

Chemical Analysis Report

CEN-DIST-2023-10-24-02

Florida DEP Laboratory
2600 Blair Stone Road
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DOH Accreditation E31780

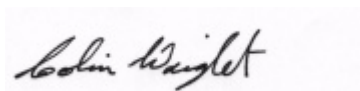
Event Description: **Run 7**
Request ID: **RQ-2023-10-23-09**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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3319 Maguire Blvd., Suite 232
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Certified by: Colin Wright, Program Administrator

Date Certified: 03-NOV-2023 09:52



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: LAKE HART AT CENTER

Collection Date/Time: 10/23/2023 09:53

Field ID: G4CE0243

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2446875	EPA 200.7 Rev. 4.4	Calcium	8.34		mg/L	P437061	
		Iron	620		ug/L	P437061	
		Magnesium	2.28		mg/L	P437061	
		Potassium	1.8		mg/L	P437061	
		Sodium	15.5		mg/L	P437061	
		Strontium	57.0		ug/L	P437061	
		Tin	3.0	U	ug/L	P437061	
		Titanium	2.4	I	ug/L	P437061	
		Vanadium	2.0	U	ug/L	P437061	
		Zinc	7.7	I	ug/L	P437061	
	EPA 200.8 Rev. 5.4	Aluminum	208		ug/L	P437061	
		Antimony	0.13	I	ug/L	P437061	
		Arsenic	0.68		ug/L	P437061	
		Barium	13.2		ug/L	P437061	
		Beryllium	0.017	I	ug/L	P437061	
		Boron	32.4		ug/L	P437061	
		Cadmium	0.048	I	ug/L	P437061	
		Chromium	0.47	I	ug/L	P437061	
		Cobalt	0.088		ug/L	P437061	
		Copper	1.12		ug/L	P437061	
		Lead	0.36	I	ug/L	P437061	
		Manganese	4.32		ug/L	P437061	
		Molybdenum	0.15	U	ug/L	P437061	
		Nickel	0.50	U	ug/L	P437061	
		Selenium	0.20	U	ug/L	P437061	
		Silver	0.010	U	ug/L	P437061	
		Thallium	0.10	U	ug/L	P437061	
	SM 2340 B-2011	Hardness	30.2		mg/L	P437061	

Sample Location: ALLIGATOR LAKE AT CENTER OF SOUTH LOBE

Collection Date/Time: 10/23/2023 12:03

Field ID: G4CE0170

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2446876	EPA 200.7 Rev. 4.4	Calcium	5.37		mg/L	P437061	
		Iron	660		ug/L	P437061	
		Magnesium	2.90		mg/L	P437061	
		Potassium	3.1		mg/L	P437061	
		Sodium	15.0		mg/L	P437061	
		Strontium	33.6		ug/L	P437061	
		Tin	3.0	U	ug/L	P437061	
		Titanium	1.8	I	ug/L	P437061	
		Vanadium	2.0	U	ug/L	P437061	
		Zinc	7.8	I	ug/L	P437061	
	EPA 200.8 Rev. 5.4	Aluminum	188		ug/L	P437061	
		Antimony	0.12	I	ug/L	P437061	
		Arsenic	0.73		ug/L	P437061	
		Barium	14.8		ug/L	P437061	
		Beryllium	0.018	I	ug/L	P437061	
		Boron	35.1		ug/L	P437061	
		Cadmium	0.024	I	ug/L	P437061	
		Chromium	0.46	I	ug/L	P437061	
		Cobalt	0.060	I	ug/L	P437061	
		Copper	0.88		ug/L	P437061	
		Lead	0.51		ug/L	P437061	
		Manganese	6.94		ug/L	P437061	
		Molybdenum	0.15	U	ug/L	P437061	
		Nickel	0.50	U	ug/L	P437061	
		Selenium	0.20	U	ug/L	P437061	
		Silver	0.010	U	ug/L	P437061	
		Thallium	0.10	U	ug/L	P437061	
	SM 2340 B-2011	Hardness	25.4		mg/L	P437061	

Quality Assurance Report

Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P437061

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: P437061

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: P437061

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	104		P	85 - 115
Iron	111		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	101		P	85 - 115
Sodium	102		P	85 - 115
Strontium	98.8		P	85 - 115
Tin	97.4		P	85 - 115
Titanium	101		P	85 - 115
Vanadium	98.9		P	85 - 115
Zinc	97.3		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P437061

