

Chemical Analysis Report

TLH-ROC-2017-11-20-01

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

Event Description: **SMP Freshwater Kit A**
Request ID: **RQ-2017-10-30-54**
Customer: **TLH-ROC**
Project ID: **SMP**

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

For additional information please contact
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Certified by: Colin Wright, Program Administrator

Date Certified: 11-DEC-2017 11:14

A handwritten signature in black ink, appearing to read "Colin Wright", is written on a light-colored rectangular background.

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: Big Branch 50 meter upstream of CR 67

Collection Date/Time: 11/20/2017 12:00

Field ID: G1WA001_11202017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1947738	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P335792	
	EPA 300.0 Rev. 2.1	Chloride	2.6		mg Cl/L	P336016	
	SM 2120 B	Color (true)	130		PCU	P335735	
	SM 2320 B-97	Total Alkalinity	22		mg CaCO3/L	P336241	
	SM 2540 C-97	TDS	42		mg/L	P335826	
	SM 2540 D-97	TSS	2	I	mg/L	P335959	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P336330	
1947739	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P336255	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.24		mg N/L	P226130	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P336036	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P335977	
	SM 5310 B-00	Organic Carbon	8.0		mg C/L	P336099	
1947740	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P335743	

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: P335792

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P336016

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P336255

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P226130

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

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P336036

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P335977

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335743

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

Reference Method: SM 2120 B
Batch ID: P335735

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P336241

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

Reference Method: SM 2540 C-97
Batch ID: P335826

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P335959

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P336330

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P336099

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: P336016

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336016

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	93.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336255

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: P226130

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336036

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: P335977

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335743

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

Reference Method: SM 2320 B-97
Batch ID: P336241

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P336330

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.8		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P336099

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P336016

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947744	Chloride	94.2		P	90 - 110
1947759	Chloride	94.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P336255

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947554	Ammonia-N	99.3	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P226130

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947746	Kjeldahl Nitrogen	102	97.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P336036

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947739	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P335977

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947502	Total-P	101	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P335743

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947740	O-Phosphate-P	91.4	90.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
 Batch ID: P336330

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947907	Fluoride	95.2	95.9	P/P	91 - 105

Reference Method: SM 5310 B-00
 Batch ID: P336099

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947596	Organic Carbon	94.2	96.0	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P335792

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947743	Turbidity	2.46	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336016

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947759	Chloride	1.75	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336255

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947554	Ammonia-N	0.592	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P226130

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947746	Kjeldahl Nitrogen	3.51	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336036

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947739	NO2NO3-N	0.468	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P335977

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947502	Total-P	1.40	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335743

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947740	O-Phosphate-P	0.518	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P335735

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947758	Color (true)	4.89	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P336241

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947907	Total Alkalinity	0.147	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P335826

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947758	TDS	6.57	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P336330

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947907	Fluoride	0.477	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P336099

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947596	Organic Carbon	0.939	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: A80442
Included Lab Sample IDs: 1947738

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A80443
Included Lab Sample IDs: 1947740

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	94.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A80463
Included Lab Sample IDs: 1947738

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A80566

Included Lab Sample IDs: 1947738

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A80575

Included Lab Sample IDs: 1947739

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A80597

Included Lab Sample IDs: 1947739

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

Reference Method: SM 5310 B-00

Run ID: A80598

Included Lab Sample IDs: 1947739

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	97.4	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A80654

Included Lab Sample IDs: 1947738

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.3	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A80655

Included Lab Sample IDs: 1947739

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	98.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A80675

Included Lab Sample IDs: 1947739

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.0	91.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A80689

Included Lab Sample IDs: 1947738

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.6	98.1	P/P	90 - 110

Quality Assurance Report Calibration Verification

* 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		MS
					LCS	SMP	
EPA 180.1 Rev. 2.0	Turbidity					2.46	
EPA 300.0 Rev. 2.1	Chloride	93.2	94.3	94.2		1.75	
EPA 350.1 Rev. 2.0	Ammonia-N	101	99.3	98.5			0.592
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.9	102	97.5			3.51
EPA 353.2 Rev. 2.0	NO2NO3-N	102	104	104			0.468
EPA 365.1 Rev. 2.0	Total-P	105	101	99.5			1.40
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.5	91.4	90.9			0.518
SM 2120 B	Color (true)					4.89	
SM 2320 B-97	Total Alkalinity	102				0.147	
SM 2540 C-97	TDS					6.57	
SM 4500 F-C-97	Fluoride	94.8	95.2	95.9			0.477
SM 5310 B-00	Organic Carbon	95.4	94.2	96.0			0.939

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1947738
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1947738
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1947739
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1947739
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1947739
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1947739
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1947740
SM 2120 B / E31780	True Color measured at 450 nm	1947738
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1947738
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1947738
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1947738
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1947738
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1947739

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	11/20/2017			11/21/2017 16:18	DeAsia Armster	1947738
EPA 300.0 Rev. 2.1	11/20/2017			11/28/2017	Julia Storbeck	1947738
EPA 350.1 Rev. 2.0	11/20/2017			12/01/2017	Sofia Elnemr	1947739
EPA 351.2 Rev. 2.0	11/20/2017	11/30/2017	Adrian Shelby	12/04/2017	Tanya Welborn	1947739
EPA 353.2 Rev. 2.0	11/20/2017			11/29/2017	Beverly Y. Sanders	1947739
EPA 365.1 Rev. 2.0	11/20/2017	11/28/2017	Sima Feizi	11/29/2017	Lipi Saha	1947739
EPA 365.1 Rev. 2.0 dissolved	11/20/2017			11/21/2017 13:44	Megan Treadwell	1947740
SM 2120 B	11/20/2017			11/21/2017 14:54	Tanya Welborn	1947738
SM 2320 B-97	11/20/2017			12/02/2017	Dale L. Simmons	1947738
SM 2540 C-97	11/20/2017			11/22/2017	Yijie Li	1947738
SM 2540 D-97	11/20/2017			11/22/2017	Yijie Li	1947738
SM 4500 F-C-97	11/20/2017			12/04/2017	Dale L. Simmons	1947738
SM 5310 B-00	11/20/2017			11/29/2017	Ping Hua	1947739