: SM 2540 C-97
Batch ID: P304339

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P304170

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P304123

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P304748

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: P304194

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304198

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304088

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	94.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304498

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304160

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304533

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303553

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	100		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P304329

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

Reference Method: SM 4500 F-C-97
Batch ID: P304123

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.5		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P304748

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: P304194

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1795378	Chloride	98.6		P	90 - 110
1795695	Chloride	97.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304198

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1795378	Sulfate	97.0		P	90 - 110
1795695	Sulfate	96.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304088

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1795674	Ammonia-N	95.0	95.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304498

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1795383	Kjeldahl Nitrogen	100	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304160

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1795387	NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303553

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1795791	O-Phosphate-P	98.0	99.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P304123

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1795777	Fluoride	97.9	97.9	P/P	91 - 105

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P304748

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1795364	Organic Carbon	98.4	100	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P303540

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1795380	Turbidity	3.67	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1795695	Chloride	0.0722	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P304198

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1795695	Sulfate	2.09	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304088

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1795674	Ammonia-N	0.252	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304498

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1795383	Kjeldahl Nitrogen	0.375	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304160

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1795387	NO2NO3-N	0.656	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304533

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1795622	Total-P	0.231	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303553

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1795791	O-Phosphate-P	1.32	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P303559

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1795670	Color (true)	2.12	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P304329

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1795777	Total Alkalinity	0.300	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P304339

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1795621	TDS	3.14	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P304123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1795777	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P304748

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1795364	Organic Carbon	1.39	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 180.1 Rev. 2.0
Run ID: A69278
Included Lab Sample IDs: 1795621

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.5	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A69280
Included Lab Sample IDs: 1795623

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

Reference Method: SM 2120 B
Run ID: A69282
Included Lab Sample IDs: 1795621

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	99.8	P/P	90 - 115

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A69423
Included Lab Sample IDs: 1795621

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Sulfate	99.4	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A69427
Included Lab Sample IDs: 1795622

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	95.1	95.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A69434
Included Lab Sample IDs: 1795621

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A69443
Included Lab Sample IDs: 1795622

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

Reference Method: SM 2320 B-97
Run ID: A69481
Included Lab Sample IDs: 1795621

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	99.4	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A69571
Included Lab Sample IDs: 1795622

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.7	95.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A69580
Included Lab Sample IDs: 1795622

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.7	103	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A69610
Included Lab Sample IDs: 1795622

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.8	99.2	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					3.67	
EPA 300.0 Rev. 2.1	Chloride	100	97.8	98.6		0.0722	
	Sulfate	97.7	96.1	97.0		2.09	
EPA 350.1 Rev. 2.0	Ammonia-N	94.6	95.0	95.3			0.252
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	100	101			0.375
EPA 353.2 Rev. 2.0	NO2NO3-N	104	102	103			0.656
EPA 365.1 Rev. 2.0	Total-P	99.8					0.231
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	98.0	99.3			1.32
SM 2120 B	Color (true)					2.12	
SM 2320 B-97	Total Alkalinity	101				0.300	
SM 2540 C-97	TDS					3.14	
SM 4500 F-C-97	Fluoride	99.5	97.9	97.9			0.0
SM 5310 B-00	Organic Carbon	98.6	98.4	100			1.39

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1795621
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1795621
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1795621
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1795622

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1795622
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1795622
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1795622
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1795623
SM 2120 B / E31780	True Color measured at 450 nm	1795621
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1795621
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1795621
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1795621
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1795621
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1795622

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	05/04/2016			05/04/2016 15:16	Sima Feizi	1795621
EPA 300.0 Rev. 2.1	05/04/2016			05/12/2016	Elisa J Lutz	1795621
EPA 350.1 Rev. 2.0	05/04/2016			05/11/2016	Diana M. Turner	1795622
EPA 351.2 Rev. 2.0	05/04/2016	05/18/2016	Sofia Elnemr	05/19/2016	Christopher Armour	1795622
EPA 353.2 Rev. 2.0	05/04/2016			05/12/2016	Peter D. Kaus	1795622
EPA 365.1 Rev. 2.0	05/04/2016	05/18/2016	Vijayalakshmi Reddy	05/19/2016	Lipi Saha	1795622
EPA 365.1 Rev. 2.0 dissolved	05/04/2016			05/04/2016 16:08	Julia Storbeck	1795623
SM 2120 B	05/04/2016			05/05/2016 08:25	Rochelle Y Jackson	1795621
SM 2320 B-97	05/04/2016			05/13/2016	Dale L. Simmons	1795621
SM 2540 C-97	05/04/2016			05/06/2016	Yijie Li	1795621
SM 2540 D-97	05/04/2016			05/06/2016	Yijie Li	1795621
SM 4500 F-C-97	05/04/2016			05/11/2016	Dale L. Simmons	1795621
SM 5310 B-00	05/04/2016			05/21/2016	Rochelle Y Jackson	1795622