

Chemical Analysis Report

CEN-DIST-2023-01-17-01

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

Event Description: **Florence/SJR/Second/Faulk**
Request ID: **RQ-2023-01-02-56**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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3319 Maguire Blvd., Suite 232
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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 31-JAN-2023 13:46



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: Metals.

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: SJR-700M Upstream of Lake Winder

Collection Date/Time: 01/12/2023 11:35

Field ID: G3CE0030

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2380943	EPA 200.7 Rev. 4.4	Calcium	41.1		mg/L	P424652	
		Iron	260		ug/L	P424652	
		Magnesium	9.08		mg/L	P424652	
		Potassium	3.2		mg/L	P424652	
		Sodium	48.7		mg/L	P424652	
		Strontium	1.10E+03		ug/L	P424652	
		Tin	6.0	U	ug/L	P424652	
		Titanium	1.1	I	ug/L	P424652	
		Vanadium	2.0	U	ug/L	P424652	
		Zinc	5.0	U	ug/L	P424652	
	EPA 200.8 Rev. 5.4	Aluminum	42		ug/L	P424652	
		Antimony	0.050	U	ug/L	P424652	
		Arsenic	0.60		ug/L	P424652	
		Barium	23.4		ug/L	P424652	
		Beryllium	0.010	U	ug/L	P424652	
		Boron	27.1		ug/L	P424652	
		Cadmium	0.020	U	ug/L	P424652	
		Chromium	0.40	U	ug/L	P424652	
		Cobalt	0.110		ug/L	P424652	
		Copper	0.40	U	ug/L	P424652	
		Lead	0.20	U	ug/L	P424652	
		Manganese	5.18		ug/L	P424652	
		Molybdenum	0.32	I	ug/L	P424652	
		Nickel	0.50	U	ug/L	P424652	
		Selenium	0.20	U	ug/L	P424652	
		Silver	0.010	U	ug/L	P424652	
		Thallium	0.10	U	ug/L	P424652	
	SM 2340 B-2011	Hardness	140		mg/L	P424652	

Ref. Method and Comment:
 EPA 200.7 Rev. 4.4: The tin MDL/PQL was adjusted due to analytical difficulties.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P424652

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P424652

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P424652

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	105		P	85 - 115
Magnesium	106		P	85 - 115
Potassium	102		P	85 - 115
Sodium	104		P	85 - 115
Strontium	103		P	85 - 115
Tin	106		P	85 - 115
Titanium	104		P	85 - 115
Vanadium	104		P	85 - 115
Zinc	108		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P424652

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.0		P	85 - 115
Antimony	104		P	85 - 115
Arsenic	104		P	85 - 115
Barium	103		P	85 - 115
Beryllium	94.8		P	85 - 115
Boron	104		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	95.7		P	85 - 115
Cobalt	98.9		P	85 - 115
Copper	101		P	85 - 115
Lead	94.1		P	85 - 115
Manganese	97.0		P	85 - 115
Molybdenum	102		P	85 - 115
Nickel	102		P	85 - 115
Selenium	104		P	85 - 115
Silver	101		P	85 - 115
Thallium	102		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P424652

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2381159	Calcium	105	103	P/P	80 - 120
2381159	Iron	106	104	P/P	80 - 120
2381159	Magnesium	106	105	P/P	80 - 120
2381159	Potassium	106	106	P/P	80 - 120
2381159	Sodium	103	101	P/P	80 - 120
2381159	Strontium	103	101	P/P	80 - 120
2381159	Tin	105	104	P/P	80 - 120
2381159	Titanium	103	100	P/P	80 - 120
2381159	Vanadium	102	101	P/P	80 - 120
2381159	Zinc	107	105	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P424652

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2381159	Aluminum	96.9	96.2	P/P	80 - 120
2381159	Antimony	103	103	P/P	80 - 120
2381159	Arsenic	101	102	P/P	80 - 120
2381159	Barium	103	103	P/P	80 - 120
2381159	Beryllium	94.1	92.3	P/P	80 - 120
2381159	Boron	105	104	P/P	80 - 120
2381159	Cadmium	105	104	P/P	80 - 120
2381159	Chromium	96.0	96.6	P/P	80 - 120
2381159	Cobalt	96.8	96.6	P/P	80 - 120
2381159	Copper	99.1	99.7	P/P	80 - 120
2381159	Lead	95.3	95.0	P/P	80 - 120
2381159	Manganese	97.5	97.2	P/P	80 - 120
2381159	Molybdenum	100	101	P/P	80 - 120
2381159	Nickel	100	101	P/P	80 - 120
2381159	Selenium	101	103	P/P	80 - 120
2381159	Silver	100	100	P/P	80 - 120
2381159	Thallium	105	104	P/P	80 - 120

