

Chemical Analysis Report

SO-DIST-2022-04-13-01

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-2022-04-11-33**
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
Attn: William Mullen

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 03-MAY-2022 11:00

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

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: 04/12/2022 12:45

Field ID: G4SD0210

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2318910	DEP SOP: NU-094-1	Color (true)**	93		PCU	P412345	
	EPA 180.1 Rev. 2.0	Turbidity	8.3		NTU	P412331	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P412820	
		Sulfate	29		mg SO4/L	P412822	
	SM 2320 B-2011	Total Alkalinity	21		mg CaCO3/L	P412680	
	SM 2540 C-2011	TDS	124		mg/L	P412851	
	SM 2540 D-2011	TSS	16		mg/L	P412855	
	SM 4500-F- C-2011	Fluoride	0.070	I	mg F/L	P412684	
2318911	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P412411	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P412735	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.38		mg N/L	P412482	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P412553	
	SM 5310 B-2011	Organic Carbon	13		mg C/L	P412581	

Quality Assurance Report

Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P412345

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P412331

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412820

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412822

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P412411

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P412735

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P412482

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P412553

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

Reference Method: SM 2320 B-2011
Batch ID: P412680

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: P412851

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P412855

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P412684

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P412581

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: P412345

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P412331

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	96.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412820

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412822

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P412411

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P412735

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P412482

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P412553

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.7		P	90 - 110

Reference Method: SM 2320 B-2011
Batch ID: P412680

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.8		P	94 - 106

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P412684

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.5		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P412581

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412820

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318860	Chloride	95.5		P	90 - 110
2319040	Chloride	96.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412822

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318860	Sulfate	93.3		P	90 - 110
2319040	Sulfate	94.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P412411

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318911	Ammonia-N	98.2	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P412735

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318562	Kjeldahl Nitrogen	106	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P412482

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318846	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P412553

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318999	Total-P	99.6	97.5	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P412684

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318994	Fluoride	98.2	98.2	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P412581

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318692	Organic Carbon	99.8	100	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P412345

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318845	Color (true)	5.54	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P412331

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318845	Turbidity	6.76	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412820

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318860	Chloride	0.294	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412822

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318860	Sulfate	0.522	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P412411

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318911	Ammonia-N	0.408	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P412735

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318562	Kjeldahl Nitrogen	0.469	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P412482

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318846	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P412553

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318999	Total-P	2.03	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P412680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318994	Total Alkalinity	0.105	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P412851

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318860	TDS	7.87	Sample	P	0 - 10

Reference Method: SM 2540 D-2011
Batch ID: P412855

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318860	TSS	3.39	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P412684

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318994	Fluoride	0.0	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P412581

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318692	Organic Carbon	0.145	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: A111457
Included Lab Sample IDs: 2318910

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

Reference Method: DEP SOP: NU-094-1
Run ID: A111462
Included Lab Sample IDs: 2318910

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A111496
Included Lab Sample IDs: 2318911

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.5	98.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A111507
Included Lab Sample IDs: 2318911

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A111566
Included Lab Sample IDs: 2318911

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.4	96.9	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A111591
Included Lab Sample IDs: 2318910

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.4	96.3	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A111591
Included Lab Sample IDs: 2318910

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A111625
Included Lab Sample IDs: 2318911

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.4	97.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A111664

Included Lab Sample IDs: 2318910

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.3	99.2	P/P	90 - 110
Sulfate	99.1	99.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A111674

Included Lab Sample IDs: 2318911

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	109	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	MS
DEP SOP: NU-094-1	Color (true)	100			5.54	
EPA 180.1 Rev. 2.0	Turbidity	96.5			6.76	
EPA 300.0 Rev. 2.1	Chloride	98.1	95.5	96.1	0.294	
	Sulfate	97.4	93.3	94.3	0.522	
EPA 350.1 Rev. 2.0	Ammonia-N	96.0	98.2	97.8		0.408
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	106	106		0.469
EPA 353.2 Rev. 2.0	NO2NO3-N	101	100	100		0.0
EPA 365.1 Rev. 2.0	Total-P	96.7	99.6	97.5		2.03
SM 2320 B-2011	Total Alkalinity	97.8			0.105	
SM 2540 C-2011	TDS				7.87	
SM 2540 D-2011	TSS				3.39	
SM 4500-F- C-2011	Fluoride	98.5	98.2	98.2		0.0
SM 5310 B-2011	Organic Carbon	96.0	99.8	100		0.145

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2318910
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2318910
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2318910
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2318910
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2318911
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2318911
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2318911
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2318911
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2318910
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2318910
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2318910
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2318910
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2318911

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	04/13/2022			04/13/2022 17:53	Anna M. Plaviak	2318910
EPA 180.1 Rev. 2.0	04/13/2022			04/13/2022 15:06	Khloe J Berg	2318910
EPA 300.0 Rev. 2.1	04/13/2022			04/22/2022 14:20	Anna M. Plaviak	2318910
EPA 350.1 Rev. 2.0	04/13/2022			04/15/2022 11:52	Ping Hua	2318911
EPA 351.2 Rev. 2.0	04/13/2022	04/22/2022 08:58	Samantha L Bates	04/25/2022 15:35	Samantha L Bates	2318911
EPA 353.2 Rev. 2.0	04/13/2022			04/15/2022 19:19	Nathaniel J Jones	2318911
EPA 365.1 Rev. 2.0	04/13/2022	04/19/2022 14:35	Simonne.V. Calhoun	04/20/2022 19:53	Sarah A Nixon	2318911
SM 2320 B-2011	04/13/2022			04/20/2022 13:52	Dale L. Simmons	2318910
SM 2540 C-2011	04/13/2022			04/18/2022 15:45	Yijie Li	2318910
SM 2540 D-2011	04/13/2022			04/18/2022 15:45	Yijie Li	2318910
SM 4500-F- C-2011	04/13/2022			04/20/2022 13:52	Dale L. Simmons	2318910
SM 5310 B-2011	04/13/2022			04/19/2022 11:14	Khloe J Berg	2318911