Chemical Analysis Report

CEN-DIST-2021-08-24-02

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

Event Description: **Little Haw and B-19 + Metals Blank**
Request ID: **RQ-2021-08-23-21**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Colin Wright, Program Administrator

Date Certified: 03-SEP-2021 08:32

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: Little Haw Creek @ 25m DS of SR40 **Collection Date/Time: 08/23/2021 12:28**

Field ID: G2CE0128 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2271429	EPA 200.7 Rev. 4.4	Calcium	5.13		mg/L	P402888	
		Iron	1.17E+03		ug/L	P402888	
		Magnesium	1.21		mg/L	P402888	
		Manganese	9.2		ug/L	P402888	
		Potassium	0.56	I	mg/L	P402888	
		Sodium	8.5		mg/L	P402888	
		Zinc	5.0	U	ug/L	P402888	
	EPA 200.8 Rev. 5.4	Aluminum	529		ug/L	P402888	
		Antimony	0.050	U	ug/L	P402888	
		Arsenic	0.62		ug/L	P402888	
		Barium	10.0		ug/L	P402888	
		Beryllium	0.026	I	ug/L	P402888	
		Boron**	23.5		ug/L	P402888	
		Cadmium	0.020	U	ug/L	P402888	
		Chromium	0.65	I	ug/L	P402888	
		Copper	0.40	U	ug/L	P402888	
		Lead	0.51		ug/L	P402888	
		Nickel	0.53	I	ug/L	P402888	
		Selenium	0.20	U	ug/L	P402888	
		Silver	0.010	U	ug/L	P402888	
		Thallium	0.10	U	ug/L	P402888	
	SM 2340B	Hardness	17.8		mg/L	P402888	

Ref. Method and Comment:
EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 08/26/2021.

Sample Location: FB **Collection Date/Time: 08/23/2021 12:38**

Field ID: FB_08232021 Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2271430	EPA 200.7 Rev. 4.4	Calcium	0.075	U	mg/L	P402888	
		Iron	30	U	ug/L	P402888	
		Magnesium	0.040	U	mg/L	P402888	
		Manganese	1.0	U	ug/L	P402888	
		Potassium	0.30	U	mg/L	P402888	
		Sodium	0.50	U	mg/L	P402888	
		Zinc	5.0	U	ug/L	P402888	
	EPA 200.8 Rev. 5.4	Aluminum	5.0	U	ug/L	P402888	
		Antimony	0.050	U	ug/L	P402888	
		Arsenic	0.050	U	ug/L	P402888	
		Barium	0.20	U	ug/L	P402888	
		Beryllium	0.010	U	ug/L	P402888	
		Boron**	2.0	U	ug/L	P402888	
		Cadmium	0.020	U	ug/L	P402888	
		Chromium	0.40	U	ug/L	P402888	
		Copper	0.40	U	ug/L	P402888	
		Lead	0.20	U	ug/L	P402888	
		Nickel	0.50	U	ug/L	P402888	
		Selenium	0.20	U	ug/L	P402888	
		Silver	0.010	U	ug/L	P402888	
		Thallium	0.10	U	ug/L	P402888	
	SM 2340B	Hardness	0.35	U	mg/L	P402888	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P402888

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P402888

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
Copper	0.40	U	ug/L
Lead	0.20	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: P402888

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	106		P	85 - 115
Magnesium	107		P	85 - 115
Manganese	102		P	85 - 115
Potassium	104		P	85 - 115
Sodium	104		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P402888

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	98.6		P	85 - 115
Antimony	98.8		P	85 - 115
Arsenic	96.6		P	85 - 115
Barium	100		P	85 - 115
Beryllium	94.5		P	85 - 115
Boron	99.0		P	85 - 115
Cadmium	97.4		P	85 - 115
Chromium	97.2		P	85 - 115
Copper	96.8		P	85 - 115
Lead	97.2		P	85 - 115
Nickel	96.4		P	85 - 115
Selenium	94.5		P	85 - 115
Silver	100		P	85 - 115
Thallium	99.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P402888

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270915	Calcium	102		P	80 - 120
2270915	Iron	110	111	P/P	80 - 120
2270915	Magnesium	110	113	P/P	80 - 120
2270915	Manganese	102	104	P/P	80 - 120
2270915	Potassium	110	111	P/P	80 - 120
2270915	Sodium	101		P	80 - 120
2270915	Zinc	105	107	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P402888

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270915	Aluminum	93.3	95.1	P/P	80 - 120
2270915	Antimony	100	100	P/P	80 - 120
2270915	Arsenic	98.4	98.5	P/P	80 - 120
2270915	Barium	99.9	101	P/P	80 - 120
2270915	Beryllium	97.6	95.2	P/P	80 - 120
2270915	Boron	97.1	96.3	P/P	80 - 120
2270915	Cadmium	101	98.5	P/P	80 - 120
2270915	Chromium	97.6	98.1	P/P	80 - 120
2270915	Copper	96.3	96.1	P/P	80 - 120
2270915	Lead	98.5	99.3	P/P	80 - 120
2270915	Nickel	97.0	96.9	P/P	80 - 120
2270915	Selenium	97.3	96.8	P/P	80 - 120
2270915	Silver	97.9	99.9	P/P	80 - 120
2270915	Thallium	104	105	P/P	80 - 120

