Chemical Analysis Report

SO-DIST-2020-02-12-01

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

Event Description: **2020 SMP : Marco Island**
Request ID: **RQ-2020-02-10-57**
Customer: **SO-DIST**
Project ID: **SMP**

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FLDEP South District Office
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Date Certified: 05-MAR-2020 15:54

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: ENRE 2 **Collection Date/Time: 02/11/2020 11:40**

Field ID: G1SD0066 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156918	EPA 180.1 Rev. 2.0	Turbidity	5.0		NTU	P378806	
	EPA 300.0 Rev. 2.1	Bromide	67		mg Br/L	P379449	
	SM 2320 B-2011	Total Alkalinity	120		mg CaCO3/L	P379246	
	SM 2540 D-2011	TSS	6	I	mg/L	P379198	
	SM 4500 F-C-2011	Fluoride	1.2		mg F/L	P379250	
2156920	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P379354	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29	I	mg N/L	P379063	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P379259	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P379389	
	SM 5310 B-2011	Organic Carbon	2.4		mg C/L	P379080	
2156922	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P378777	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: ENRE 2 **Collection Date/Time: 02/11/2020 11:45**

Field ID: G1SD0066_DUP Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156919	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P378806	
	EPA 300.0 Rev. 2.1	Bromide	67		mg Br/L	P379449	
	SM 2320 B-2011	Total Alkalinity	120		mg CaCO3/L	P379246	
	SM 2540 D-2011	TSS	4	I	mg/L	P379198	
	SM 4500 F-C-2011	Fluoride	1.2		mg F/L	P379250	
2156921	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P379354	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29	I	mg N/L	P379063	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P379259	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P379389	
	SM 5310 B-2011	Organic Carbon	2.3		mg C/L	P379080	
2156923	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P378777	

Ref. Method and Comment:
SM 2540 D-2011: 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: P378806

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P379449

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379354

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379063

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379259

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379389

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P378777

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

Reference Method: SM 2320 B-2011
Batch ID: P379246

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

Reference Method: SM 2540 D-2011
Batch ID: P379198

Component	Result	Code	Units
TSS	3	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-2011
Batch ID: P379250

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P379080

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: P379449

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379354

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379063

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379259

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: P379389

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: P378777

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.6		P	90 - 110

Reference Method: SM 2320 B-2011
Batch ID: P379246

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P379250

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.6		P	92 - 103

Reference Method: SM 5310 B-2011
Batch ID: P379080

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P379449

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156692	Bromide	96.0	96.7	P/P	90 - 110
2157502	Bromide	95.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379354

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156850	Ammonia-N	98.5	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379063

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156920	Kjeldahl Nitrogen	95.6	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379259

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156878	NO2NO3-N	98.6	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379389

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156879	Total-P	106	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P378777

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156880	O-Phosphate-P	95.1	94.7	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P379250

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2157001	Fluoride	97.3	98.6	P/P	89 - 106

Reference Method: SM 5310 B-2011
Batch ID: P379080

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156878	Organic Carbon	96.6	97.2	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P378806

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156877	Turbidity	1.91	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P379449

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156692	Bromide	0.725	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379354

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156850	Ammonia-N	0.878	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379063

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156920	Kjeldahl Nitrogen	5.77	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379259

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156878	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379389

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156879	Total-P	1.69	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P378777

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156880	O-Phosphate-P	0.421	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P379246

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2157001	Total Alkalinity	0.118	Sample	P	0 - 2.8

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P379250

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2157001	Fluoride	0.946	Spike	P	0 - 2.5

Reference Method: SM 5310 B-2011
Batch ID: P379080

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156878	Organic Carbon	0.562	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A97481
Included Lab Sample IDs: 2156922, 2156923

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.0	96.9	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A97488
Included Lab Sample IDs: 2156918, 2156919

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.5	P/P	95 - 105

Reference Method: SM 5310 B-2011
Run ID: A97590
Included Lab Sample IDs: 2156920, 2156921

