

Chemical Analysis Report

CEN-DIST-2023-02-07-02

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

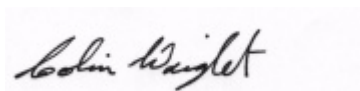
Event Description: **Run 19**
Request ID: **RQ-2023-01-30-26**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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FL Dept. of Environmental Protection
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Certified by: Colin Wright, Program Administrator

Date Certified: 20-FEB-2023 08:32

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light blue rectangular 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: 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: Sweetwater Creek @ Howard Ave

Collection Date/Time: 02/06/2023 10:45

Field ID: G2CE0273

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2385378	EPA 200.7 Rev. 4.4	Calcium	54.9		mg/L	P425553	
		Chromium	1.0	U	ug/L	P425553	
		Iron	330		ug/L	P425553	
		Magnesium	17.8		mg/L	P425553	
		Potassium	6.9		mg/L	P425553	
		Sodium	127		mg/L	P425553	
		Strontium	412		ug/L	P425553	
		Tin	3.0	U	ug/L	P425553	
		Titanium	1.5	I	ug/L	P425553	
		Vanadium	2.0	U	ug/L	P425553	
		Zinc	5.0	U	ug/L	P425553	
	EPA 200.8 Rev. 5.4	Aluminum	89		ug/L	P425553	
		Antimony	0.068	I	ug/L	P425553	
		Arsenic	1.70		ug/L	P425553	
		Barium	23.8		ug/L	P425553	
		Beryllium	0.010	I	ug/L	P425553	
		Boron	89.3		ug/L	P425553	
		Cadmium	0.020	U	ug/L	P425553	
		Cobalt	0.082		ug/L	P425553	
		Copper	1.19		ug/L	P425553	
		Lead	0.20	U	ug/L	P425553	
		Manganese	20.6		ug/L	P425553	
		Molybdenum	0.48	I	ug/L	P425553	
		Nickel	0.50	I	ug/L	P425553	
		Selenium	0.20	U	ug/L	P425553	
		Silver	0.010	U	ug/L	P425553	
		Thallium	0.10	U	ug/L	P425553	
	SM 2340 B-2011	Hardness	210		mg/L	P425553	

Sample Location: Sweetwater Creek @ Artesia St

Collection Date/Time: 02/06/2023 11:05

Field ID: G2CE0287

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2385379	EPA 200.7 Rev. 4.4	Calcium	47.1		mg/L	P425553	
		Chromium	1.0	I	ug/L	P425553	
		Iron	540		ug/L	P425553	
		Magnesium	5.13		mg/L	P425553	
		Potassium	3.3		mg/L	P425553	
		Sodium	27.5		mg/L	P425553	
		Strontium	157		ug/L	P425553	
		Tin	3.0	U	ug/L	P425553	
		Titanium	2.4	I	ug/L	P425553	
		Vanadium	2.0	U	ug/L	P425553	
		Zinc	5.0	U	ug/L	P425553	
	EPA 200.8 Rev. 5.4	Aluminum	145		ug/L	P425553	
		Antimony	0.10	I	ug/L	P425553	
		Arsenic	1.46		ug/L	P425553	
		Barium	28.7		ug/L	P425553	
		Beryllium	0.016	I	ug/L	P425553	
		Boron	45.0		ug/L	P425553	
		Cadmium	0.020	U	ug/L	P425553	
		Cobalt	0.158		ug/L	P425553	
		Copper	1.93		ug/L	P425553	
		Lead	0.35	I	ug/L	P425553	
		Manganese	27.0		ug/L	P425553	
		Molybdenum	0.56	I	ug/L	P425553	
SM 2340 B-2011	Nickel	0.61	I	ug/L	P425553		
	Selenium	0.20	U	ug/L	P425553		
	Silver	0.010	U	ug/L	P425553		
	Thallium	0.10	U	ug/L	P425553		
	Hardness	139		mg/L	P425553		

Quality Assurance Report

Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P425553

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Chromium	1.0	U	ug/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: P425553

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
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: P425553

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	104		P	85 - 115
Chromium	101		P	85 - 115
Iron	102		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	102		P	85 - 115
Sodium	104		P	85 - 115
Strontium	99.2		P	85 - 115
Tin	101		P	85 - 115
Titanium	101		P	85 - 115
Vanadium	101		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P425553

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	101		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	101		P	85 - 115
Barium	103		P	85 - 115
Beryllium	93.6		P	85 - 115
Boron	104		P	85 - 115
Cadmium	103		P	85 - 115
Cobalt	99.7		P	85 - 115
Copper	101		P	85 - 115
Lead	95.3		P	85 - 115
Manganese	101		P	85 - 115
Molybdenum	101		P	85 - 115
Nickel	103		P	85 - 115
Selenium	101		P	85 - 115
Silver	104		P	85 - 115
Thallium	97.9		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P425553

