Chemical Analysis Report

NE-DIST-2021-03-05-02

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

Event Description: **LSJR West 2021**
Request ID: **RQ-2021-02-08-32**
Customer: **NE-DIST**
Project ID: **SMP**

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 16-MAR-2021 11:50

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: Yellow Water CR at SR 228 **Collection Date/Time: 03/04/2021 10:45**

Field ID: 20030549 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2229568	EPA 200.7 Rev. 4.4	Barium	9.9		ug/L	P394624	
		Calcium	4.40		mg/L	P394624	
		Iron	1.46E+03		ug/L	P394624	
		Magnesium	0.93		mg/L	P394624	
		Manganese	15.4		ug/L	P394624	
		Potassium	0.35	I	mg/L	P394624	
		Sodium	5.1		mg/L	P394624	
		Zinc	9.3	I	ug/L	P394624	
	EPA 200.8 Rev. 5.4	Aluminum	534		ug/L	P394624	
		Antimony	0.092	I	ug/L	P394624	
		Arsenic	0.38		ug/L	P394624	
		Beryllium	0.032	I	ug/L	P394624	
		Boron**	13.5		ug/L	P394624	
		Cadmium	0.020	U	ug/L	P394624	
		Chromium	0.96	I	ug/L	P394624	
		Copper	3.92		ug/L	P394624	
		Lead	2.12		ug/L	P394624	
		Nickel	0.99	I	ug/L	P394624	
		Selenium	0.20	U	ug/L	P394624	
		Silver	0.010	U	ug/L	P394624	
		Thallium	0.10	U	ug/L	P394624	
	SM 2340B	Hardness	14.8		mg/L	P394624	

Ref. Method and Comment:
EPA 200.8 Rev. 5.4: The copper and lead result was confirmed in the undigested sample on 03/11/2021.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P394624

Component	Result	Code	Units
Barium	1.0	U	ug/L
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: P394624

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	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: P394624

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	99.8		P	85 - 115
Calcium	104		P	85 - 115
Iron	103		P	85 - 115
Magnesium	102		P	85 - 115
Manganese	99.3		P	85 - 115
Potassium	103		P	85 - 115
Sodium	105		P	85 - 115
Zinc	94.2		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P394624

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	93.5		P	85 - 115
Antimony	98.8		P	85 - 115
Arsenic	99.0		P	85 - 115
Beryllium	88.7		P	85 - 115
Boron	91.5		P	85 - 115
Cadmium	98.5		P	85 - 115
Chromium	94.0		P	85 - 115
Copper	96.2		P	85 - 115
Lead	100		P	85 - 115
Nickel	95.9		P	85 - 115
Selenium	95.5		P	85 - 115
Silver	101		P	85 - 115
Thallium	103		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P394624

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2229527	Barium	101	101	P/P	80 - 120
2229527	Calcium	106	105	P/P	80 - 120
2229527	Iron	107	105	P/P	80 - 120
2229527	Magnesium	105	104	P/P	80 - 120
2229527	Manganese	99.9	99.8	P/P	80 - 120
2229527	Potassium	108	107	P/P	80 - 120
2229527	Sodium	105		P	80 - 120
2229527	Zinc	96.4	95.8	P/P	80 - 120
2229659	Barium	104		P	80 - 120
2229659	Calcium	105		P	80 - 120
2229659	Iron	103		P	80 - 120
2229659	Magnesium	102		P	80 - 120
2229659	Manganese	101		P	80 - 120
2229659	Potassium	99.4		P	80 - 120
2229659	Sodium	104		P	80 - 120
2229659	Zinc	100		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P394624

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2229527	Aluminum	93.3	91.8	P/P	80 - 120
2229527	Antimony	98.1	98.1	P/P	80 - 120
2229527	Arsenic	98.2	97.1	P/P	80 - 120
2229527	Beryllium	89.0	90.7	P/P	80 - 120
2229527	Boron	88.5	91.1	P/P	80 - 120
2229527	Cadmium	98.4	98.0	P/P	80 - 120
2229527	Chromium	94.9	94.8	P/P	80 - 120
2229527	Copper	91.0	94.1	P/P	80 - 120
2229527	Lead	100	101	P/P	80 - 120
2229527	Nickel	96.6	97.1	P/P	80 - 120
2229527	Selenium	86.7	85.6	P/P	80 - 120
2229527	Silver	97.9	99.0	P/P	80 - 120
2229527	Thallium	104	106	P/P	80 - 120
2229659	Aluminum	91.2		P	80 - 120
2229659	Antimony	98.1		P	80 - 120
2229659	Arsenic	96.4		P	80 - 120
2229659	Beryllium	88.8		P	80 - 120
2229659	Boron	92.0		P	80 - 120
2229659	Cadmium	97.8		P	80 - 120
2229659	Chromium	97.7		P	80 - 120
2229659	Copper	94.4		P	80 - 120
2229659	Lead	101		P	80 - 120
2229659	Nickel	94.6		P	80 - 120
2229659	Selenium	93.5		P	80 - 120
2229659	Silver	99.4		P	80 - 120
2229659	Thallium	105		P	80 - 120

