

Chemical Analysis Report

TLH-ROC-2018-01-11-01

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

Event Description: **kit A w/ bacteria**
Request ID: **RQ-2018-01-01-24**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Michael Eckles

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 02-FEB-2018 09:40



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: WILLACOOCHEE CREEK

Collection Date/Time: 01/11/2018 10:40

Field ID: G1TLHR0087

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1958884	EPA 180.1 Rev. 2.0	Turbidity	6.7		NTU	P338122	
	EPA 300.0 Rev. 2.1	Chloride	6.4		mg Cl/L	P338416	
		Sulfate	0.53		mg SO4/L	P338418	
	SM 2120 B	Color (true)	41		PCU	P338109	
	SM 2320 B-97	Total Alkalinity	18		mg CaCO3/L	P338673	
	SM 2540 C-97	TDS	52		mg/L	P338391	
	SM 2540 D-97	TSS	7	I	mg/L	P338550	
	SM 4500 F-C-97	Fluoride	0.057	I	mg F/L	P338677	
1958885	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P338537	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36		mg N/L	P338263	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.5		mg N/L	P338403	
	EPA 365.1 Rev. 2.0	Total-P	0.044		mg P/L	P338265	
	SM 5310 B-00	Organic Carbon	3.1		mg C/L	P338324	
1958886	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.014		mg P/L	P338142	

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: P338122

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P338416

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P338418

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P338537

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P338263

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: P338403

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338265

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338142

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

Reference Method: SM 2120 B
Batch ID: P338109

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P338673

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

Reference Method: SM 2540 C-97
Batch ID: P338391

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P338550

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P338677

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P338324

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: P338416

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	96.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338418

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338537

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: P338263

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338403

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: P338265

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.1		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338142

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

Reference Method: SM 2320 B-97
Batch ID: P338673

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.8		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P338677

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.6		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P338324

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.9		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338416

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1958884	Chloride	92.4		P	90 - 110
1959125	Chloride	95.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338418

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1958884	Sulfate	91.4		P	90 - 110
1959125	Sulfate	92.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338537

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1958885	Ammonia-N	98.1	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338263

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1958893	Kjeldahl Nitrogen	103	91.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338403

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1959527	NO2NO3-N	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338265

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1958885	Total-P	99.0	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338142

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1958886	O-Phosphate-P	95.7	96.8	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P338677

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1959526	Fluoride	95.7	95.7	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P338324

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1958648	Organic Carbon	94.2	94.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P338122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1958698	Turbidity	2.47	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338416

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1959125	Chloride	0.847	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338418

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1959125	Sulfate	1.41	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1958885	Ammonia-N	1.13	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338263

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1958893	Kjeldahl Nitrogen	9.68	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338403

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338403

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1959527	NO2NO3-N	0.468	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338265

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1958885	Total-P	0.138	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1958886	O-Phosphate-P	0.999	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P338109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1958722	Color (true)	6.61	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P338673

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1959526	Total Alkalinity	0.728	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P338391

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1958699	TDS	3.19	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P338677

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1959526	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P338324

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1958648	Organic Carbon	0.101	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: A81418
Included Lab Sample IDs: 1958884

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A81425
Included Lab Sample IDs: 1958884

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	99.0	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A81429
Included Lab Sample IDs: 1958886

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.7	97.0	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A81480
Included Lab Sample IDs: 1958885

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.4	94.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A81512
Included Lab Sample IDs: 1958885

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A81519
Included Lab Sample IDs: 1958885

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.9	105	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A81524
Included Lab Sample IDs: 1958884

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Sulfate	103	99.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A81552

Included Lab Sample IDs: 1958885

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A81570

Included Lab Sample IDs: 1958885

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	102	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A81614

Included Lab Sample IDs: 1958884

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.9	97.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A81614

Included Lab Sample IDs: 1958884

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.1	99.5	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				2.47	
EPA 300.0 Rev. 2.1	Chloride	96.7	95.0 92.4		0.847	
	Sulfate	94.0	92.7 91.4		1.41	
EPA 350.1 Rev. 2.0	Ammonia-N	101	98.1 99.5			1.13
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	103 91.7			9.68
EPA 353.2 Rev. 2.0	NO2NO3-N	102	104 105			0.468
EPA 365.1 Rev. 2.0	Total-P	98.1	99.0 98.8			0.138
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	95.9	95.7 96.8			0.999
SM 2120 B	Color (true)				6.61	
SM 2320 B-97	Total Alkalinity	98.8			0.728	
SM 2540 C-97	TDS				3.19	
SM 4500 F-C-97	Fluoride	94.6	95.7 95.7			0.0
SM 5310 B-00	Organic Carbon	94.9	94.2 94.1			0.101

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
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Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1958884
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1958884
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1958884
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1958885
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1958885
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1958885
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1958885
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1958886
SM 2120 B / E31780	True Color measured at 450 nm	1958884
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1958884
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1958884
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1958884
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1958884
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1958885

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	01/11/2018			01/11/2018 14:38	DeAsia Armster	1958884
EPA 300.0 Rev. 2.1	01/11/2018			01/17/2018	Julia Storbeck	1958884
EPA 350.1 Rev. 2.0	01/11/2018			01/19/2018	Sofia Elnemr	1958885
EPA 351.2 Rev. 2.0	01/11/2018	01/16/2018	Adrian Shelby	01/18/2018	Joseph Suarez	1958885
EPA 353.2 Rev. 2.0	01/11/2018			01/18/2018	Beverly Y. Sanders	1958885
EPA 365.1 Rev. 2.0	01/11/2018	01/16/2018	Sima Feizi	01/19/2018	Lipi Saha	1958885
EPA 365.1 Rev. 2.0 dissolved	01/11/2018			01/11/2018 16:23	Megan Treadwell	1958886
SM 2120 B	01/11/2018			01/11/2018 15:39	Tanya Welborn	1958884
SM 2320 B-97	01/11/2018			01/23/2018	Dale L. Simmons	1958884
SM 2540 C-97	01/11/2018			01/13/2018	Yijie Li	1958884
SM 2540 D-97	01/11/2018			01/13/2018	Yijie Li	1958884
SM 4500 F-C-97	01/11/2018			01/23/2018	Dale L. Simmons	1958884
SM 5310 B-00	01/11/2018			01/17/2018	Megan Treadwell	1958885