

Chemical Analysis Report

WQAP-2017-10-10-02

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

Event Description: **SMP 2016 Freshwater Kit A**
Request ID: **RQ-2017-03-20-29**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
MS #3560
Tallahassee, FL 32399-2400
Attn: Chris Green

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 31-OCT-2017 14:25



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: Steinhatchee Spring Vent @ SE Wolf Rd.

Collection Date/Time: 10/10/2017 10:30

Field ID: G1TLHR0066-2017-05

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935505	EPA 180.1 Rev. 2.0	Turbidity	0.40		NTU	P333099	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P333255	
	SM 2120 B	Color (true)	25		PCU	P333106	
	SM 2320 B-97	Total Alkalinity	335		mg CaCO3/L	P333524	
	SM 2540 C-97	TDS	458		mg/L	P333826	
	SM 2540 D-97	TSS	2	U	mg/L	P333284	
	SM 4500 F-C-97	Fluoride	0.32		mg F/L	P333527	
1935506	EPA 350.1 Rev. 2.0	Ammonia-N	0.20		mg N/L	P333444	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P333728	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P333486	
	EPA 365.1 Rev. 2.0	Total-P	0.075		mg P/L	P333270	
	SM 5310 B-00	Organic Carbon	9.9		mg C/L	P333822	
1935507	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.065		mg P/L	P333214	

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: 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: P333099

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P333255

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P333444

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P333728

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

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P333486

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: P333270

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333214

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

Reference Method: SM 2120 B
Batch ID: P333106

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P333524

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

Reference Method: SM 2540 C-97
Batch ID: P333826

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P333284

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P333527

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P333822

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: P333255

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: P333255

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P333444

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P333728

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	108		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333486

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: P333270

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: P333214

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

Reference Method: SM 2320 B-97
Batch ID: P333524

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

Reference Method: SM 4500 F-C-97
Batch ID: P333527

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.6		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P333822

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333255

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935395	Chloride	105		P	90 - 110
1935398	Chloride	104		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P333728

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935550	Kjeldahl Nitrogen	106	112	P/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333486

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935506	NO2NO3-N	106	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P333270

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935506	Total-P	99.9	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333214

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935507	O-Phosphate-P	97.5	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P333527

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935178	Fluoride	101	102	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P333822

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935409	Organic Carbon	94.8	95.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P333099

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935401	Turbidity	1.12	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333255

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935398	Chloride	0.422	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P333444

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935402	Ammonia-N	0.961	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P333728

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935550	Kjeldahl Nitrogen	4.96	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333486

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935506	NO2NO3-N	0.475	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P333270

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935506	Total-P	3.96	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333214

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935507	O-Phosphate-P	1.53	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P333106

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935400	Color (true)	0.736	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P333524

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935178	Total Alkalinity	0.109	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P333826

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935401	TDS	1.50	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P333284

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935401	TSS	6.67	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P333527

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935178	Fluoride	0.473	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P333822

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935409	Organic Carbon	0.690	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: A79470
Included Lab Sample IDs: 1935505

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

Reference Method: SM 2120 B
Run ID: A79471
Included Lab Sample IDs: 1935505

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	104	103	P/P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A79473
Included Lab Sample IDs: 1935505

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	108	107	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A79502

Included Lab Sample IDs: 1935507

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	99.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A79567

Included Lab Sample IDs: 1935506

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A79581

Included Lab Sample IDs: 1935506

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	104	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A79597

Included Lab Sample IDs: 1935506

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

Reference Method: SM 2320 B-97

Run ID: A79620

Included Lab Sample IDs: 1935505

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.8	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A79620

Included Lab Sample IDs: 1935505

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

Reference Method: SM 5310 B-00

Run ID: A79713

Included Lab Sample IDs: 1935506

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	96.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A79750

Included Lab Sample IDs: 1935506

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	107	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	MS
EPA 180.1 Rev. 2.0	Turbidity				1.12	
EPA 300.0 Rev. 2.1	Chloride	104	104	105	0.422	
EPA 350.1 Rev. 2.0	Ammonia-N	104				0.961
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108	106	112		4.96
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	106	105		0.475
EPA 365.1 Rev. 2.0	Total-P	105	99.9	105		3.96
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.0	97.5	100		1.53
SM 2120 B	Color (true)				0.736	
SM 2320 B-97	Total Alkalinity	102			0.109	
SM 2540 C-97	TDS				1.50	
SM 2540 D-97	TSS				6.67	
SM 4500 F-C-97	Fluoride	98.6	101	102		0.473
SM 5310 B-00	Organic Carbon	96.4	94.8	95.6		0.690

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1935505
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1935505
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1935506
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1935506
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1935506
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1935506
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1935507
SM 2120 B / E31780	True Color measured at 450 nm	1935505
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1935505
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1935505
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1935505
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1935505
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1935506

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	10/10/2017			10/10/2017 16:21	DeAsia Armster	1935505
EPA 300.0 Rev. 2.1	10/10/2017			10/11/2017	Julia Storbeck	1935505
EPA 350.1 Rev. 2.0	10/10/2017			10/16/2017	Sofia Elnemr	1935506
EPA 351.2 Rev. 2.0	10/10/2017	10/20/2017	Adrian Shelby	10/23/2017	Tanya Welborn	1935506
EPA 353.2 Rev. 2.0	10/10/2017			10/17/2017	Beverly Y. Sanders	1935506
EPA 365.1 Rev. 2.0	10/10/2017	10/12/2017	Sima Feizi	10/13/2017	Lipi Saha	1935506
EPA 365.1 Rev. 2.0 dissolved	10/10/2017			10/11/2017 14:52	Megan Treadwell	1935507
SM 2120 B	10/10/2017			10/10/2017 16:54	Julia Storbeck	1935505
SM 2320 B-97	10/10/2017			10/17/2017	Dale L. Simmons	1935505
SM 2540 C-97	10/10/2017			10/11/2017	Yijie Li	1935505
SM 2540 D-97	10/10/2017			10/11/2017	Yijie Li	1935505
SM 4500 F-C-97	10/10/2017			10/17/2017	Dale L. Simmons	1935505
SM 5310 B-00	10/10/2017			10/21/2017	Ping Hua	1935506