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P424652

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2381159	Calcium	1.01	Spike	P	0 - 20
2381159	Iron	1.15	Spike	P	0 - 20
2381159	Magnesium	1.02	Spike	P	0 - 20
2381159	Potassium	0.209	Spike	P	0 - 20
2381159	Sodium	2.06	Spike	P	0 - 20
2381159	Strontium	1.70	Spike	P	0 - 20
2381159	Tin	0.802	Spike	P	0 - 20
2381159	Titanium	2.22	Spike	P	0 - 20
2381159	Vanadium	1.52	Spike	P	0 - 20
2381159	Zinc	1.61	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P424652

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2381159	Aluminum	0.660	Spike	P	0 - 20
2381159	Antimony	0.316	Spike	P	0 - 20
2381159	Arsenic	0.852	Spike	P	0 - 20
2381159	Barium	0.422	Spike	P	0 - 20
2381159	Beryllium	1.90	Spike	P	0 - 20
2381159	Boron	0.695	Spike	P	0 - 20
2381159	Cadmium	0.170	Spike	P	0 - 20
2381159	Chromium	0.651	Spike	P	0 - 20
2381159	Cobalt	0.202	Spike	P	0 - 20
2381159	Copper	0.543	Spike	P	0 - 20
2381159	Lead	0.397	Spike	P	0 - 20
2381159	Manganese	0.273	Spike	P	0 - 20
2381159	Molybdenum	0.141	Spike	P	0 - 20
2381159	Nickel	0.508	Spike	P	0 - 20
2381159	Selenium	1.55	Spike	P	0 - 20
2381159	Silver	0.407	Spike	P	0 - 20
2381159	Thallium	0.648	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A117087

Included Lab Sample IDs: 2380943

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	101	102	P/P	90 - 110
Arsenic	102	99.5	P/P	90 - 110
Barium	99.5	98.8	P/P	90 - 110
Beryllium	96.5	95.5	P/P	90 - 110
Boron	95.0	98.5	P/P	90 - 110
Cadmium	101	102	P/P	90 - 110
Chromium	94.0	94.3	P/P	90 - 110
Cobalt	96.4	92.7	P/P	90 - 110
Copper	99.6	96.3	P/P	90 - 110
Lead	91.7	91.1	P/P	90 - 110
Manganese	95.4	95.8	P/P	90 - 110
Molybdenum	99.6	98.6	P/P	90 - 110
Nickel	100	95.8	P/P	90 - 110
Selenium	101	101	P/P	90 - 110
Silver	99.6	99.0	P/P	90 - 110
Thallium	99.9	99.8	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A117127

Included Lab Sample IDs: 2380943

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	101	P/P	90 - 110
Iron	102	103	P/P	90 - 110
Magnesium	102	103	P/P	90 - 110
Potassium	101	102	P/P	90 - 110
Sodium	101	102	P/P	90 - 110
Strontium	104	104	P/P	90 - 110
Titanium	103	103	P/P	90 - 110
Vanadium	103	102	P/P	90 - 110
Zinc	109	109	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A117147

Included Lab Sample IDs: 2380943

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Tin	101	105	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A117152

Included Lab Sample IDs: 2380943

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	95.3	94.4	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		LCS	Precision SMP	MS
EPA 200.7 Rev. 4.4	Calcium	106	105	103			1.01
	Iron	105	106	104			1.15
	Magnesium	106	106	105			1.02
	Potassium	102	106	106			0.209
	Sodium	104	103	101			2.06
	Strontium	103	103	101			1.70
	Tin	106	105	104			0.802
	Titanium	104	103	100			2.22
	Vanadium	104	102	101			1.52
	Zinc	108	107	105			1.61
EPA 200.8 Rev. 5.4	Aluminum	99.0	96.9	96.2			0.660
	Antimony	104	103	103			0.316
	Arsenic	104	101	102			0.852
	Barium	103	103	103			0.422
	Beryllium	94.8	94.1	92.3			1.90
	Boron	104	105	104			0.695
	Cadmium	103	105	104			0.170
	Chromium	95.7	96.0	96.6			0.651
	Cobalt	98.9	96.8	96.6			0.202
	Copper	101	99.1	99.7			0.543
	Lead	94.1	95.3	95.0			0.397
	Manganese	97.0	97.5	97.2			0.273
	Molybdenum	102	100	101			0.141
	Nickel	102	100	101			0.508
	Selenium	104	101	103			1.55
	Silver	101	100	100			0.407
	Thallium	102	105	104			0.648

Reference Method Descriptions

Method	Description	Associated Samples
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2380943
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2380943
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2380943

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 200.7 Rev. 4.4	01/17/2023	01/18/2023 10:35	George D Taylor	01/26/2023 16:12	McKinley C Carter	2380943
	01/17/2023	01/18/2023 10:35	George D Taylor	01/27/2023 13:37	McKinley C Carter	2380943
EPA 200.8 Rev. 5.4	01/17/2023	01/18/2023 10:35	George D Taylor	01/24/2023 19:36	Emily M Philpot	2380943
	01/17/2023	01/18/2023 10:35	George D Taylor	01/27/2023 14:15	Megan Whitefoot	2380943
SM 2340 B-2011	01/17/2023			01/26/2023 16:12	McKinley C Carter	2380943