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2385042	Calcium	103		P	80 - 120
2385042	Chromium	102	102	P/P	80 - 120
2385042	Iron	105	103	P/P	80 - 120
2385042	Magnesium	102		P	80 - 120
2385042	Potassium	104	103	P/P	80 - 120
2385042	Sodium	104	102	P/P	80 - 120
2385042	Strontium	102	101	P/P	80 - 120
2385042	Tin	102	102	P/P	80 - 120
2385042	Titanium	101	101	P/P	80 - 120
2385042	Vanadium	105	104	P/P	80 - 120
2385042	Zinc	105	105	P/P	80 - 120
2385369	Calcium	105		P	80 - 120
2385369	Chromium	100		P	80 - 120
2385369	Iron	106		P	80 - 120
2385369	Magnesium	103		P	80 - 120
2385369	Potassium	105		P	80 - 120
2385369	Sodium	103		P	80 - 120
2385369	Strontium	100		P	80 - 120
2385369	Tin	102		P	80 - 120
2385369	Titanium	102		P	80 - 120
2385369	Vanadium	103		P	80 - 120
2385369	Zinc	104		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P425553

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2385042	Aluminum	97.2	102	P/P	80 - 120
2385042	Antimony	98.8	102	P/P	80 - 120
2385042	Arsenic	99.8	103	P/P	80 - 120
2385042	Barium	102	105	P/P	80 - 120
2385042	Beryllium	93.5	93.7	P/P	80 - 120
2385042	Boron	103	106	P/P	80 - 120
2385042	Cadmium	103	103	P/P	80 - 120
2385042	Cobalt	96.9	99.9	P/P	80 - 120
2385042	Copper	98.7	102	P/P	80 - 120
2385042	Lead	94.3	97.7	P/P	80 - 120
2385042	Manganese	97.2	103	P/P	80 - 120
2385042	Molybdenum	99.3	103	P/P	80 - 120
2385042	Nickel	99.6	102	P/P	80 - 120
2385042	Selenium	96.8	101	P/P	80 - 120
2385042	Silver	97.7	101	P/P	80 - 120
2385042	Thallium	98.5	103	P/P	80 - 120
2385369	Aluminum	101		P	80 - 120
2385369	Antimony	103		P	80 - 120
2385369	Arsenic	103		P	80 - 120
2385369	Barium	104		P	80 - 120
2385369	Beryllium	91.9		P	80 - 120
2385369	Boron	107		P	80 - 120
2385369	Cadmium	103		P	80 - 120
2385369	Cobalt	100		P	80 - 120
2385369	Copper	104		P	80 - 120

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P425553

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2385369	Lead	98.5		P	80 - 120
2385369	Manganese	102		P	80 - 120
2385369	Molybdenum	105		P	80 - 120
2385369	Nickel	102		P	80 - 120
2385369	Selenium	101		P	80 - 120
2385369	Silver	98.3		P	80 - 120
2385369	Thallium	101		P	80 - 120

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P425553

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2385042	Calcium	0.199	Spike	P	0 - 20
2385042	Chromium	0.0989	Spike	P	0 - 20
2385042	Iron	1.13	Spike	P	0 - 20
2385042	Magnesium	0.845	Spike	P	0 - 20
2385042	Potassium	1.38	Spike	P	0 - 20
2385042	Sodium	0.720	Spike	P	0 - 20
2385042	Strontium	0.858	Spike	P	0 - 20
2385042	Tin	0.343	Spike	P	0 - 20
2385042	Titanium	0.0749	Spike	P	0 - 20
2385042	Vanadium	0.526	Spike	P	0 - 20
2385042	Zinc	0.139	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P425553

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2385042	Aluminum	3.17	Spike	P	0 - 20
2385042	Antimony	3.06	Spike	P	0 - 20
2385042	Arsenic	3.15	Spike	P	0 - 20
2385042	Barium	2.77	Spike	P	0 - 20
2385042	Beryllium	0.254	Spike	P	0 - 20
2385042	Boron	2.89	Spike	P	0 - 20
2385042	Cadmium	0.213	Spike	P	0 - 20
2385042	Cobalt	3.00	Spike	P	0 - 20
2385042	Copper	3.58	Spike	P	0 - 20
2385042	Lead	3.54	Spike	P	0 - 20
2385042	Manganese	3.51	Spike	P	0 - 20
2385042	Molybdenum	3.43	Spike	P	0 - 20
2385042	Nickel	2.58	Spike	P	0 - 20
2385042	Selenium	4.49	Spike	P	0 - 20
2385042	Silver	3.44	Spike	P	0 - 20
2385042	Thallium	3.95	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A117362

