Chemical Analysis Report

SW-DIST-2020-09-10-01

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

Event Description: **Run 5: Salt Springs GOM**
Request ID: **RQ-2020-09-14-07**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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Temple Terrace, FL 33637-0926
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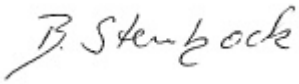
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 29-SEP-2020 17:25



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 by the Florida Department of Health Environmental Laboratory Certification Program 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: Salt Springs #1 **Collection Date/Time: 09/09/2020 11:30**

Field ID: G5SW0158 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2195415	EPA 180.1 Rev. 2.0	Turbidity	9.1		NTU	P387219	
	EPA 300.0 Rev. 2.1	Bromide	3.8		mg Br/L	P387642	
	SM 2320 B-2011	Total Alkalinity	104		mg CaCO3/L	P387352	
	SM 2540 D-2011	TSS	8	I	mg/L	P387629	
	SM 4500 F-C-2011	Fluoride	0.14		mg F/L	P387354	
2195416	EPA 350.1 Rev. 2.0	Ammonia-N	0.036		mg N/L	P387308	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P387462	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.037		mg N/L	P387372	
	EPA 365.1 Rev. 2.0	Total-P	0.089		mg P/L	P387671	
	SM 5310 B-2011	Organic Carbon	10		mg C/L	P387428	
2195417	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.033		mg P/L	P387233	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Bromide: Batch relative percent difference and batch matrix spike recoveries for one of two spiked samples 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: P387219

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387642

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387308

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387462

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387372

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387671

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387233

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

Reference Method: SM 2320 B-2011
Batch ID: P387352

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

Reference Method: SM 2540 D-2011
Batch ID: P387629

Component	Result	Code	Units
TSS	3	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-2011
Batch ID: P387354

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P387428

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: P387642

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Bromide	99.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387308

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387462

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387372

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387671

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387233

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	101		P	90 - 110

Reference Method: SM 2320 B-2011
Batch ID: P387352

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P387354

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.1		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P387428

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387642

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2196574	Bromide	93.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387308

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2195442	Ammonia-N	97.5	97.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387462

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2195416	Kjeldahl Nitrogen	107	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387372

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2195233	NO2NO3-N	97.2	97.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387671

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2195233	Total-P	107	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387233

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2195234	O-Phosphate-P	99.1	99.1	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P387354

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2195370	Fluoride	96.3	96.3	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P387428

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2195329	Organic Carbon	99.6	99.5	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P387219

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2195396	Turbidity	1.43	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387308

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2195442	Ammonia-N	0.349	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2195416	Kjeldahl Nitrogen	2.65	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387372

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2195233	NO2NO3-N	0.489	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387671

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2195233	Total-P	1.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2195234	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P387352

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2195370	Total Alkalinity	2.53	Sample	P	0 - 8.1

Reference Method: SM 2540 D-2011
Batch ID: P387629

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194776	TSS	8.55	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P387354

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2195370	Fluoride	0.0	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P387428

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2195329	Organic Carbon	0.0800	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A100910
Included Lab Sample IDs: 2195415

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	98.5	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A100920
Included Lab Sample IDs: 2195417

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.9	98.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A100947
Included Lab Sample IDs: 2195416

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	95.5	93.7	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A100972
Included Lab Sample IDs: 2195415

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.1	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A100972
Included Lab Sample IDs: 2195415

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	98.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A100978
Included Lab Sample IDs: 2195416

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

Reference Method: SM 5310 B-2011
Run ID: A101004
Included Lab Sample IDs: 2195416

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	98.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A101022
Included Lab Sample IDs: 2195415

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	100	99.8	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A101057
Included Lab Sample IDs: 2195416

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.1	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A101168
Included Lab Sample IDs: 2195416

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	93.0	91.8	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		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					1.43	
EPA 300.0 Rev. 2.1	Bromide	99.3	93.9				
EPA 350.1 Rev. 2.0	Ammonia-N	97.5	97.5	97.9			0.349
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	110	107	104			2.65
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	97.7	97.2			0.489
EPA 365.1 Rev. 2.0	Total-P	107	107	106			1.02
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	99.1	99.1			0.0
SM 2320 B-2011	Total Alkalinity	103				2.53	
SM 2540 D-2011	TSS					8.55	
SM 4500 F-C-2011	Fluoride	98.1	96.3	96.3			0.0
SM 5310 B-2011	Organic Carbon	101	99.6	99.5			0.0800

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2195415
EPA 300.0 Rev. 2.1	Bromide in aqueous matrices	2195415
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2195416
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2195416
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2195416
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2195416
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2195417
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2195415
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2195415
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2195415
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2195416

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	09/10/2020			09/10/2020 15:02	Yen Ta	2195415
EPA 300.0 Rev. 2.1	09/10/2020			09/18/2020 17:49	Lipi Saha	2195415
EPA 350.1 Rev. 2.0	09/10/2020			09/13/2020 15:04	Ping Hua	2195416
EPA 351.2 Rev. 2.0	09/10/2020	09/16/2020 12:40	David Boose	09/17/2020 12:08	Virginia P. Brown	2195416
EPA 353.2 Rev. 2.0	09/10/2020			09/15/2020 10:12	Beverly Y. Sanders	2195416
EPA 365.1 Rev. 2.0	09/10/2020	09/22/2020 11:37	Yen Ta	09/23/2020 15:40	Lipi Saha	2195416
EPA 365.1 Rev. 2.0 dissolved	09/10/2020			09/10/2020 15:56	Virginia P. Brown	2195417
SM 2320 B-2011	09/10/2020			09/11/2020 20:00	Dale L. Simmons	2195415
SM 2540 D-2011	09/10/2020			09/14/2020 15:06	Yijie Li	2195415
SM 4500 F-C-2011	09/10/2020			09/11/2020 20:00	Dale L. Simmons	2195415
SM 5310 B-2011	09/10/2020			09/16/2020 04:03	David Boose	2195416