Chemical Analysis Report

TLH-ROC-2017-11-29-02

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
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 18-DEC-2017 16:29

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: FISHBONE CREEK @ 212TH **Collection Date/Time: 11/29/2017 11:30**

Field ID: G1TLHR0015-2017-06 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1949401	EPA 180.1 Rev. 2.0	Turbidity	1.3	A	NTU	P336083	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P336267	
	SM 2120 B	Color (true)	80		PCU	P336112	
	SM 2320 B-97	Total Alkalinity	192		mg CaCO3/L	P336617	
	SM 2540 C-97	TDS	261	A	mg/L	P336394	
	SM 2540 D-97	TSS	3	IA	mg/L	P336368	
	SM 4500 F-C-97	Fluoride	0.057	I	mg F/L	P336620	
1949402	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P336628	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P336473	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P336320	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P336375	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P336334	
1949403	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P336132	

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: P336083

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336267

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336628

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336473

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336320

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: P336375

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336132

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

Reference Method: SM 2120 B
Batch ID: P336112

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P336617

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

Reference Method: SM 2540 C-97
Batch ID: P336394

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P336368

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P336620

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P336334

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: P336267

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336267

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	94.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336628

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: P336473

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336320

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: P336375

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: P336132

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.9		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P336617

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P336620

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P336334

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336267

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949462	Chloride	94.9		P	90 - 110
1949482	Chloride	93.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336628

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949358	Ammonia-N	97.5	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336473

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949357	Kjeldahl Nitrogen	102	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336320

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949356	NO2NO3-N	106	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336375

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949354	Total-P	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336132

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949359	O-Phosphate-P	96.4	97.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P336620

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949722	Fluoride	98.2	97.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P336334

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949161	Organic Carbon	94.8	95.2	P/P	85 - 115

Quality Assurance Report
Precision

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P336083

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949401	Turbidity	10.3	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336267

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949462	Chloride	0.576	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336628

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949358	Ammonia-N	5.92	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336473

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949357	Kjeldahl Nitrogen	0.566	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336320

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949356	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336375

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949354	Total-P	0.396	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336132

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949359	O-Phosphate-P	0.620	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P336112

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949347	Color (true)	2.73	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-97
Batch ID: P336617

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949722	Total Alkalinity	1.19	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P336394

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949401	TDS	9.20	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P336620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949722	Fluoride	0.474	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P336334

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949161	Organic Carbon	0.268	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: EPA 180.1 Rev. 2.0
Run ID: A80593
Included Lab Sample IDs: 1949401

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

Reference Method: SM 2120 B
Run ID: A80606
Included Lab Sample IDs: 1949401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	101	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A80611
Included Lab Sample IDs: 1949403

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.3	99.4	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A80632
Included Lab Sample IDs: 1949401

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A80683
Included Lab Sample IDs: 1949402

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

Reference Method: SM 5310 B-00
Run ID: A80692
Included Lab Sample IDs: 1949402

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.6	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A80765
Included Lab Sample IDs: 1949402

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	103	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A80770
Included Lab Sample IDs: 1949401

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

Reference Method: SM 4500 F-C-97
Run ID: A80770
Included Lab Sample IDs: 1949401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A80773
Included Lab Sample IDs: 1949402

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	106	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A80787
Included Lab Sample IDs: 1949402

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	104	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		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					10.3	
EPA 300.0 Rev. 2.1	Chloride	94.7	94.9	93.1		0.576	
EPA 350.1 Rev. 2.0	Ammonia-N	103	97.5	105			5.92
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	102	101			0.566
EPA 353.2 Rev. 2.0	NO2NO3-N	106	106	106			0.0
EPA 365.1 Rev. 2.0	Total-P	102	101	102			0.396
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.9	96.4	97.0			0.620
SM 2120 B	Color (true)					2.73	
SM 2320 B-97	Total Alkalinity	103				1.19	
SM 2540 C-97	TDS					9.20	
SM 4500 F-C-97	Fluoride	98.2	98.2	97.6			0.474
SM 5310 B-00	Organic Carbon	97.0	94.8	95.2			0.268

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1949401
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1949401
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1949402
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1949402
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1949402
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1949402
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1949403
SM 2120 B / E31780	True Color measured at 450 nm	1949401
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1949401
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1949401
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1949401
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1949401
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1949402

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	11/29/2017			11/29/2017 16:26	DeAsia Armster	1949401
EPA 300.0 Rev. 2.1	11/29/2017			12/02/2017	Julia Storbeck	1949401
EPA 350.1 Rev. 2.0	11/29/2017			12/07/2017	Sofia Elnemr	1949402
EPA 351.2 Rev. 2.0	11/29/2017	12/06/2017	Adrian Shelby	12/07/2017	Joseph Suarez	1949402
EPA 353.2 Rev. 2.0	11/29/2017			12/04/2017	Lauren Bottorf	1949402
EPA 365.1 Rev. 2.0	11/29/2017	12/05/2017	Sima Feizi	12/08/2017	Beverly Y. Sanders	1949402
EPA 365.1 Rev. 2.0 dissolved	11/29/2017			11/30/2017 13:57	Megan Treadwell	1949403
SM 2120 B	11/29/2017			11/30/2017 10:48	Tanya Welborn	1949401
SM 2320 B-97	11/29/2017			12/06/2017	Dale L. Simmons	1949401
SM 2540 C-97	11/29/2017			12/01/2017	Yijie Li	1949401
SM 2540 D-97	11/29/2017			12/01/2017	Yijie Li	1949401
SM 4500 F-C-97	11/29/2017			12/06/2017	Dale L. Simmons	1949401
SM 5310 B-00	11/29/2017			12/04/2017	Ping Hua	1949402