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	102	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A97644
Included Lab Sample IDs: 2156920, 2156921

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	109	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A97673
Included Lab Sample IDs: 2156918, 2156919

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

Reference Method: SM 4500 F-C-2011
Run ID: A97673
Included Lab Sample IDs: 2156918, 2156919

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A97690
Included Lab Sample IDs: 2156920, 2156921

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	102	P/P	90 - 110
Kjeldahl Nitrogen	99.6	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A97714
Included Lab Sample IDs: 2156920, 2156921

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A97750
Included Lab Sample IDs: 2156918, 2156919

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A97851
Included Lab Sample IDs: 2156920, 2156921

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	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						1.91	
EPA 300.0 Rev. 2.1	Bromide	101	96.0	96.7	95.5			0.725
EPA 350.1 Rev. 2.0	Ammonia-N	99.3	98.5	99.8				0.878
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	95.6	102				5.77
EPA 353.2 Rev. 2.0	NO2NO3-N	102	98.6	98.6				0.0
EPA 365.1 Rev. 2.0	Total-P	105	106	104				1.69
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.6	95.1	94.7				0.421
SM 2320 B-2011	Total Alkalinity	103					0.118	
SM 4500 F-C-2011	Fluoride	96.6	97.3	98.6				0.946
SM 5310 B-2011	Organic Carbon	97.8	96.6	97.2				0.562

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2156918, 2156919
EPA 300.0 Rev. 2.1	Bromide in aqueous matrices	2156918, 2156919
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2156920, 2156921
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2156920, 2156921
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2156920, 2156921
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2156920, 2156921
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2156922, 2156923
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2156918, 2156919
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2156918, 2156919
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2156918, 2156919
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2156920, 2156921

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	02/12/2020			02/12/2020 16:39	Yen Ta	2156918, 2156919
EPA 300.0 Rev. 2.1	02/12/2020			02/22/2020 08:20	Lipi Saha	2156918
	02/12/2020			02/22/2020 08:37	Lipi Saha	2156919
EPA 350.1 Rev. 2.0	02/12/2020			02/19/2020 12:57	Ping Hua	2156920
	02/12/2020			02/19/2020 12:59	Ping Hua	2156921
EPA 351.2 Rev. 2.0	02/12/2020	02/18/2020 11:25	Sima Feizi	02/20/2020 15:52	Jhamieka S. Greenwood	2156920
	02/12/2020	02/18/2020 11:25	Sima Feizi	02/20/2020 16:08	Jhamieka S. Greenwood	2156921
EPA 353.2 Rev. 2.0	02/12/2020			02/19/2020 12:02	Beverly Y. Sanders	2156920
	02/12/2020			02/19/2020 12:03	Beverly Y. Sanders	2156921
EPA 365.1 Rev. 2.0	02/12/2020	02/21/2020 14:16	Yen Ta	02/26/2020 16:57	Benjamin T. Nordmann	2156920
	02/12/2020	02/21/2020 14:16	Yen Ta	02/26/2020 16:58	Benjamin T. Nordmann	2156921
EPA 365.1 Rev. 2.0 dissolved	02/12/2020			02/12/2020 13:54	Lipi Saha	2156922
	02/12/2020			02/12/2020 13:55	Lipi Saha	2156923
SM 2320 B-2011	02/12/2020			02/18/2020 23:25	Dale L. Simmons	2156918
	02/12/2020			02/18/2020 23:37	Dale L. Simmons	2156919
SM 2540 D-2011	02/12/2020			02/14/2020 13:00	Sima Feizi	2156918, 2156919
SM 4500 F-C-2011	02/12/2020			02/18/2020 20:58	Dale L. Simmons	2156918
	02/12/2020			02/18/2020 21:02	Dale L. Simmons	2156919
SM 5310 B-2011	02/12/2020			02/18/2020 04:17	Madeline Funaro	2156920
	02/12/2020			02/18/2020 04:32	Madeline Funaro	2156921