Chemical Analysis Report

SO-DIST-2023-01-13-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **2022 SMP : Charlotte Harbor**
Request ID: **RQ-2023-01-09-42**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 314
Fort Myers, FL 33901-3381
Attn: William Mullen

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant Date Certified: 07-FEB-2023 09:49

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: Tippecanoe Bay North **Collection Date/Time: 01/12/2023 13:00**

Field ID: G3SD0218 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2380815	EPA 180.1 Rev. 2.0	Turbidity	9.0	A	NTU	P424568	
	SM 2320 B-2011	Total Alkalinity	104		mg CaCO3/L	P425020	
	SM 2540 D-2015	TSS	32		mg/L	P424829	
	SM 4500-F- C-2011	Fluoride	0.88	J	mg F/L	P425320	LCS
2380817	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P425100	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P424940	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P424900	
	EPA 365.1 Rev. 2.0	Total-P	0.20		mg P/L	P424648	
	SM 5310 B-2011	Organic Carbon	8.4		mg C/L	P424636	

Ref. Method and Comment:
SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 4500-F- C-2011: Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: Myakka River West **Collection Date/Time: 01/12/2023 13:25**

Field ID: G3SD0219 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2380816	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P424568	
	SM 2320 B-2011	Total Alkalinity	86		mg CaCO3/L	P425020	
	SM 2540 D-2015	TSS	6	I	mg/L	P424829	
	SM 4500-F- C-2011	Fluoride	0.45	J	mg F/L	P425320	LCS
2380818	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P425100	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.85		mg N/L	P424940	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P424900	
	EPA 365.1 Rev. 2.0	Total-P	0.20		mg P/L	P424648	
	SM 5310 B-2011	Organic Carbon	15		mg C/L	P424636	

Ref. Method and Comment:
SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 4500-F- C-2011: Refer to the Lab Analysis Report for an explanation of QC Codes.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P424568

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425100

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424940

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424900

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424648

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

Reference Method: SM 2320 B-2011
Batch ID: P425020

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

Reference Method: SM 2540 D-2015
Batch ID: P424829

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P425320

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P424636

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P424568

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425100

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424940

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424900

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: P424648

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

Reference Method: SM 2320 B-2011
Batch ID: P425020

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	95.4		P	94 - 106

Reference Method: SM 2540 D-2015
Batch ID: P424829

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	96.0		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P425320

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.8		F	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P424636

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.6		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425100

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380314	Ammonia-N	105	108	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424940

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380817	Kjeldahl Nitrogen	101	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424900

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380483	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424648

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380483	Total-P	101	101	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P425320

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380071	Fluoride	100	100	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P424636

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380818	Organic Carbon	97.3	95.4	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P424568

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380815	Turbidity	3.76	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425100

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380314	Ammonia-N	1.53	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424940

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380817	Kjeldahl Nitrogen	0.725	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424900

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380483	NO2NO3-N	0.904	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424648

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380483	Total-P	0.436	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P425020

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380899	Total Alkalinity	1.51	Sample	P	0 - 3.8

Reference Method: SM 4500-F- C-2011
Batch ID: P425320

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380071	Fluoride	0.0	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P424636

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380818	Organic Carbon	1.42	Spike	P	0 - 20

Quality Assurance Report
Precision

* 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: A116903
Included Lab Sample IDs: 2380815, 2380816

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

Reference Method: SM 5310 B-2011
Run ID: A116931
Included Lab Sample IDs: 2380817, 2380818

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	91.4	97.7	P/P	90 - 110
Organic Carbon	98.2	91.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A116970
Included Lab Sample IDs: 2380817, 2380818

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A117060
Included Lab Sample IDs: 2380817, 2380818

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	102	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A117107
Included Lab Sample IDs: 2380815, 2380816

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.5	93.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A117139
Included Lab Sample IDs: 2380817, 2380818

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	107	P/P	90 - 110
Kjeldahl Nitrogen	107	105	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A117140
Included Lab Sample IDs: 2380817, 2380818

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.6	97.5	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A117235
Included Lab Sample IDs: 2380815, 2380816

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500-F- C-2011
Run ID: A117235
Included Lab Sample IDs: 2380815, 2380816

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	102	101	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	101				3.76	
EPA 350.1 Rev. 2.0	Ammonia-N	99.6	105	108			1.53
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	101	102			0.725
EPA 353.2 Rev. 2.0	NO2NO3-N	100	101	102			0.904
EPA 365.1 Rev. 2.0	Total-P	104	101	101			0.436
SM 2320 B-2011	Total Alkalinity	95.4				1.51	
SM 2540 D-2015	TSS	96.0					
SM 4500-F- C-2011	Fluoride	94.8	100	100			0.0
SM 5310 B-2011	Organic Carbon	98.6	97.3	95.4			1.42

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2380815, 2380816
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2380817, 2380818
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2380817, 2380818
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2380817, 2380818
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2380817, 2380818
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2380815, 2380816
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2380815, 2380816
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2380815, 2380816
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2380817, 2380818

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	01/13/2023			01/13/2023 12:37	Chandler E Cox	2380815
	01/13/2023			01/13/2023 12:38	Chandler E Cox	2380816
EPA 350.1 Rev. 2.0	01/13/2023			01/27/2023 13:32	Ping Hua	2380817
	01/13/2023			01/27/2023 13:34	Ping Hua	2380818
EPA 351.2 Rev. 2.0	01/13/2023	01/26/2023 08:24	Samantha L Bates	01/27/2023 11:17	Judith K. Clark	2380817
	01/13/2023	01/26/2023 08:24	Samantha L Bates	01/27/2023 11:25	Judith K. Clark	2380818
EPA 353.2 Rev. 2.0	01/13/2023			01/24/2023 10:32	Beverly Y. Sanders	2380817
	01/13/2023			01/24/2023 10:33	Beverly Y. Sanders	2380818
EPA 365.1 Rev. 2.0	01/13/2023	01/18/2023 15:47	Adam P Silver	01/19/2023 09:38	James L Waggerby	2380817
	01/13/2023	01/18/2023 15:47	Adam P Silver	01/19/2023 09:40	James L Waggerby	2380818
SM 2320 B-2011	01/13/2023			01/25/2023 00:08	Dale L. Simmons	2380816
	01/13/2023			01/25/2023 00:31	Dale L. Simmons	2380815
SM 2540 D-2015	01/13/2023			01/17/2023 15:22	Yijie Li	2380815, 2380816
SM 4500-F- C-2011	01/13/2023			02/02/2023 04:08	Dale L. Simmons	2380816
	01/13/2023			02/02/2023 04:46	Dale L. Simmons	2380815
SM 5310 B-2011	01/13/2023			01/17/2023 23:39	Elise M. Gillis	2380818
	01/13/2023			01/18/2023 02:28	Elise M. Gillis	2380817