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P394624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2229527	Barium	0.122	Spike	P	0 - 20
2229527	Calcium	0.856	Spike	P	0 - 20
2229527	Iron	1.09	Spike	P	0 - 20
2229527	Magnesium	0.780	Spike	P	0 - 20
2229527	Manganese	0.172	Spike	P	0 - 20
2229527	Potassium	0.757	Spike	P	0 - 20
2229527	Sodium	0.457	Spike	P	0 - 20
2229527	Zinc	0.553	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P394624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2229527	Aluminum	1.53	Spike	P	0 - 20
2229527	Antimony	0.0703	Spike	P	0 - 20
2229527	Arsenic	1.15	Spike	P	0 - 20
2229527	Beryllium	1.77	Spike	P	0 - 20
2229527	Boron	2.57	Spike	P	0 - 20
2229527	Cadmium	0.395	Spike	P	0 - 20
2229527	Chromium	0.159	Spike	P	0 - 20
2229527	Copper	2.12	Spike	P	0 - 20
2229527	Lead	0.545	Spike	P	0 - 20
2229527	Nickel	0.512	Spike	P	0 - 20
2229527	Selenium	1.28	Spike	P	0 - 20
2229527	Silver	1.12	Spike	P	0 - 20
2229527	Thallium	1.64	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: A103973
Included Lab Sample IDs: 2229568

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	98.3	102	P/P	90 - 110
Calcium	101	99.8	P/P	90 - 110
Iron	101	101	P/P	90 - 110
Magnesium	100	99.9	P/P	90 - 110
Manganese	98.8	98.5	P/P	90 - 110
Potassium	101	100	P/P	90 - 110
Sodium	101	99.8	P/P	90 - 110
Zinc	92.6	97.1	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A103997
Included Lab Sample IDs: 2229568

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.0	95.8	P/P	90 - 110
Antimony	96.6	96.7	P/P	90 - 110
Arsenic	99.2	99.1	P/P	90 - 110
Beryllium	94.8	92.5	P/P	90 - 110
Cadmium	97.7	98.5	P/P	90 - 110
Chromium	98.7	98.7	P/P	90 - 110
Lead	100	101	P/P	90 - 110
Nickel	99.2	98.0	P/P	90 - 110
Selenium	96.4	97.2	P/P	90 - 110
Silver	98.4	98.0	P/P	90 - 110
Thallium	107	106	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A104027
Included Lab Sample IDs: 2229568

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Boron	94.7	96.5	P/P	90 - 110
Copper	94.6	95.5	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		
						LCS	SMP	MS
EPA 200.7 Rev. 4.4	Barium	99.8	101	101	104			0.122
	Calcium	104	106	105	105			0.856
	Iron	103	107	105	103			1.09
	Magnesium	102	105	104	102			0.780
	Manganese	99.3	99.9	99.8	101			0.172
	Potassium	103	108	107	99.4			0.757
	Sodium	105	105	104				0.457
	Zinc	94.2	96.4	95.8	100			0.553
EPA 200.8 Rev. 5.4	Aluminum	93.5	93.3	91.8	91.2			1.53
	Antimony	98.8	98.1	98.1	98.1			0.0703
	Arsenic	99.0	98.2	97.1	96.4			1.15
	Beryllium	88.7	89.0	90.7	88.8			1.77
	Boron	91.5	88.5	91.1	92.0			2.57
	Cadmium	98.5	98.4	98.0	97.8			0.395
	Chromium	94.0	94.9	94.8	97.7			0.159
	Copper	96.2	91.0	94.1	94.4			2.12
	Lead	100	100	101	101			0.545
	Nickel	95.9	96.6	97.1	94.6			0.512
	Selenium	95.5	86.7	85.6	93.5			1.28
	Silver	101	99.0	99.4	97.9			1.12
	Thallium	103	104	106	105			1.64

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	2229568
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2229568
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2229568

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	03/05/2021	03/08/2021 14:10	Elliott D. Healy	03/09/2021 14:11	Betina Topolski	2229568
EPA 200.8 Rev. 5.4	03/05/2021	03/08/2021 14:10	Elliott D. Healy	03/10/2021 20:02	McKinley C Carter	2229568
	03/05/2021	03/08/2021 14:10	Elliott D. Healy	03/11/2021 17:53	McKinley C Carter	2229568
SM 2340B	03/05/2021			03/09/2021 14:11	Betina Topolski	2229568