

Chemical Analysis Report

TLH-ROC-2018-02-22-01

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-2018-01-29-48**
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: 16-MAR-2018 11:51



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: SOUTH MOSQUITO CREEK @

Collection Date/Time: 02/22/2018 11:30

Field ID: G2TLHR0039

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969833	EPA 180.1 Rev. 2.0	Turbidity	7.8	A	NTU	P340458	
	EPA 300.0 Rev. 2.1	Chloride	3.9		mg Cl/L	P340796	
		Sulfate	1.0		mg SO4/L	P340800	
	SM 2120 B	Color (true)	53	A	PCU	P340452	
	SM 2320 B-97	Total Alkalinity	24		mg CaCO3/L	P340919	
	SM 2540 C-97	TDS	71		mg/L	P340806	
	SM 2540 D-97	TSS	8	I	mg/L	P340882	
	SM 4500 F-C-97	Fluoride	0.071	I	mg F/L	P341123	MS, RPD
	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P340968	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25		mg N/L	P340559	
1969834	EPA 353.2 Rev. 2.0	NO2NO3-N	0.31		mg N/L	P340588	
	EPA 365.1 Rev. 2.0	Total-P	0.044		mg P/L	P340582	
	SM 5310 B-00	Organic Carbon	4.2		mg C/L	P340632	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.014		mg P/L	P340479	
	dissolved						

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 5310 B-00: 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: P340458

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P340796

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P340800

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P340968

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P340559

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: P340588

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340582

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P340479

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

Reference Method: SM 2120 B
Batch ID: P340452

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P340919

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

Reference Method: SM 2540 C-97
Batch ID: P340806

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P340882

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P341123

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P340632

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: P340796

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

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P340800

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P340968

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P340559

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: P340588

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

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P340582

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P340479

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.9		P	90 - 110

Reference Method: SM 2320 B-97
 Batch ID: P340919

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.0		P	95 - 108

Reference Method: SM 4500 F-C-97
 Batch ID: P341123

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.7		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P340632

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.7		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340796

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969665	Chloride	96.1		P	90 - 110
1969667	Chloride	97.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340800

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969665	Sulfate	98.2		P	90 - 110
1969667	Sulfate	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340968

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969677	Ammonia-N	92.8	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340559

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969834	Kjeldahl Nitrogen	101	98.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340588

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969668	NO2NO3-N	98.6	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340582

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969624	Total-P	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P340479

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969674	O-Phosphate-P	97.9	97.9	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
 Batch ID: P341123

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969839	Fluoride	94.9	108	P/F	91 - 105

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P340458

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969833	Turbidity	4.85	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P340796

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969665	Chloride	2.17	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P340800

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969665	Sulfate	1.96	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P340968

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969677	Ammonia-N	5.82	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P340559

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969834	Kjeldahl Nitrogen	2.57	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P340588

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969668	NO2NO3-N	0.0	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340582

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969624	Total-P	0.440	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P340479

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969674	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P340452

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969833	Color (true)	1.54	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P340919

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969839	Total Alkalinity	0.957	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P340806

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969622	TDS	4.91	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P341123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969839	Fluoride	9.61	Spike	F	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P340632

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969610	Organic Carbon	0.691	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: SM 2120 B
Run ID: A82235
Included Lab Sample IDs: 1969833

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.2	98.6	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A82236
Included Lab Sample IDs: 1969833

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A82246
Included Lab Sample IDs: 1969835

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.9	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A82286
Included Lab Sample IDs: 1969834

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.5	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A82301
Included Lab Sample IDs: 1969834

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.5	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A82302
Included Lab Sample IDs: 1969834

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A82322
Included Lab Sample IDs: 1969833

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.3	99.6	P/P	90 - 110
Sulfate	98.2	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A82347
Included Lab Sample IDs: 1969834

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.6	95.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A82421
Included Lab Sample IDs: 1969833

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.7	99.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A82430
Included Lab Sample IDs: 1969834

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.6	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A82484
Included Lab Sample IDs: 1969833

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	99.0	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				4.85	
EPA 300.0 Rev. 2.1	Chloride	97.7	96.1 97.5		2.17	
	Sulfate	97.6	98.2 97.9		1.96	
EPA 350.1 Rev. 2.0	Ammonia-N	100	92.8 102			5.82
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	101 98.0			2.57
EPA 353.2 Rev. 2.0	NO2NO3-N	103	98.6 98.6			0.0
EPA 365.1 Rev. 2.0	Total-P	103	101 102			0.440
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.9	97.9 97.9			0.0
SM 2120 B	Color (true)				1.54	
SM 2320 B-97	Total Alkalinity	99.0			0.957	
SM 2540 C-97	TDS				4.91	
SM 4500 F-C-97	Fluoride	94.7	94.9 108			9.61
SM 5310 B-00	Organic Carbon	99.7				0.691

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1969833
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1969833
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1969833
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1969834

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1969834
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1969834
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1969834
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1969835
SM 2120 B / E31780	True Color measured at 450 nm	1969833
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1969833
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1969833
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1969833
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1969833
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1969834

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	02/22/2018			02/22/2018 15:15	Julia Storbeck	1969833
EPA 300.0 Rev. 2.1	02/22/2018			03/01/2018	Julia Storbeck	1969833
EPA 350.1 Rev. 2.0	02/22/2018			03/05/2018	Ping Hua	1969834
EPA 351.2 Rev. 2.0	02/22/2018	02/26/2018	Adrian Shelby	02/28/2018	Joseph Suarez	1969834
EPA 353.2 Rev. 2.0	02/22/2018			02/26/2018	Lauren Bottorf	1969834
EPA 365.1 Rev. 2.0	02/22/2018	02/26/2018	Sima Feizi	02/27/2018	Beverly Y. Sanders	1969834
EPA 365.1 Rev. 2.0 dissolved	02/22/2018			02/22/2018 17:09	Megan Treadwell	1969835
SM 2120 B	02/22/2018			02/22/2018 15:18	Tanya Welborn	1969833
SM 2320 B-97	02/22/2018			03/04/2018	Dale L. Simmons	1969833
SM 2540 C-97	02/22/2018			02/23/2018	Ping Hua	1969833
SM 2540 D-97	02/22/2018			02/23/2018	Ping Hua	1969833
SM 4500 F-C-97	02/22/2018			03/08/2018	Dale L. Simmons	1969833
SM 5310 B-00	02/22/2018			02/26/2018	Megan Treadwell	1969834