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	98.2		P	85 - 115
Antimony	96.6		P	85 - 115
Arsenic	101		P	85 - 115
Barium	102		P	85 - 115
Beryllium	96.4		P	85 - 115
Boron	108		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	97.3		P	85 - 115
Cobalt	99.1		P	85 - 115
Copper	97.9		P	85 - 115
Lead	93.0		P	85 - 115
Manganese	96.6		P	85 - 115
Molybdenum	98.6		P	85 - 115
Nickel	98.4		P	85 - 115
Selenium	102		P	85 - 115
Silver	107		P	85 - 115
Thallium	99.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P437061

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446327	Calcium	103		P	80 - 120
2446327	Iron	109	108	P/P	80 - 120
2446327	Magnesium	104		P	80 - 120
2446327	Potassium	101	100	P/P	80 - 120
2446327	Sodium	102		P	80 - 120
2446327	Strontium	98.4	97.4	P/P	80 - 120
2446327	Tin	96.2	95.6	P/P	80 - 120
2446327	Titanium	100	99.5	P/P	80 - 120
2446327	Vanadium	99.4	98.7	P/P	80 - 120
2446327	Zinc	94.8	94.1	P/P	80 - 120
2446815	Calcium	102		P	80 - 120
2446815	Iron	109		P	80 - 120
2446815	Magnesium	108		P	80 - 120
2446815	Potassium	101		P	80 - 120
2446815	Sodium	106		P	80 - 120
2446815	Strontium	96.4		P	80 - 120
2446815	Tin	95.9		P	80 - 120
2446815	Titanium	100		P	80 - 120
2446815	Vanadium	98.6		P	80 - 120
2446815	Zinc	94.9		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P437061

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446327	Aluminum	96.8	97.1	P/P	80 - 120
2446327	Antimony	98.5	98.1	P/P	80 - 120
2446327	Arsenic	101	101	P/P	80 - 120
2446327	Barium	102	99.4	P/P	80 - 120
2446327	Beryllium	97.2	95.1	P/P	80 - 120
2446327	Boron	108	106	P/P	80 - 120
2446327	Cadmium	104	102	P/P	80 - 120
2446327	Chromium	99.2	98.3	P/P	80 - 120
2446327	Cobalt	96.1	94.2	P/P	80 - 120
2446327	Copper	93.3	92.8	P/P	80 - 120
2446327	Lead	94.2	92.9	P/P	80 - 120
2446327	Manganese	98.2	96.9	P/P	80 - 120
2446327	Molybdenum	102	102	P/P	80 - 120
2446327	Nickel	94.5	92.5	P/P	80 - 120
2446327	Selenium	99.6	98.7	P/P	80 - 120
2446327	Silver	109	107	P/P	80 - 120
2446327	Thallium	103	102	P/P	80 - 120
2446815	Aluminum	97.6		P	80 - 120
2446815	Antimony	99.2		P	80 - 120
2446815	Arsenic	99.9		P	80 - 120
2446815	Barium	102		P	80 - 120
2446815	Beryllium	93.9		P	80 - 120
2446815	Boron	109		P	80 - 120
2446815	Cadmium	107		P	80 - 120
2446815	Chromium	103		P	80 - 120
2446815	Cobalt	94.7		P	80 - 120
2446815	Copper	92.4		P	80 - 120

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P437061

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446815	Lead	93.2		P	80 - 120
2446815	Manganese	101		P	80 - 120
2446815	Molybdenum	101		P	80 - 120
2446815	Nickel	92.8		P	80 - 120
2446815	Selenium	99.0		P	80 - 120
2446815	Silver	110		P	80 - 120
2446815	Thallium	102		P	80 - 120

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P437061

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446327	Calcium	0.512	Spike	P	0 - 20
2446327	Iron	0.751	Spike	P	0 - 20
2446327	Magnesium	0.386	Spike	P	0 - 20
2446327	Potassium	0.762	Spike	P	0 - 20
2446327	Sodium	0.523	Spike	P	0 - 20
2446327	Strontium	0.994	Spike	P	0 - 20
2446327	Tin	0.648	Spike	P	0 - 20
2446327	Titanium	0.818	Spike	P	0 - 20
2446327	Vanadium	0.664	Spike	P	0 - 20
2446327	Zinc	0.735	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P437061

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446327	Aluminum	0.312	Spike	P	0 - 20
2446327	Antimony	0.376	Spike	P	0 - 20
2446327	Arsenic	0.146	Spike	P	0 - 20
2446327	Barium	2.12	Spike	P	0 - 20
2446327	Beryllium	2.15	Spike	P	0 - 20
2446327	Boron	1.74	Spike	P	0 - 20
2446327	Cadmium	1.84	Spike	P	0 - 20
2446327	Chromium	0.902	Spike	P	0 - 20
2446327	Cobalt	1.93	Spike	P	0 - 20
2446327	Copper	0.559	Spike	P	0 - 20
2446327	Lead	1.39	Spike	P	0 - 20
2446327	Manganese	1.20	Spike	P	0 - 20
2446327	Molybdenum	0.334	Spike	P	0 - 20
2446327	Nickel	2.14	Spike	P	0 - 20
2446327	Selenium	0.934	Spike	P	0 - 20
2446327	Silver	1.86	Spike	P	0 - 20
2446327	Thallium	0.880	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: A122425

