Chemical Analysis Report

SO-DIST-2018-09-14-01

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

Event Description: **Cow Slough HA**
Request ID: **RQ-2018-09-10-70**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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FLDEP South District Office
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Date Certified: 03-OCT-2018 10:58

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: CowSlough @LkTraffordRd **Collection Date/Time: 09/13/2018 11:11**

Field ID: IMKFSHCK Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2025418	EPA 180.1 Rev. 2.0	Turbidity	4.2	A	NTU	P351843	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P352242	
		Sulfate	9.7		mg SO4/L	P352245	
	SM 2120 B	Color (true)	270		PCU	P351992	
	SM 2320 B-97	Total Alkalinity	54		mg CaCO3/L	P351903	
	SM 2540 C-97	TDS	154	A	mg/L	P352128	
	SM 2540 D-97	TSS	8	IA	mg/L	P352130	
	SM 4500 F-C-97	Fluoride	0.096	I	mg F/L	P351906	
2025419	EPA 350.1 Rev. 2.0	Ammonia-N	0.12		mg N/L	P351825	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P351921	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.054		mg N/L	P351999	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P351791	
	SM 5310 B-00	Organic Carbon	29		mg C/L	P352092	
2025420	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.094		mg P/L	P351689	

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: P351843

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352242

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352245

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351825

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351921

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351999

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351791

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351689

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

Reference Method: SM 2120 B
Batch ID: P351992

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P351903

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

Reference Method: SM 2540 C-97
Batch ID: P352128

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P352130

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P351906

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P352092

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: P352242

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352245

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351825

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	105		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351921

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351999

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351791

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351689

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

Reference Method: SM 2120 B
Batch ID: P351992

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.8		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P351903

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	98 - 107

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P351906

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.6		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P352092

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352242

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025287	Chloride	95.6		P	90 - 110
2025344	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025287	Sulfate	98.0		P	90 - 110
2025344	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351825

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025457	Ammonia-N	103	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351921

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025409	Kjeldahl Nitrogen	109	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351999

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025427	NO2NO3-N	99.0	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351791

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025428	Total-P	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025465	O-Phosphate-P	102	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P351906

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025343	Fluoride	96.3	95.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P352092

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025362	Organic Carbon	101	101	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P351843

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025418	Turbidity	2.38	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352242

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025287	Chloride	0.110	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025287	Sulfate	0.0938	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351825

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025457	Ammonia-N	0.904	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351921

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025409	Kjeldahl Nitrogen	2.98	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351999

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025427	NO2NO3-N	0.583	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351791

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025428	Total-P	0.0735	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025465	O-Phosphate-P	0.977	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P351992

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025426	Color (true)	0.0626	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P351903

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025343	Total Alkalinity	0.145	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P352128

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025418	TDS	1.95	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P351906

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025343	Fluoride	0.487	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P352092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025362	Organic Carbon	0.149	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: SM 2120 B
Run ID: A86502
Included Lab Sample IDs: 2025418

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.7	97.8	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A86504
Included Lab Sample IDs: 2025420

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.9	99.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A86557
Included Lab Sample IDs: 2025419

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A86561
Included Lab Sample IDs: 2025418

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

Reference Method: SM 2320 B-97
Run ID: A86586
Included Lab Sample IDs: 2025418

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.6	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A86586
Included Lab Sample IDs: 2025418

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A86596
Included Lab Sample IDs: 2025419

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A86611
Included Lab Sample IDs: 2025419

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.4	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A86615
Included Lab Sample IDs: 2025419

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A86647
Included Lab Sample IDs: 2025419

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.1	97.1	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A86718
Included Lab Sample IDs: 2025418

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	101	P/P	90 - 110
Sulfate	102	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		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					2.38	
EPA 300.0 Rev. 2.1	Chloride	101	95.6	100		0.110	
	Sulfate	101	98.0	100		0.0938	
EPA 350.1 Rev. 2.0	Ammonia-N	105	103	102			0.904
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.2	109	104			2.98
EPA 353.2 Rev. 2.0	NO2NO3-N	100	99.0	100			0.583
EPA 365.1 Rev. 2.0	Total-P	98.4	100	100			0.0735
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	102	103			0.977
SM 2120 B	Color (true)	97.8				0.0626	
SM 2320 B-97	Total Alkalinity	100				0.145	
SM 2540 C-97	TDS					1.95	
SM 4500 F-C-97	Fluoride	97.6	96.3	95.8			0.487
SM 5310 B-00	Organic Carbon	98.0	101	101			0.149

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2025418
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2025418
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2025418
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2025419
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2025419
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2025419
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2025419
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2025420
SM 2120 B / E31780	True Color measured at 450 nm	2025418
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2025418
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2025418
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2025418
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2025418
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2025419

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	09/14/2018			09/14/2018 16:35	Megan Treadwell	2025418
EPA 300.0 Rev. 2.1	09/14/2018			09/25/2018 07:28	Lipi Saha	2025418
EPA 350.1 Rev. 2.0	09/14/2018			09/18/2018 14:19	Ping Hua	2025419
EPA 351.2 Rev. 2.0	09/14/2018	09/19/2018 15:55	Adrian Shelby	09/20/2018 13:07	Joseph Suarez	2025419
EPA 353.2 Rev. 2.0	09/14/2018			09/20/2018 13:19	Lauren Bottorf	2025419
EPA 365.1 Rev. 2.0	09/14/2018	09/18/2018 12:30	Sima Feizi	09/20/2018 08:22	Beverly Y. Sanders	2025419
EPA 365.1 Rev. 2.0 dissolved	09/14/2018			09/14/2018 15:51	Julia Storbeck	2025420
SM 2120 B	09/14/2018			09/14/2018 15:43	DeAsia Armster	2025418
SM 2320 B-97	09/14/2018			09/19/2018 02:30	Dale L. Simmons	2025418
SM 2540 C-97	09/14/2018			09/18/2018 14:02	Yijie Li	2025418
SM 2540 D-97	09/14/2018			09/18/2018 14:02	Yijie Li	2025418
SM 4500 F-C-97	09/14/2018			09/19/2018 02:30	Dale L. Simmons	2025418
SM 5310 B-00	09/14/2018			09/21/2018 03:18	Megan Treadwell	2025419