Chemical Analysis Report

SE-DIST-2023-08-24-01

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

Event Description: **Highlands Canoe Run**
Request ID: **RQ-2023-08-14-40**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant Date Certified: 20-SEP-2023 09:25

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: LAKE DENTON NEAR CENTER **Collection Date/Time: 08/23/2023 10:00**

Field ID: G4SE0158 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2433499	DEP SOP: NU-094-1	Color (true)	2.5	U	PCU	P434325	
	EPA 180.1 Rev. 2.0	Turbidity	0.30	I	NTU	P434328	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P434532	
		Sulfate	43		mg SO4/L	P434535	
	SM 2320 B-2011	Total Alkalinity	37	A	mg CaCO3/L	P434513	
	SM 2540 C-2015	TDS	149		mg/L	P434503	
	SM 2540 D-2015	TSS	2	U	mg/L	P434433	
	SM 4500-F- C-2011	Fluoride	0.22		mg F/L	P434516	
2433500	EPA 350.1 Rev. 2.0	Ammonia-N	0.033		mg N/L	P434580	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26		mg N/L	P434951	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.6		mg N/L	P434794	
	EPA 365.1 Rev. 2.0	Total-P	0.003	I	mg P/L	P434414	
	SM 5310 B-2011	Organic Carbon	1.7		mg C/L	P434450	

Ref. Method and Comment:
SM 2540 D-2015: 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: P434325

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P434328

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434532

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434535

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434580

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434951

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434794

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434414

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

Reference Method: SM 2320 B-2011
Batch ID: P434513

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 C-2015
Batch ID: P434503

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P434433

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P434516

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P434450

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: P434325

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P434328

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434532

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434535

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434580

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: P434951

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: P434794

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434414

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

Reference Method: SM 2320 B-2011
Batch ID: P434513

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.6		P	92 - 105

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2540 C-2015
Batch ID: P434503

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	91.8		P	90 - 110

Reference Method: SM 2540 D-2015
Batch ID: P434433

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	100		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P434516

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.8		P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P434450

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434532

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2433503	Chloride	103		P	90 - 110
2433612	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434535

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2433503	Sulfate	101		P	90 - 110
2433612	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434580

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2433357	Ammonia-N	97.6	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434951

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2434449	Kjeldahl Nitrogen	93.0	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434794

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2433357	NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434414

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2433411	Total-P	103	104	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P434516

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2433499	Fluoride	103	103	P/P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P434450

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2433617	Organic Carbon	97.0	97.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P434325

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2433356	Color (true)	0.909	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P434328

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2433208	Turbidity	3.15	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434532

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2433503	Chloride	0.243	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434535

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2433503	Sulfate	0.572	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434580

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2433357	Ammonia-N	1.70	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434951

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2434449	Kjeldahl Nitrogen	5.51	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434794

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2433357	NO2NO3-N	0.976	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434414

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2433411	Total-P	0.531	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-2011
Batch ID: P434513

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2433499	Total Alkalinity	0.292	Sample	P	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P434503

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2433310	TDS	2.31	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P434516

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2433499	Fluoride	0.0	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2011
Batch ID: P434450

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2433617	Organic Carbon	0.822	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: A121232
Included Lab Sample IDs: 2433499

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.9	102	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A121233
Included Lab Sample IDs: 2433499

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	97.5	97.5	P/P	95 - 105

Reference Method: SM 5310 B-2011
Run ID: A121294
Included Lab Sample IDs: 2433500

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	96.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A121308
Included Lab Sample IDs: 2433500

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	99.2	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A121328
Included Lab Sample IDs: 2433499

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.3	95.3	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A121328
Included Lab Sample IDs: 2433499

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A121339
Included Lab Sample IDs: 2433499

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.9	100	P/P	90 - 110
Sulfate	99.3	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A121360
Included Lab Sample IDs: 2433500

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A121460
Included Lab Sample IDs: 2433500

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A121605
Included Lab Sample IDs: 2433500

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.7	97.0	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)	100				0.909	
EPA 180.1 Rev. 2.0	Turbidity	97.7				3.15	
EPA 300.0 Rev. 2.1	Chloride	101	103	103		0.243	
	Sulfate	101	101	102		0.572	
EPA 350.1 Rev. 2.0	Ammonia-N	99.6	97.6	99.4			1.70
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	93.0	103			5.51
EPA 353.2 Rev. 2.0	NO2NO3-N	104	102	103			0.976
EPA 365.1 Rev. 2.0	Total-P	103	103	104			0.531
SM 2320 B-2011	Total Alkalinity	98.6				0.292	
SM 2540 C-2015	TDS	91.8				2.31	
SM 2540 D-2015	TSS	100					
SM 4500-F- C-2011	Fluoride	99.8	103	103			0.0
SM 5310 B-2011	Organic Carbon	93.4	97.0	97.8			0.822

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2433499
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2433499
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2433499
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2433499
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2433500
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2433500
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2433500
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2433500
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2433499
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2433499
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2433499
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2433499
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2433500

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	08/24/2023			08/24/2023 14:12	Anna M. Plaviak	2433499
EPA 180.1 Rev. 2.0	08/24/2023			08/24/2023 14:29	Khloe J Berg	2433499
EPA 300.0 Rev. 2.1	08/24/2023			08/29/2023 02:37	James L Waggerby	2433499
EPA 350.1 Rev. 2.0	08/24/2023			09/05/2023 13:41	Ping Hua	2433500
EPA 351.2 Rev. 2.0	08/24/2023	09/14/2023 15:31	Simonne.V. Calhoun	09/18/2023 15:35	Samantha L Bates	2433500
EPA 353.2 Rev. 2.0	08/24/2023			09/11/2023 13:30	Anna M. Plaviak	2433500
EPA 365.1 Rev. 2.0	08/24/2023	08/28/2023 16:10	Adam P Silver	08/29/2023 11:11	Chandler E Cox	2433500
SM 2320 B-2011	08/24/2023			08/30/2023 02:36	Dale L. Simmons	2433499
SM 2540 C-2015	08/24/2023			08/25/2023 11:30	Dana G. Hughes	2433499
SM 2540 D-2015	08/24/2023			08/25/2023 11:30	Dana G. Hughes	2433499
SM 4500-F- C-2011	08/24/2023			08/30/2023 02:27	Dale L. Simmons	2433499
SM 5310 B-2011	08/24/2023			08/28/2023 22:38	Elise M. Gillis	2433500