Chemical Analysis Report

CEN-DIST-2016-11-04-01

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

Event Description: **Turkey creek+HA**
Request ID: **RQ-2016-10-03-45**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Orlando, FL 32803-3767
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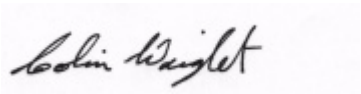
Certified by: Colin Wright, Environmental Administrator

Date Certified: 01-DEC-2016 09:13



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: TURKEY Creek 125m SW of Port Malabar **Collection Date/Time: 11/03/2016 14:06**

Field ID: G5CE0043 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1847527	EPA 180.1 Rev. 2.0	Turbidity	4.8		NTU	P314636	
	EPA 300.0 Rev. 2.1	Chloride	150		mg Cl/L	P315660	
		Sulfate	51		mg SO4/L	P315659	
	SM 2120 B	Color (true)	44	A	PCU	P314629	
	SM 2320 B-97	Total Alkalinity	237		mg CaCO3/L	P315058	
	SM 2540 C-97	TDS	599		mg/L	P315049	
	SM 2540 D-97	TSS	6	I	mg/L	P315051	
	SM 4500 F-C-97	Fluoride	0.27		mg F/L	P315060	
1847528	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P315183	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.64		mg N/L	P315611	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.23		mg N/L	P314791	
	EPA 365.1 Rev. 2.0	Total-P	0.043		mg P/L	P315145	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P314743	
1847529	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.015		mg P/L	P314637	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high 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: P314636

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315659

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315660

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315183

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315611

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: P314791

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315145

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314637

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

Reference Method: SM 2120 B
Batch ID: P314629

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P315058

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

Reference Method: SM 2540 C-97
Batch ID: P315049

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P315051

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P315060

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P314743

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: P315659

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315660

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315183

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315611

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314791

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: P315145

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: P314637

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

Reference Method: SM 2320 B-97
Batch ID: P315058

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P315060

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.0		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P314743

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315659

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1851970	Sulfate	94.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315660

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1851965	Chloride	98.3		P	90 - 110
1851970	Chloride	98.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315183

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1847521	Ammonia-N	105	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315611

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1847297	Kjeldahl Nitrogen	107	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314791

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1847440	NO2NO3-N	105	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1847144	Total-P	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314637

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1847298	O-Phosphate-P	98.5	99.4	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P315060

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1847437	Fluoride	99.8	99.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P314743

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1847554	Organic Carbon	97.0	98.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P314636

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1847481	Turbidity	4.46	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315659

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1851965	Sulfate	0.0216	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315660

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1851965	Chloride	0.451	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315183

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1847521	Ammonia-N	1.15	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315611

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1847297	Kjeldahl Nitrogen	0.700	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314791

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: P314791

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1847440	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1847144	Total-P	0.0656	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314637

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1847298	O-Phosphate-P	0.627	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P314629

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1847527	Color (true)	2.05	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P315058

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1847437	Total Alkalinity	1.19	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P315049

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1847437	TDS	0.851	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P315060

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1847437	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P314743

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1847554	Organic Carbon	0.729	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: SM 2120 B
Run ID: A72633
Included Lab Sample IDs: 1847527

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.6	101	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A72634
Included Lab Sample IDs: 1847527

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A72635
Included Lab Sample IDs: 1847529

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

Reference Method: SM 5310 B-00
Run ID: A72671
Included Lab Sample IDs: 1847528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.8	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A72695
Included Lab Sample IDs: 1847528

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

Reference Method: SM 2320 B-97
Run ID: A72775
Included Lab Sample IDs: 1847527

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

Reference Method: SM 4500 F-C-97
Run ID: A72775
Included Lab Sample IDs: 1847527

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	100	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A72814
Included Lab Sample IDs: 1847528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A72891
Included Lab Sample IDs: 1847528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	104	102	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A72975
Included Lab Sample IDs: 1847527

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Sulfate	97.3	99.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A72998
Included Lab Sample IDs: 1847528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	97.9	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					4.46	
EPA 300.0 Rev. 2.1	Chloride	99.1	98.3	98.4		0.451	
	Sulfate	96.8	94.5			0.0216	
EPA 350.1 Rev. 2.0	Ammonia-N	103	105	103			1.15
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	110	107	106			0.700
EPA 353.2 Rev. 2.0	NO2NO3-N	106	105	105			0.0
EPA 365.1 Rev. 2.0	Total-P	102	100	100			0.0656
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.5	99.4			0.627
SM 2120 B	Color (true)					2.05	
SM 2320 B-97	Total Alkalinity	101				1.19	
SM 2540 C-97	TDS					0.851	
SM 4500 F-C-97	Fluoride	97.0	99.8	99.8			0.0
SM 5310 B-00	Organic Carbon	99.2	97.0	98.3			0.729

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1847527
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1847527
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1847527
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1847528
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1847528
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1847528
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1847528
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1847529
SM 2120 B / E31780	True Color measured at 450 nm	1847527
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1847527
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1847527
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1847527
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1847527
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1847528

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	11/04/2016			11/04/2016 16:03	Sima Feizi	1847527
EPA 300.0 Rev. 2.1	11/04/2016			11/23/2016	Ping Hua	1847527
EPA 350.1 Rev. 2.0	11/04/2016			11/15/2016	Julie Michelle Frank	1847528
EPA 351.2 Rev. 2.0	11/04/2016	11/22/2016	Adrian Shelby	11/23/2016	Joseph Suarez	1847528
EPA 353.2 Rev. 2.0	11/04/2016			11/08/2016	Beverly Y. Sanders	1847528
EPA 365.1 Rev. 2.0	11/04/2016	11/15/2016	Adrian Shelby	11/18/2016	Lipi Saha	1847528
EPA 365.1 Rev. 2.0 dissolved	11/04/2016			11/04/2016 16:14	Julia Storbeck	1847529
SM 2120 B	11/04/2016			11/04/2016 15:09	Jared I. Manley	1847527
SM 2320 B-97	11/04/2016			11/11/2016	Dale L. Simmons	1847527
SM 2540 C-97	11/04/2016			11/09/2016	Yijie Li	1847527
SM 2540 D-97	11/04/2016			11/09/2016	Yijie Li	1847527
SM 4500 F-C-97	11/04/2016			11/11/2016	Dale L. Simmons	1847527
SM 5310 B-00	11/04/2016			11/07/2016	Julie Michelle Frank	1847528