

Chemical Analysis Report

TLH-ROC-2022-01-25-03

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

Event Description: **Run 16**
Request ID: **RQ-2022-01-17-48**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
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Date Certified: 03-FEB-2022 10:08



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: New River @ SR22

Collection Date/Time: 01/25/2022 12:40

Field ID: G2TLHR0091

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2301583	EPA 200.7 Rev. 4.4	Calcium	2.67		mg/L	P409051	
		Iron	530		ug/L	P409051	
		Magnesium	0.57		mg/L	P409051	
		Potassium	0.30	U	mg/L	P409051	
		Sodium	2.7		mg/L	P409051	
		Strontium	14.4		ug/L	P409051	
		Tin	3.0	U	ug/L	P409051	
		Titanium	5.5		ug/L	P409051	
		Vanadium	2.0	U	ug/L	P409051	
		Zinc	5.0	U	ug/L	P409051	
	EPA 200.8 Rev. 5.4	Aluminum	600		ug/L	P409051	
		Antimony	0.050	U	ug/L	P409051	
		Arsenic	0.18	I	ug/L	P409051	
		Barium	5.72		ug/L	P409051	
		Beryllium	0.025	I	ug/L	P409051	
		Boron**	10.7		ug/L	P409051	
		Cadmium	0.020	U	ug/L	P409051	
		Chromium	0.44	I	ug/L	P409051	
		Cobalt	0.166		ug/L	P409051	
		Copper	0.51	I	ug/L	P409051	
		Lead	0.49		ug/L	P409051	
		Manganese	10.1		ug/L	P409051	
		Molybdenum	0.15	U	ug/L	P409051	
		Nickel	0.50	U	ug/L	P409051	
		Selenium	0.20	U	ug/L	P409051	
		Silver	0.010	U	ug/L	P409051	
		Thallium	0.10	U	ug/L	P409051	
	SM 2340B	Hardness	9.0		mg/L	P409051	

Quality Assurance Report

Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P409051

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: P409051

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: P409051

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	109		P	85 - 115
Iron	112		P	85 - 115
Magnesium	114		P	85 - 115
Potassium	103		P	85 - 115
Sodium	104		P	85 - 115
Strontium	102		P	85 - 115
Tin	108		P	85 - 115
Titanium	106		P	85 - 115
Vanadium	105		P	85 - 115
Zinc	108		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P409051

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	102		P	85 - 115
Barium	105		P	85 - 115
Beryllium	96.2		P	85 - 115
Boron	103		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	97.9		P	85 - 115
Cobalt	102		P	85 - 115
Copper	102		P	85 - 115
Lead	101		P	85 - 115
Manganese	96.6		P	85 - 115
Molybdenum	103		P	85 - 115
Nickel	103		P	85 - 115
Selenium	99.9		P	85 - 115
Silver	102		P	85 - 115
Thallium	108		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P409051

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2301138	Calcium	106	107	P/P	80 - 120
2301138	Iron	109	110	P/P	80 - 120
2301138	Magnesium	109	111	P/P	80 - 120
2301138	Potassium	104	103	P/P	80 - 120
2301138	Sodium	104	103	P/P	80 - 120
2301138	Strontium	103	104	P/P	80 - 120
2301138	Tin	109	108	P/P	80 - 120
2301138	Titanium	105	107	P/P	80 - 120
2301138	Vanadium	105	108	P/P	80 - 120
2301138	Zinc	107	111	P/P	80 - 120
2301572	Calcium	105		P	80 - 120
2301572	Iron	110		P	80 - 120
2301572	Magnesium	108		P	80 - 120
2301572	Potassium	103		P	80 - 120
2301572	Sodium	104		P	80 - 120
2301572	Strontium	102		P	80 - 120
2301572	Tin	105		P	80 - 120
2301572	Titanium	106		P	80 - 120
2301572	Vanadium	106		P	80 - 120
2301572	Zinc	108		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P409051

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2301138	Aluminum	103	103	P/P	80 - 120
2301138	Antimony	101	101	P/P	80 - 120
2301138	Arsenic	103	101	P/P	80 - 120
2301138	Barium	105	105	P/P	80 - 120
2301138	Beryllium	102	103	P/P	80 - 120
2301138	Boron	103	103	P/P	80 - 120
2301138	Cadmium	103	101	P/P	80 - 120
2301138	Chromium	99.8	98.9	P/P	80 - 120
2301138	Cobalt	104	103	P/P	80 - 120
2301138	Copper	105	105	P/P	80 - 120
2301138	Lead	102	101	P/P	80 - 120
2301138	Manganese	98.3	97.7	P/P	80 - 120
2301138	Molybdenum	103	103	P/P	80 - 120
2301138	Nickel	104	104	P/P	80 - 120
2301138	Selenium	99.1	99.2	P/P	80 - 120
2301138	Silver	102	101	P/P	80 - 120
2301138	Thallium	108	109	P/P	80 - 120
2301572	Aluminum	101		P	80 - 120
2301572	Antimony	103		P	80 - 120
2301572	Arsenic	102		P	80 - 120
2301572	Barium	103		P	80 - 120
2301572	Beryllium	94.9		P	80 - 120
2301572	Boron	106		P	80 - 120
2301572	Cadmium	103		P	80 - 120
2301572	Chromium	98.8		P	80 - 120
2301572	Cobalt	100		P	80 - 120
2301572	Copper	101		P	80 - 120

