Chemical Analysis Report

SO-DIST-2022-06-01-01

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

Event Description: **2022 SMP : Arbuckle**
Request ID: **RQ-2022-05-30-26**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant Date Certified: 23-JUN-2022 11:01

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: ArbuckleCreekNearBranch **Collection Date/Time: 05/31/2022 12:55**

Field ID: G4SD0210 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2330879	DEP SOP: NU-094-1	Color (true)**	95		PCU	P414600	
	EPA 180.1 Rev. 2.0	Turbidity	11		NTU	P414605	
	EPA 300.0 Rev. 2.1	Chloride	17	A	mg Cl/L	P414983	
		Sulfate	28	A	mg SO4/L	P414987	
	SM 2320 B-2011	Total Alkalinity	17		mg CaCO3/L	P415108	
	SM 2540 C-2011	TDS	134		mg/L	P414802	
	SM 2540 D-2011	TSS	15		mg/L	P414768	
	SM 4500-F- C-2011	Fluoride	0.068	I	mg F/L	P415112	
2330880	EPA 350.1 Rev. 2.0	Ammonia-N	0.039		mg N/L	P415172	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P415353	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.36		mg N/L	P415070	
	EPA 365.1 Rev. 2.0	Total-P	0.098		mg P/L	P414630	
	SM 5310 B-2011	Organic Carbon	13		mg C/L	P414756	

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: DEP SOP: NU-094-1
Batch ID: P414600

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P414605

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P414983

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P414987

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415172

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P415353

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P415070

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414630

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

Reference Method: SM 2320 B-2011
Batch ID: P415108

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 C-2011
Batch ID: P414802

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P414768

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P415112

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P414756

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P414600

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P414605

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	97.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P414983

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P414987

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415172

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P415353

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: P415070

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: P414630

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.4		P	90 - 110

Reference Method: SM 2320 B-2011
Batch ID: P415108

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	94 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P415112

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P414756

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P414983

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330879	Chloride	100		P	90 - 110
2330889	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P414987

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330879	Sulfate	96.4		P	90 - 110
2330889	Sulfate	98.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415172

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330766	Ammonia-N	96.6	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P415353

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2333232	Kjeldahl Nitrogen	97.9	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P415070

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330822	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414630

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330788	Total-P	103	99.9	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P415112

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330820	Fluoride	100	100	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P414756

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2331158	Organic Carbon	95.3	95.0	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P414600

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330888	Color (true)	7.59	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P414605

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330699	Turbidity	2.89	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P414983

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330879	Chloride	0.362	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P414987

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330879	Sulfate	0.540	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415172

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330766	Ammonia-N	1.53	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P415353

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2333232	Kjeldahl Nitrogen	3.46	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P415070

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330822	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414630

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330788	Total-P	2.13	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-2011
Batch ID: P415108

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330820	Total Alkalinity	0.250	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2011
Batch ID: P414802

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330698	TDS	2.14	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P415112

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330820	Fluoride	0.0	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P414756

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2331158	Organic Carbon	0.259	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: DEP SOP: NU-094-1
Run ID: A112553
Included Lab Sample IDs: 2330879

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	104	102	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A112555
Included Lab Sample IDs: 2330879

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

Reference Method: SM 5310 B-2011
Run ID: A112617
Included Lab Sample IDs: 2330880

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.7	97.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A112625
Included Lab Sample IDs: 2330880

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.7	97.7	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A112707
Included Lab Sample IDs: 2330879

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.5	100	P/P	90 - 110
Sulfate	99.9	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A112751
Included Lab Sample IDs: 2330880

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	103	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A112774
Included Lab Sample IDs: 2330879

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

Reference Method: SM 4500-F- C-2011
Run ID: A112774
Included Lab Sample IDs: 2330879

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A112817
Included Lab Sample IDs: 2330880

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	94.5	94.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A112973
Included Lab Sample IDs: 2330880

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	103	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
DEP SOP: NU-094-1	Color (true)	102				7.59	
EPA 180.1 Rev. 2.0	Turbidity	97.4				2.89	
EPA 300.0 Rev. 2.1	Chloride	99.9	100	100		0.362	
	Sulfate	99.6	96.4	98.5		0.540	
EPA 350.1 Rev. 2.0	Ammonia-N	95.4	96.6	98.2			1.53
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	97.9	102			3.46
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102			0.0
EPA 365.1 Rev. 2.0	Total-P	99.4	103	99.9			2.13
SM 2320 B-2011	Total Alkalinity	102				0.250	
SM 2540 C-2011	TDS					2.14	
SM 4500-F- C-2011	Fluoride	100	100	100			0.0
SM 5310 B-2011	Organic Carbon	93.5	95.3	95.0			0.259

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2330879
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2330879
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2330879
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2330879
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2330880
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2330880
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2330880
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2330880
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2330879
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2330879
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2330879
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2330879
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2330880

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	06/01/2022			06/01/2022 14:50	Samantha L Bates	2330879
EPA 180.1 Rev. 2.0	06/01/2022			06/01/2022 14:03	Khloe J Berg	2330879
EPA 300.0 Rev. 2.1	06/01/2022			06/08/2022 17:18	Anna M. Plaviak	2330879
EPA 350.1 Rev. 2.0	06/01/2022			06/14/2022 11:54	Judith K. Clark	2330880
EPA 351.2 Rev. 2.0	06/01/2022	06/20/2022 16:21	Samantha L Bates	06/21/2022 11:30	Alexandra J Mattheus	2330880
EPA 353.2 Rev. 2.0	06/01/2022			06/10/2022 17:53	Nathaniel J Jones	2330880
EPA 365.1 Rev. 2.0	06/01/2022	06/03/2022 15:50	Adam P Silver	06/06/2022 11:23	Sarah A Nixon	2330880
SM 2320 B-2011	06/01/2022			06/12/2022 22:18	Dale L. Simmons	2330879
SM 2540 C-2011	06/01/2022			06/03/2022 14:44	Ping Hua	2330879
SM 2540 D-2011	06/01/2022			06/03/2022 14:44	Ping Hua	2330879
SM 4500-F- C-2011	06/01/2022			06/12/2022 22:18	Dale L. Simmons	2330879
SM 5310 B-2011	06/01/2022			06/03/2022 16:59	Khloe J Berg	2330880