

Chemical Analysis Report

WQAP-2017-11-07-02

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

Event Description: **2017 SMP Kit Template 1**

Request ID: **RQ-2017-11-06-74**

Customer: **WQAP**

Project ID: **SMP**

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Date Certified: 30-NOV-2017 16:37



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: Fence Line Drain at Blue Head Ranch SE

Collection Date/Time: 11/06/2017 10:55

Field ID: G4SD110617-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1943562	EPA 180.1 Rev. 2.0	Turbidity	4.7		NTU	P334906	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P335056	
		Sulfate	2.5		mg SO4/L	P335059	
	SM 2120 B	Color (true)	370		PCU	P334891	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P335164	
	SM 2540 C-97	TDS	123		mg/L	P335254	
	SM 2540 D-97	TSS	12		mg/L	P335259	
	SM 4500 F-C-97	Fluoride	0.080	I	mg F/L	P335168	
1943563	EPA 350.1 Rev. 2.0	Ammonia-N	0.12		mg N/L	P335576	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.7		mg N/L	P335707	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P335456	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P334972	
	SM 5310 B-00	Organic Carbon	28		mg C/L	P335303	
1943564	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.035		mg P/L	P334873	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: 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: P334906

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P335056

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P335059

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P335576

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P335707

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: P335456

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P334972

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P334873

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

Reference Method: SM 2120 B
Batch ID: P334891

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P335164

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

Reference Method: SM 2540 C-97
Batch ID: P335254

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P335259

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P335168

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P335303

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: P335056

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335059

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P335576

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P335707

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: P335456

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P334972

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: P334873

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

Reference Method: SM 2320 B-97
Batch ID: P335164

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P335168

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.2		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P335303

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335056

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943504	Chloride	102		P	90 - 110
1943583	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335059

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943504	Sulfate	102		P	90 - 110
1943583	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P335576

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943532	Ammonia-N	103	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P335707

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943568	Kjeldahl Nitrogen	92.6	97.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335456

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943514	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P334873

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943217	O-Phosphate-P	103	96.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P335168

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943504	Fluoride	101	100	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
 Batch ID: P335303

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943505	Organic Carbon	97.4	98.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P334906

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943509	Turbidity	1.34	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P335056

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943504	Chloride	0.0907	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P335059

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943504	Sulfate	0.120	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P335576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943532	Ammonia-N	2.25	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P335707

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943568	Kjeldahl Nitrogen	2.92	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P335456

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943514	NO2NO3-N	0.353	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P334972

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943532	Total-P	3.28	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P334873

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943217	O-Phosphate-P	5.16	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P334891

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943529	Color (true)	1.63	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P335164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943504	Total Alkalinity	0.321	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P335254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943501	TDS	2.65	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P335168

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943504	Fluoride	0.484	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P335303

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943505	Organic Carbon	0.455	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: EPA 365.1 Rev. 2.0 dissolved

Run ID: A80109

Included Lab Sample IDs: 1943564

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.5	102	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A80114

Included Lab Sample IDs: 1943562

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	104	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A80117

Included Lab Sample IDs: 1943562

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	100	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A80134

Included Lab Sample IDs: 1943562

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	104	103	P/P	90 - 110
Sulfate	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A80172

Included Lab Sample IDs: 1943563

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	99.2	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A80224

Included Lab Sample IDs: 1943562

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

Reference Method: SM 4500 F-C-97

Run ID: A80224

Included Lab Sample IDs: 1943562

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

Reference Method: SM 5310 B-00

Run ID: A80269

Included Lab Sample IDs: 1943563

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	99.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A80277

Included Lab Sample IDs: 1943563

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A80369

Included Lab Sample IDs: 1943563

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A80471

Included Lab Sample IDs: 1943563

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.3	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				1.34	
EPA 300.0 Rev. 2.1	Chloride	103	102 103		0.0907	
	Sulfate	103	102 102		0.120	
EPA 350.1 Rev. 2.0	Ammonia-N	106	103 99.7			2.25
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	92.6 97.0			2.92
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104 104			0.353
EPA 365.1 Rev. 2.0	Total-P	102				3.28
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	108	103 96.2			5.16
SM 2120 B	Color (true)				1.63	
SM 2320 B-97	Total Alkalinity	104			0.321	
SM 2540 C-97	TDS				2.65	
SM 4500 F-C-97	Fluoride	99.2	101 100			0.484
SM 5310 B-00	Organic Carbon	99.4	97.4 98.2			0.455

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1943562
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1943562
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1943562
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1943563

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1943563
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1943563
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1943563
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1943564
SM 2120 B / E31780	True Color measured at 450 nm	1943562
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1943562
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1943562
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1943562
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1943562
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1943563

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	11/07/2017			11/07/2017 17:16	DeAsia Armster	1943562
EPA 300.0 Rev. 2.1	11/07/2017			11/09/2017	Julia Storbeck	1943562
EPA 350.1 Rev. 2.0	11/07/2017			11/17/2017	Sofia Elnemr	1943563
EPA 351.2 Rev. 2.0	11/07/2017	11/21/2017	Adrian Shelby	11/22/2017	Tanya Welborn	1943563
EPA 353.2 Rev. 2.0	11/07/2017			11/15/2017	Beverly Y. Sanders	1943563
EPA 365.1 Rev. 2.0	11/07/2017	11/08/2017	Sima Feizi	11/09/2017	Lipi Saha	1943563
EPA 365.1 Rev. 2.0 dissolved	11/07/2017			11/07/2017 15:21	Megan Treadwell	1943564
SM 2120 B	11/07/2017			11/07/2017 16:36	Tanya Welborn	1943562
SM 2320 B-97	11/07/2017			11/10/2017	Dale L. Simmons	1943562
SM 2540 C-97	11/07/2017			11/08/2017	Yijie Li	1943562
SM 2540 D-97	11/07/2017			11/08/2017	Yijie Li	1943562
SM 4500 F-C-97	11/07/2017			11/10/2017	Dale L. Simmons	1943562
SM 5310 B-00	11/07/2017			11/15/2017	Ping Hua	1943563