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P402888

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270915	Calcium	1.50	Spike	P	0 - 20
2270915	Iron	1.32	Spike	P	0 - 20
2270915	Magnesium	1.41	Spike	P	0 - 20
2270915	Manganese	2.00	Spike	P	0 - 20
2270915	Potassium	0.893	Spike	P	0 - 20
2270915	Sodium	1.30	Spike	P	0 - 20
2270915	Zinc	1.99	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P402888

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2270915	Aluminum	1.15	Spike	P	0 - 20
2270915	Antimony	0.0361	Spike	P	0 - 20
2270915	Arsenic	0.108	Spike	P	0 - 20
2270915	Barium	1.27	Spike	P	0 - 20
2270915	Beryllium	2.25	Spike	P	0 - 20
2270915	Boron	0.678	Spike	P	0 - 20
2270915	Cadmium	2.24	Spike	P	0 - 20
2270915	Chromium	0.522	Spike	P	0 - 20
2270915	Copper	0.149	Spike	P	0 - 20
2270915	Lead	0.821	Spike	P	0 - 20
2270915	Nickel	0.117	Spike	P	0 - 20
2270915	Selenium	0.420	Spike	P	0 - 20
2270915	Silver	1.97	Spike	P	0 - 20
2270915	Thallium	0.375	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: A107467
Included Lab Sample IDs: 2271429, 2271430

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	99.3	P/P	90 - 110
Aluminum	99.3	99.6	P/P	90 - 110
Antimony	98.7	98.9	P/P	90 - 110
Antimony	98.9	99.3	P/P	90 - 110
Arsenic	98.5	97.4	P/P	90 - 110
Arsenic	99.1	98.5	P/P	90 - 110
Barium	99.0	99.2	P/P	90 - 110
Barium	99.2	99.4	P/P	90 - 110
Beryllium	95.9	96.1	P/P	90 - 110
Beryllium	96.1	97.6	P/P	90 - 110
Boron	101	97.9	P/P	90 - 110
Boron	97.9	96.9	P/P	90 - 110
Cadmium	98.5	98.7	P/P	90 - 110
Cadmium	98.7	98.8	P/P	90 - 110
Chromium	98.2	98.4	P/P	90 - 110
Chromium	98.4	97.0	P/P	90 - 110
Copper	97.8	98.0	P/P	90 - 110
Copper	98.0	95.7	P/P	90 - 110
Lead	96.6	97.6	P/P	90 - 110
Lead	97.1	96.6	P/P	90 - 110
Nickel	97.4	97.5	P/P	90 - 110
Nickel	97.5	95.1	P/P	90 - 110
Selenium	97.8	98.1	P/P	90 - 110
Selenium	98.1	98.4	P/P	90 - 110
Silver	96.1	96.1	P/P	90 - 110
Silver	96.1	96.1	P/P	90 - 110
Thallium	99.2	99.3	P/P	90 - 110
Thallium	99.3	100	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A107531
Included Lab Sample IDs: 2271429, 2271430

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	97.8	98.3	P/P	95 - 105
Calcium	98.3	99.6	P/P	90 - 110
Iron	97.2	97.4	P/P	95 - 105
Iron	97.4	98.5	P/P	90 - 110
Magnesium	96.3	97.7	P/P	95 - 105
Magnesium	97.7	98.4	P/P	90 - 110
Manganese	101	101	P/P	95 - 105
Manganese	101	102	P/P	90 - 110
Potassium	97.9	97.2	P/P	90 - 110
Potassium	97.9	97.9	P/P	95 - 105
Sodium	98.7	97.8	P/P	90 - 110
Sodium	98.8	98.7	P/P	95 - 105
Zinc	101	103	P/P	90 - 110
Zinc	99.5	101	P/P	95 - 105

Quality Assurance Report
Calibration Verification

* 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		
					LCS	SMP	MS
EPA 200.7 Rev. 4.4	Calcium	103	102				1.50
	Iron	106	110	111			1.32
	Magnesium	107	110	113			1.41
	Manganese	102	102	104			2.00
	Potassium	104	110	111			0.893
	Sodium	104	101				1.30
	Zinc	101	105	107			1.99
EPA 200.8 Rev. 5.4	Aluminum	98.6	93.3	95.1			1.15
	Antimony	98.8	100	100			0.0361
	Arsenic	96.6	98.4	98.5			0.108
	Barium	100	99.9	101			1.27
	Beryllium	94.5	97.6	95.2			2.25
	Boron	99.0	97.1	96.3			0.678
	Cadmium	97.4	101	98.5			2.24
	Chromium	97.2	97.6	98.1			0.522
	Copper	96.8	96.3	96.1			0.149
	Lead	97.2	98.5	99.3			0.821
	Nickel	96.4	97.0	96.9			0.117
	Selenium	94.5	97.3	96.8			0.420
	Silver	100	97.9	99.9			1.97
	Thallium	99.2	104	105			0.375

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	2271429, 2271430
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2271429, 2271430
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2271429, 2271430

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	08/24/2021	08/24/2021 14:10	Elliott D. Healy	08/29/2021 12:36	Josef B Mick	2271430
	08/24/2021	08/24/2021 14:10	Elliott D. Healy	08/29/2021 14:38	Josef B Mick	2271429
EPA 200.8 Rev. 5.4	08/24/2021	08/24/2021 14:10	Elliott D. Healy	08/25/2021 18:22	Alexander Thompson	2271430
	08/24/2021	08/24/2021 14:10	Elliott D. Healy	08/25/2021 20:18	Alexander Thompson	2271429
SM 2340B	08/24/2021			08/29/2021 12:36	Josef B Mick	2271430
	08/24/2021			08/29/2021 14:38	Josef B Mick	2271429