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P409051

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2301572	Lead	102		P	80 - 120
2301572	Manganese	97.3		P	80 - 120
2301572	Molybdenum	107		P	80 - 120
2301572	Nickel	101		P	80 - 120
2301572	Selenium	97.9		P	80 - 120
2301572	Silver	101		P	80 - 120
2301572	Thallium	110		P	80 - 120

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P409051

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2301138	Calcium	1.22	Spike	P	0 - 20
2301138	Iron	0.683	Spike	P	0 - 20
2301138	Magnesium	1.27	Spike	P	0 - 20
2301138	Potassium	0.842	Spike	P	0 - 20
2301138	Sodium	0.764	Spike	P	0 - 20
2301138	Strontium	1.29	Spike	P	0 - 20
2301138	Tin	0.162	Spike	P	0 - 20
2301138	Titanium	1.65	Spike	P	0 - 20
2301138	Vanadium	2.14	Spike	P	0 - 20
2301138	Zinc	3.32	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P409051

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2301138	Aluminum	0.242	Spike	P	0 - 20
2301138	Antimony	0.00172	Spike	P	0 - 20
2301138	Arsenic	1.57	Spike	P	0 - 20
2301138	Barium	0.105	Spike	P	0 - 20
2301138	Beryllium	0.654	Spike	P	0 - 20
2301138	Boron	0.190	Spike	P	0 - 20
2301138	Cadmium	2.23	Spike	P	0 - 20
2301138	Chromium	0.943	Spike	P	0 - 20
2301138	Cobalt	0.589	Spike	P	0 - 20
2301138	Copper	0.606	Spike	P	0 - 20
2301138	Lead	0.333	Spike	P	0 - 20
2301138	Manganese	0.446	Spike	P	0 - 20
2301138	Molybdenum	0.0810	Spike	P	0 - 20
2301138	Nickel	0.661	Spike	P	0 - 20
2301138	Selenium	0.0880	Spike	P	0 - 20
2301138	Silver	0.724	Spike	P	0 - 20
2301138	Thallium	0.518	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: A110087

Included Lab Sample IDs: 2301583

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	101	P/P	90 - 110
Antimony	101	103	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Barium	99.3	100	P/P	90 - 110
Beryllium	93.1	93.4	P/P	90 - 110
Boron	104	104	P/P	90 - 110
Cadmium	102	102	P/P	90 - 110
Chromium	96.4	96.4	P/P	90 - 110
Cobalt	98.3	97.3	P/P	90 - 110
Copper	99.2	98.1	P/P	90 - 110
Lead	97.7	97.7	P/P	90 - 110
Manganese	96.8	96.8	P/P	90 - 110
Molybdenum	101	101	P/P	90 - 110
Nickel	98.5	97.8	P/P	90 - 110
Selenium	100	100	P/P	90 - 110
Silver	102	102	P/P	90 - 110
Thallium	105	105	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A110112

Included Lab Sample IDs: 2301583

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	104	P/P	90 - 110
Iron	104	106	P/P	90 - 110
Magnesium	104	104	P/P	90 - 110
Potassium	98.7	99.0	P/P	90 - 110
Sodium	102	102	P/P	90 - 110
Strontium	101	103	P/P	90 - 110
Tin	101	103	P/P	90 - 110
Titanium	103	103	P/P	90 - 110
Vanadium	102	102	P/P	90 - 110
Zinc	103	102	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	109	106	107	105		1.22
	Iron	112	109	110	110		0.683
	Magnesium	114	109	111	108		1.27
	Potassium	103	104	103	103		0.842
	Sodium	104	104	103	104		0.764
	Strontium	102	103	104	102		1.29
	Tin	108	109	108	105		0.162
	Titanium	106	105	107	106		1.65
	Vanadium	105	105	108	106		2.14
	Zinc	108	107	111	108		3.32
EPA 200.8 Rev. 5.4	Aluminum	102	103	103	101		0.242
	Antimony	101	101	101	103		0.0017
	Arsenic	102	103	101	102		1.57
	Barium	105	105	105	103		0.105
	Beryllium	96.2	94.9	102	103		0.654
	Boron	103	103	103	106		0.190
	Cadmium	100	103	101	103		2.23
	Chromium	97.9	99.8	98.9	98.8		0.943
	Cobalt	102	104	103	100		0.589
	Copper	102	105	105	101		0.606
	Lead	101	102	101	102		0.333
	Manganese	96.6	98.3	97.7	97.3		0.446
	Molybdenum	103	103	103	107		0.0810
	Nickel	103	104	104	101		0.661
	Selenium	99.9	99.1	99.2	97.9		0.0880
	Silver	102	102	101	101		0.724
	Thallium	108	108	109	110		0.518

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	2301583
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2301583
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2301583

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	01/25/2022	01/27/2022 10:45	Vijayalakshmi Reddy	01/28/2022 20:18	Josef B Mick	2301583
EPA 200.8 Rev. 5.4	01/25/2022	01/27/2022 10:45	Vijayalakshmi Reddy	01/27/2022 20:50	Alexander Thompson	2301583
SM 2340B	01/25/2022			01/28/2022 20:18	Josef B Mick	2301583