Chemical Analysis Report

SW-DIST-2022-06-16-01

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

Event Description: **Itchy Creek**
Request ID: **RQ-2022-06-13-04**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant Date Certified: 07-JUL-2022 15:47

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: Itchepackesassa Creek in Park **Collection Date/Time: 06/15/2022 11:10**

Field ID: G2SW0145 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2335130	DEP SOP: NU-094-1	Color (true)**	53		PCU	P415339	
	EPA 180.1 Rev. 2.0	Turbidity	3.6	A	NTU	P415323	
	EPA 300.0 Rev. 2.1	Chloride	41		mg Cl/L	P415627	
		Sulfate	42		mg SO4/L	P415630	
	SM 2320 B-2011	Total Alkalinity	127		mg CaCO3/L	P415757	
	SM 2540 C-2011	TDS	264		mg/L	P415864	
	SM 2540 D-2011	TSS	4	I	mg/L	P415796	
	SM 4500-F- C-2011	Fluoride	0.40		mg F/L	P415760	
2335131	EPA 350.1 Rev. 2.0	Ammonia-N	0.038		mg N/L	P415821	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.85		mg N/L	P415709	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.17		mg N/L	P416081	
	EPA 365.1 Rev. 2.0	Total-P	0.44		mg P/L	P415616	
	SM 5310 B-2011	Organic Carbon	10		mg C/L	P415476	

Quality Assurance Report
Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P415339

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P415323

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P415627

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P415630

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415821

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P415709

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P416081

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P415616

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

Reference Method: SM 2320 B-2011
Batch ID: P415757

Component	Result	Code	Units
Total Alkalinity	1.0	U	mg CaCO3/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 C-2011
Batch ID: P415864

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P415796

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P415760

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P415476

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: P415339

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	96.7		P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P415323

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	96.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P415627

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P415630

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415821

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	93.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P415709

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: P416081

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: P415616

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

Reference Method: SM 2320 B-2011
Batch ID: P415757

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.4		P	94 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P415760

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.5		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P415476

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: P415627

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2335172	Chloride	96.5		P	90 - 110
2335287	Chloride	97.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P415630

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2335172	Sulfate	97.8		P	90 - 110
2335287	Sulfate	99.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415821

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2335052	Ammonia-N	96.2	98.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P415709

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2334886	Kjeldahl Nitrogen	90.2	91.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P416081

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2335174	NO2NO3-N	102	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P415616

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2335173	Total-P	109	106	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P415760

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2334895	Fluoride	99.3	99.3	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P415476

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2335022	Organic Carbon	96.6	98.0	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P415339

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2334953	Color (true)	3.41	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P415323

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2335130	Turbidity	5.03	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P415627

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2335172	Chloride	0.208	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P415630

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2335172	Sulfate	0.616	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P415821

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2335052	Ammonia-N	1.95	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P415709

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2334886	Kjeldahl Nitrogen	1.10	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P416081

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2335174	NO2NO3-N	2.90	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P415616

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2335173	Total-P	1.96	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-2011
Batch ID: P415757

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2334895	Total Alkalinity	1.22	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2011
Batch ID: P415864

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2335084	TDS	2.86	Sample	P	0 - 10

Reference Method: SM 2540 D-2011
Batch ID: P415796

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2335084	TSS	2.67	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P415760

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2334895	Fluoride	0.0	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P415476

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2335022	Organic Carbon	0.914	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: A112877
Included Lab Sample IDs: 2335130

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

Reference Method: DEP SOP: NU-094-1
Run ID: A112888
Included Lab Sample IDs: 2335130

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	98.6	P/P	85 - 115

Reference Method: SM 5310 B-2011
Run ID: A112948
Included Lab Sample IDs: 2335131

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A112976
Included Lab Sample IDs: 2335130

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.7	97.9	P/P	90 - 110
Sulfate	99.9	101	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A113065
Included Lab Sample IDs: 2335130

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	98.7	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A113065
Included Lab Sample IDs: 2335130

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A113104
Included Lab Sample IDs: 2335131

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.1	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A113112
Included Lab Sample IDs: 2335131

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A113146
Included Lab Sample IDs: 2335131

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.2	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A113229
Included Lab Sample IDs: 2335131

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	104	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)	96.7				3.41	
EPA 180.1 Rev. 2.0	Turbidity	96.8				5.03	
EPA 300.0 Rev. 2.1	Chloride	96.7	96.5	97.2		0.208	
	Sulfate	100	97.8	99.5		0.616	
EPA 350.1 Rev. 2.0	Ammonia-N	93.2	96.2	98.4			1.95
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	90.2	91.4			1.10
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	105			2.90
EPA 365.1 Rev. 2.0	Total-P	104	109	106			1.96
SM 2320 B-2011	Total Alkalinity	99.4				1.22	
SM 2540 C-2011	TDS					2.86	
SM 2540 D-2011	TSS					2.67	
SM 4500-F- C-2011	Fluoride	97.5	99.3	99.3			0.0
SM 5310 B-2011	Organic Carbon	97.8	96.6	98.0			0.914

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2335130
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2335130
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2335130
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2335130
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2335131
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2335131
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2335131
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2335131
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2335130
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2335130
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2335130
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2335130
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2335131

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	06/16/2022			06/16/2022 15:34	Blanca Fach	2335130
EPA 180.1 Rev. 2.0	06/16/2022			06/16/2022 13:56	Khloe J Berg	2335130
EPA 300.0 Rev. 2.1	06/16/2022			06/23/2022 03:52	Anna M. Plaviak	2335130
EPA 350.1 Rev. 2.0	06/16/2022			06/27/2022 13:24	Judith K. Clark	2335131
EPA 351.2 Rev. 2.0	06/16/2022	06/27/2022 14:35	Samantha L Bates	06/28/2022 13:24	Alexandra J Mattheus	2335131
EPA 353.2 Rev. 2.0	06/16/2022			06/29/2022 16:36	Touraj Touran	2335131
EPA 365.1 Rev. 2.0	06/16/2022	06/24/2022 14:50	Simonne.V. Calhoun	06/27/2022 12:45	James L Waggerby	2335131
SM 2320 B-2011	06/16/2022			06/24/2022 06:26	Dale L. Simmons	2335130
SM 2540 C-2011	06/16/2022			06/21/2022 14:32	Yijie Li	2335130
SM 2540 D-2011	06/16/2022			06/21/2022 14:32	Yijie Li	2335130
SM 4500-F- C-2011	06/16/2022			06/24/2022 06:26	Dale L. Simmons	2335130
SM 5310 B-2011	06/16/2022			06/21/2022 04:27	Khloe J Berg	2335131