Included Lab Sample IDs: 2385378, 2385379

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	100	99.5	P/P	90 - 110
Calcium	100	100	P/P	90 - 110
Chromium	103	103	P/P	90 - 110
Chromium	103	103	P/P	90 - 110
Iron	102	99.9	P/P	90 - 110
Iron	99.9	100	P/P	90 - 110
Magnesium	101	99.1	P/P	90 - 110
Magnesium	99.1	99.8	P/P	90 - 110
Potassium	100	101	P/P	90 - 110
Potassium	102	100	P/P	90 - 110
Sodium	99.7	100	P/P	90 - 110
Sodium	100	99.7	P/P	90 - 110
Strontium	102	101	P/P	90 - 110
Strontium	102	102	P/P	90 - 110
Tin	101	102	P/P	90 - 110
Tin	103	101	P/P	90 - 110
Titanium	101	102	P/P	90 - 110
Titanium	102	102	P/P	90 - 110
Vanadium	102	102	P/P	90 - 110
Vanadium	102	102	P/P	90 - 110
Zinc	105	105	P/P	90 - 110
Zinc	106	105	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A117421

Included Lab Sample IDs: 2385378, 2385379

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.2	101	P/P	90 - 110
Antimony	101	99.1	P/P	90 - 110
Arsenic	102	101	P/P	90 - 110
Barium	100	99.9	P/P	90 - 110
Beryllium	95.1	94.8	P/P	90 - 110
Boron	101	101	P/P	90 - 110
Cadmium	99.7	98.4	P/P	90 - 110
Cobalt	97.2	97.9	P/P	90 - 110
Copper	100	101	P/P	90 - 110
Lead	94.8	98.2	P/P	90 - 110
Manganese	99.2	98.9	P/P	90 - 110
Molybdenum	101	99.0	P/P	90 - 110
Nickel	100	101	P/P	90 - 110
Selenium	99.8	99.8	P/P	90 - 110
Silver	98.2	97.4	P/P	90 - 110
Thallium	97.0	97.3	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	MS
			LCS	SMP			
EPA 200.7 Rev. 4.4	Calcium	104	103	105			0.199
	Chromium	101	102	102	100		0.0989
	Iron	102	105	103	106		1.13
	Magnesium	104	102	103			0.845
	Potassium	102	104	103	105		1.38
	Sodium	104	104	102	103		0.720
	Strontium	99.2	102	101	100		0.858
	Tin	101	102	102	102		0.343
	Titanium	101	101	101	102		0.0749
	Vanadium	101	105	104	103		0.526
	Zinc	103	105	105	104		0.139
EPA 200.8 Rev. 5.4	Aluminum	101	97.2	102	101		3.17
	Antimony	101	98.8	102	103		3.06
	Arsenic	101	99.8	103	103		3.15
	Barium	103	102	105	104		2.77
	Beryllium	93.6	93.5	93.7	91.9		0.254
	Boron	104	103	106	107		2.89
	Cadmium	103	103	103	103		0.213
	Cobalt	99.7	96.9	99.9	100		3.00
	Copper	101	98.7	102	104		3.58
	Lead	95.3	94.3	97.7	98.5		3.54
	Manganese	101	97.2	103	102		3.51
	Molybdenum	101	99.3	103	105		3.43
	Nickel	103	99.6	102	102		2.58
	Selenium	101	96.8	101	101		4.49
	Silver	104	97.7	101	98.3		3.44
	Thallium	97.9	98.5	103	101		3.95

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	2385378, 2385379
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2385378, 2385379
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2385378, 2385379

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	02/07/2023	02/08/2023 13:50	George D Taylor	02/09/2023 21:22	McKinley C Carter	2385378
	02/07/2023	02/08/2023 13:50	George D Taylor	02/09/2023 22:05	McKinley C Carter	2385379
EPA 200.8 Rev. 5.4	02/07/2023	02/08/2023 13:50	George D Taylor	02/13/2023 16:20	Megan Whitefoot	2385378
	02/07/2023	02/08/2023 13:50	George D Taylor	02/13/2023 16:29	Megan Whitefoot	2385379
SM 2340 B-2011	02/07/2023			02/09/2023 21:22	McKinley C Carter	2385378
	02/07/2023			02/09/2023 22:05	McKinley C Carter	2385379