

Chemical Analysis Report

CEN-DIST-2023-04-12-01

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

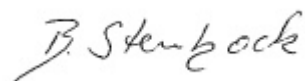
Event Description: **Run 7**
Request ID: **RQ-2023-04-10-18**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Matthew Bearden

For additional information please contact
Colin Wright, Ph.D.
Chris Bowen, B.S.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 21-APR-2023 15:43



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: 04/11/2023 11:38

Field ID: G4CE0243

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2399892	EPA 200.7 Rev. 4.4	Calcium	7.00		mg/L	P428416	
		Iron	770		ug/L	P428416	
		Magnesium	1.98		mg/L	P428416	
		Potassium	1.7		mg/L	P428416	
		Sodium	12.4		mg/L	P428416	
		Strontium	50.3		ug/L	P428416	
		Tin	3.0	U	ug/L	P428416	
		Titanium	1.4	I	ug/L	P428416	
		Vanadium	2.0	U	ug/L	P428416	
		Zinc	5.0	U	ug/L	P428416	
	EPA 200.8 Rev. 5.4	Aluminum	370		ug/L	P428416	
		Antimony	0.089	I	ug/L	P428416	
		Arsenic	0.74		ug/L	P428416	
		Barium	13.5		ug/L	P428416	
		Beryllium	0.014	I	ug/L	P428416	
		Boron	27.4		ug/L	P428416	
		Cadmium	0.020	U	ug/L	P428416	
		Chromium	0.95	I	ug/L	P428416	
		Cobalt	0.112		ug/L	P428416	
		Copper	1.20		ug/L	P428416	
		Lead	0.62		ug/L	P428416	
		Manganese	6.02		ug/L	P428416	
		Molybdenum	0.15	U	ug/L	P428416	
		Nickel	0.50	U	ug/L	P428416	
		Selenium	0.20	U	ug/L	P428416	
		Silver	0.010	U	ug/L	P428416	
		Thallium	0.10	U	ug/L	P428416	
	SM 2340 B-2011	Hardness	25.6		mg/L	P428416	

Ref. Method and Comment:
 EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 04/17/2023.

Sample Location: ALLIGATOR LAKE AT CENTER OF SOUTH LOBE

Collection Date/Time: 04/11/2023 13:28

Field ID: G4CE0170

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2399893	EPA 200.7 Rev. 4.4	Calcium	5.22		mg/L	P428416	
		Iron	750		ug/L	P428416	
		Magnesium	2.76		mg/L	P428416	
		Potassium	3.0		mg/L	P428416	
		Sodium	14.8		mg/L	P428416	
		Strontium	34.6		ug/L	P428416	
		Tin	3.0	U	ug/L	P428416	
		Titanium	1.3	I	ug/L	P428416	
		Vanadium	2.0	U	ug/L	P428416	
		Zinc	5.0	U	ug/L	P428416	
	EPA 200.8 Rev. 5.4	Aluminum	350		ug/L	P428416	
		Antimony	0.066	I	ug/L	P428416	
		Arsenic	0.79		ug/L	P428416	
		Barium	16.4		ug/L	P428416	
		Beryllium	0.021	I	ug/L	P428416	
		Boron	31.7		ug/L	P428416	
		Cadmium	0.020	U	ug/L	P428416	
		Chromium	0.65	I	ug/L	P428416	
		Cobalt	0.080		ug/L	P428416	
		Copper	1.33		ug/L	P428416	
		Lead	0.91		ug/L	P428416	
		Manganese	8.64		ug/L	P428416	
		Molybdenum	0.15	U	ug/L	P428416	
		Nickel	0.50	U	ug/L	P428416	
		Selenium	0.20	U	ug/L	P428416	
		Silver	0.010	U	ug/L	P428416	
		Thallium	0.10	U	ug/L	P428416	
	SM 2340 B-2011	Hardness	24.4		mg/L	P428416	

Ref. Method and Comment:

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 04/17/2023.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P428416

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: P428416

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: P428416

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P428416

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	101		P	85 - 115
Antimony	104		P	85 - 115
Arsenic	101		P	85 - 115
Barium	104		P	85 - 115
Beryllium	94.7		P	85 - 115
Boron	98.8		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	101		P	85 - 115
Cobalt	105		P	85 - 115
Copper	103		P	85 - 115
Lead	102		P	85 - 115
Manganese	99.2		P	85 - 115
Molybdenum	100		P	85 - 115
Nickel	103		P	85 - 115
Selenium	99.7		P	85 - 115
Silver	103		P	85 - 115
Thallium	101		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P428416

