Chemical Analysis Report

SO-DIST-2019-08-14-02

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

Event Description: **2019 FWC Coral Creek**
Request ID: **RQ-2019-08-12-63**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
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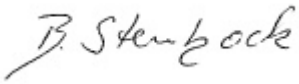
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 04-SEP-2019 18:05



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: Coral Creek West North Site **Collection Date/Time: 08/13/2019 11:20**

Field ID: FWC_081319 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2111675	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P369080	
	EPA 300.0	Bromide	20		mg Br/L	P369434	
	SM 2320 B-97	Total Alkalinity	119		mg CaCO3/L	P369681	
	SM 2540 D-97	TSS	5	I	mg/L	P369484	
	SM 4500 F-C-97	Fluoride	0.41		mg F/L	P369682	
2111676	EPA 350.1 Rev. 2.0	Ammonia-N	0.076		mg N/L	P369396	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P369363	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P369576	
	EPA 365.1 Rev. 2.0	Total-P	0.051		mg P/L	P369306	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P369287	
2111677	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P369097	

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: P369080

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0
Batch ID: P369434

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369396

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369363

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369576

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369306

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369097

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

Reference Method: SM 2320 B-97
Batch ID: P369681

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

Reference Method: SM 2540 D-97
Batch ID: P369484

Component	Result	Code	Units
TSS	3	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P369682

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P369287

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0
Batch ID: P369434

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369396

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: P369363

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369576

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369306

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: P369097

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

Reference Method: SM 2320 B-97
Batch ID: P369681

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P369682

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.7		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P369287

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0
Batch ID: P369434

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111690	Bromide	98.0	96.8	P/P	90 - 110
2111695	Bromide	95.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369396

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111593	Ammonia-N	101	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369363

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111664	Kjeldahl Nitrogen	94.2	96.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369576

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111676	NO2NO3-N	98.8	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369306

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111667	Total-P	104	96.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369097

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111677	O-Phosphate-P	100	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P369682

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2113383	Fluoride	98.0	99.3	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P369287

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112043	Organic Carbon	93.5	94.5	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369080

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111690	Turbidity	11.6	Sample	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P369434

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111690	Bromide	1.08	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369396

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111593	Ammonia-N	2.19	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369363

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111664	Kjeldahl Nitrogen	2.48	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111676	NO2NO3-N	0.494	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369306

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111667	Total-P	6.31	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111677	O-Phosphate-P	0.597	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P369681

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113383	Total Alkalinity	0.472	Sample	P	0 - 2.8

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P369682

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113383	Fluoride	0.967	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P369287

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112043	Organic Carbon	0.868	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: A93525
Included Lab Sample IDs: 2111675

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A93535
Included Lab Sample IDs: 2111677

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

Reference Method: SM 5310 B-00
Run ID: A93620
Included Lab Sample IDs: 2111676

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.4	95.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A93669
Included Lab Sample IDs: 2111676

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	108	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A93671
Included Lab Sample IDs: 2111676

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A93679
Included Lab Sample IDs: 2111676

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	99.8	P/P	90 - 110

Reference Method: EPA 300.0
Run ID: A93690
Included Lab Sample IDs: 2111675

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A93747
Included Lab Sample IDs: 2111676

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A93793
Included Lab Sample IDs: 2111675

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	105	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A93793
Included Lab Sample IDs: 2111675

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	103	100	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						11.6	
EPA 300.0	Bromide	98.6	98.0	96.8	95.9			1.08
EPA 350.1 Rev. 2.0	Ammonia-N	103	101	104				2.19
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	94.2	96.9				2.48
EPA 353.2 Rev. 2.0	NO2NO3-N	100	98.8	98.2				0.494
EPA 365.1 Rev. 2.0	Total-P	107	104	96.6				6.31
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	100	101				0.597
SM 2320 B-97	Total Alkalinity	105					0.472	
SM 4500 F-C-97	Fluoride	98.7	98.0	99.3				0.967
SM 5310 B-00	Organic Carbon	98.0	93.5	94.5				0.868

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2111675
EPA 300.0 / E31780	Bromide in aqueous matrices	2111675
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2111676
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2111676
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2111676
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2111676
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2111677
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2111675
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2111675
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2111675
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2111676

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	08/14/2019			08/14/2019 19:08	Rosalyn Ballman	2111675
EPA 300.0	08/14/2019			08/20/2019 13:23	Jhamieka S. Greenwood	2111675
EPA 350.1 Rev. 2.0	08/14/2019			08/20/2019 11:06	Ping Hua	2111676
EPA 351.2 Rev. 2.0	08/14/2019	08/20/2019 11:35	Sima Feizi	08/21/2019 11:09	Joseph Suarez	2111676
EPA 353.2 Rev. 2.0	08/14/2019			08/23/2019 10:13	Beverly Y. Sanders	2111676
EPA 365.1 Rev. 2.0	08/14/2019	08/20/2019 12:45	Lipi Saha	08/21/2019 11:59	Lipi Saha	2111676
EPA 365.1 Rev. 2.0 dissolved	08/14/2019			08/14/2019 17:32	Jhamieka S. Greenwood	2111677
SM 2320 B-97	08/14/2019			08/26/2019 22:51	Dale L. Simmons	2111675
SM 2540 D-97	08/14/2019			08/19/2019 15:20	Yijie Li	2111675
SM 4500 F-C-97	08/14/2019			08/26/2019 20:42	Dale L. Simmons	2111675
SM 5310 B-00	08/14/2019			08/20/2019 04:42	Madeline Funaro	2111676