Included Lab Sample IDs: 2446875, 2446876

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.5	97.7	P/P	90 - 110
Arsenic	95.2	95.6	P/P	90 - 110
Barium	98.3	98.0	P/P	90 - 110
Beryllium	97.3	96.7	P/P	90 - 110
Cadmium	101	102	P/P	90 - 110
Chromium	103	102	P/P	90 - 110
Cobalt	94.7	94.0	P/P	90 - 110
Copper	92.5	92.1	P/P	90 - 110
Lead	92.8	92.9	P/P	90 - 110
Manganese	103	102	P/P	90 - 110
Molybdenum	98.2	98.5	P/P	90 - 110
Nickel	92.9	92.6	P/P	90 - 110
Selenium	99.2	98.5	P/P	90 - 110
Silver	100	99.8	P/P	90 - 110
Thallium	99.1	98.7	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A122441

Included Lab Sample IDs: 2446875, 2446876

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	101	P/P	90 - 110
Iron	100	99.5	P/P	90 - 110
Magnesium	100	99.7	P/P	90 - 110
Potassium	99.3	98.2	P/P	90 - 110
Sodium	100	99.3	P/P	90 - 110
Strontium	97.1	97.3	P/P	90 - 110
Tin	99.4	99.2	P/P	90 - 110
Titanium	99.7	99.3	P/P	90 - 110
Vanadium	99.0	98.6	P/P	90 - 110
Zinc	99.3	98.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A122445

Included Lab Sample IDs: 2446875, 2446876

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	94.9	96.6	P/P	90 - 110
Boron	103	107	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	102			0.512
	Iron	111	109	108	109		0.751
	Magnesium	104	104	108			0.386
	Potassium	101	101	100	101		0.762
	Sodium	102	102	106			0.523
	Strontium	98.8	98.4	97.4	96.4		0.994
	Tin	97.4	96.2	95.6	95.9		0.648
	Titanium	101	100	99.5	100		0.818
	Vanadium	98.9	99.4	98.7	98.6		0.664
	Zinc	97.3	94.8	94.1	94.9		0.735
EPA 200.8 Rev. 5.4	Aluminum	98.2	96.8	97.1	97.6		0.312
	Antimony	96.6	98.5	98.1	99.2		0.376
	Arsenic	101	101	101	99.9		0.146
	Barium	102	102	99.4	102		2.12
	Beryllium	96.4	97.2	95.1	93.9		2.15
	Boron	108	108	106	109		1.74
	Cadmium	100	104	102	107		1.84
	Chromium	97.3	99.2	98.3	103		0.902
	Cobalt	99.1	96.1	94.2	94.7		1.93
	Copper	97.9	93.3	92.8	92.4		0.559
	Lead	93.0	94.2	92.9	93.2		1.39
	Manganese	96.6	98.2	96.9	101		1.20
	Molybdenum	98.6	102	102	101		0.334
	Nickel	98.4	94.5	92.5	92.8		2.14
	Selenium	102	99.6	98.7	99.0		0.934
	Silver	107	109	107	110		1.86
	Thallium	99.6	103	102	102		0.880

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	2446875, 2446876
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2446875, 2446876
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2446875, 2446876

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	10/24/2023	10/26/2023 14:45	George D Taylor	10/30/2023 21:18	Chase Roberts	2446875
	10/24/2023	10/26/2023 14:45	George D Taylor	10/30/2023 21:25	Chase Roberts	2446876
EPA 200.8 Rev. 5.4	10/24/2023	10/26/2023 14:45	George D Taylor	10/27/2023 21:20	Conrad Hartmann	2446875
	10/24/2023	10/26/2023 14:45	George D Taylor	10/27/2023 21:30	Conrad Hartmann	2446876
	10/24/2023	10/26/2023 14:45	George D Taylor	10/30/2023 17:04	Conrad Hartmann	2446875
	10/24/2023	10/26/2023 14:45	George D Taylor	10/30/2023 17:10	Conrad Hartmann	2446876
	10/24/2023	10/26/2023 14:45	George D Taylor	10/30/2023 21:18	Chase Roberts	2446875
SM 2340 B-2011	10/24/2023			10/30/2023 21:25	Chase Roberts	2446876