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2399727	Calcium	105	104	P/P	80 - 120
2399727	Iron	106	104	P/P	80 - 120
2399727	Magnesium	109	106	P/P	80 - 120
2399727	Potassium	107	108	P/P	80 - 120
2399727	Sodium	105	105	P/P	80 - 120
2399727	Strontium	102	101	P/P	80 - 120
2399727	Tin	101	102	P/P	80 - 120
2399727	Titanium	101	101	P/P	80 - 120
2399727	Vanadium	103	102	P/P	80 - 120
2399727	Zinc	104	104	P/P	80 - 120
2399766	Calcium	103		P	80 - 120
2399766	Iron	105		P	80 - 120
2399766	Magnesium	106		P	80 - 120
2399766	Potassium	102		P	80 - 120
2399766	Sodium	103		P	80 - 120
2399766	Strontium	100		P	80 - 120
2399766	Tin	101		P	80 - 120
2399766	Titanium	102		P	80 - 120
2399766	Vanadium	102		P	80 - 120
2399766	Zinc	103		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P428416

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2399727	Aluminum	98.7	102	P/P	80 - 120
2399727	Antimony	103	104	P/P	80 - 120
2399727	Arsenic	99.6	100	P/P	80 - 120
2399727	Barium	102	103	P/P	80 - 120
2399727	Beryllium	91.3	94.2	P/P	80 - 120
2399727	Boron	102	102	P/P	80 - 120
2399727	Cadmium	104	102	P/P	80 - 120
2399727	Chromium	98.0	98.6	P/P	80 - 120
2399727	Cobalt	101	103	P/P	80 - 120
2399727	Copper	99.5	101	P/P	80 - 120
2399727	Lead	103	104	P/P	80 - 120
2399727	Manganese	100	101	P/P	80 - 120
2399727	Molybdenum	100	100	P/P	80 - 120
2399727	Nickel	101	102	P/P	80 - 120
2399727	Selenium	96.0	97.9	P/P	80 - 120
2399727	Silver	102	103	P/P	80 - 120
2399727	Thallium	101	102	P/P	80 - 120
2399766	Aluminum	100		P	80 - 120
2399766	Antimony	104		P	80 - 120
2399766	Arsenic	102		P	80 - 120
2399766	Barium	101		P	80 - 120
2399766	Beryllium	95.3		P	80 - 120
2399766	Boron	104		P	80 - 120
2399766	Cadmium	102		P	80 - 120
2399766	Chromium	98.5		P	80 - 120
2399766	Cobalt	102		P	80 - 120
2399766	Copper	99.7		P	80 - 120

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P428416

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2399766	Lead	104		P	80 - 120
2399766	Manganese	98.0		P	80 - 120
2399766	Molybdenum	102		P	80 - 120
2399766	Nickel	101		P	80 - 120
2399766	Selenium	97.6		P	80 - 120
2399766	Silver	101		P	80 - 120
2399766	Thallium	102		P	80 - 120

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P428416

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2399727	Calcium	0.336	Spike	P	0 - 20
2399727	Iron	2.09	Spike	P	0 - 20
2399727	Magnesium	1.96	Spike	P	0 - 20
2399727	Potassium	0.0936	Spike	P	0 - 20
2399727	Sodium	0.528	Spike	P	0 - 20
2399727	Strontium	0.522	Spike	P	0 - 20
2399727	Tin	0.662	Spike	P	0 - 20
2399727	Titanium	0.0241	Spike	P	0 - 20
2399727	Vanadium	0.566	Spike	P	0 - 20
2399727	Zinc	0.0493	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P428416

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2399727	Aluminum	2.66	Spike	P	0 - 20
2399727	Antimony	0.777	Spike	P	0 - 20
2399727	Arsenic	0.522	Spike	P	0 - 20
2399727	Barium	0.419	Spike	P	0 - 20
2399727	Beryllium	2.98	Spike	P	0 - 20
2399727	Boron	0.362	Spike	P	0 - 20
2399727	Cadmium	1.11	Spike	P	0 - 20
2399727	Chromium	0.535	Spike	P	0 - 20
2399727	Cobalt	1.52	Spike	P	0 - 20
2399727	Copper	1.53	Spike	P	0 - 20
2399727	Lead	0.638	Spike	P	0 - 20
2399727	Manganese	0.380	Spike	P	0 - 20
2399727	Molybdenum	0.361	Spike	P	0 - 20
2399727	Nickel	0.996	Spike	P	0 - 20
2399727	Selenium	1.94	Spike	P	0 - 20
2399727	Silver	0.688	Spike	P	0 - 20
2399727	Thallium	1.16	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: A118594

Included Lab Sample IDs: 2399892, 2399893

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.6	99.5	P/P	90 - 110
Antimony	102	102	P/P	90 - 110
Arsenic	98.5	98.3	P/P	90 - 110
Barium	99.9	99.6	P/P	90 - 110
Beryllium	94.3	96.1	P/P	90 - 110
Boron	98.9	98.1	P/P	90 - 110
Cadmium	99.6	98.9	P/P	90 - 110
Chromium	96.6	96.4	P/P	90 - 110
Cobalt	98.3	98.9	P/P	90 - 110
Copper	97.2	96.5	P/P	90 - 110
Lead	99.6	99.9	P/P	90 - 110
Manganese	96.6	96.5	P/P	90 - 110
Molybdenum	97.8	97.8	P/P	90 - 110
Nickel	97.5	97.5	P/P	90 - 110
Selenium	99.5	98.5	P/P	90 - 110
Silver	99.6	99.4	P/P	90 - 110
Thallium	99.6	98.4	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A118667

Included Lab Sample IDs: 2399892, 2399893

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	101	P/P	90 - 110
Iron	105	102	P/P	90 - 110
Magnesium	105	101	P/P	90 - 110
Potassium	103	102	P/P	90 - 110
Sodium	102	102	P/P	90 - 110
Strontium	101	102	P/P	90 - 110
Tin	101	101	P/P	90 - 110
Titanium	100	99.3	P/P	90 - 110
Vanadium	100	100	P/P	90 - 110
Zinc	102	101	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 SMP	MS
			LCS				
EPA 200.7 Rev. 4.4	Calcium	104	105	104	103		0.336
	Iron	103	106	104	105		2.09
	Magnesium	105	109	106	106		1.96
	Potassium	103	107	108	102		0.0936
	Sodium	105	105	105	103		0.528
	Strontium	101	102	101	100		0.522
	Tin	105	101	102	101		0.662
	Titanium	102	101	101	102		0.0241
	Vanadium	104	103	102	102		0.566
	Zinc	106	104	104	103		0.0493
EPA 200.8 Rev. 5.4	Aluminum	101	98.7	102	100		2.66
	Antimony	104	103	104	104		0.777
	Arsenic	101	99.6	100	102		0.522
	Barium	104	102	103	101		0.419
	Beryllium	94.7	91.3	94.2	95.3		2.98
	Boron	98.8	102	102	104		0.362
	Cadmium	102	104	102	102		1.11
	Chromium	101	98.0	98.6	98.5		0.535
	Cobalt	105	101	103	102		1.52
	Copper	103	99.5	101	99.7		1.53
	Lead	102	103	104	104		0.638
	Manganese	99.2	100	101	98.0		0.380
	Molybdenum	100	100	100	102		0.361
	Nickel	103	101	102	101		0.996
	Selenium	99.7	96.0	97.9	97.6		1.94
	Silver	103	102	103	101		0.688
	Thallium	101	101	102	102		1.16

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	2399892, 2399893
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2399892, 2399893
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2399892, 2399893

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	04/12/2023	04/13/2023 11:25	George D Taylor	04/19/2023 22:50	McKinley C Carter	2399892
	04/12/2023	04/13/2023 11:25	George D Taylor	04/19/2023 22:58	McKinley C Carter	2399893
EPA 200.8 Rev. 5.4	04/12/2023	04/13/2023 11:25	George D Taylor	04/14/2023 19:32	Conrad Hartmann	2399892
	04/12/2023	04/13/2023 11:25	George D Taylor	04/14/2023 19:41	Conrad Hartmann	2399893
SM 2340 B-2011	04/12/2023			04/19/2023 22:50	McKinley C Carter	2399892
	04/12/2023			04/19/2023 22:58	McKinley C Carter	2399893