Chemical Analysis Report

NE-DIST-2021-12-14-02

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

Event Description: **LSJR South West Boat**
Request ID: **RQ-2021-12-13-55**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
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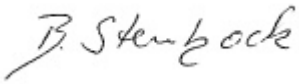
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 05-JAN-2022 17:44



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: Swimming Pen Creek at Eagles Creek Dr. **Collection Date/Time: 12/13/2021 09:40**

Field ID: G2NE1188 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2295090	EPA 200.7 Rev. 4.4	Calcium	24.5		mg/L	P407537	
		Iron	370		ug/L	P407537	
		Magnesium	2.82		mg/L	P407537	
		Potassium	2.5		mg/L	P407537	
		Sodium	14.9		mg/L	P407537	
		Strontium	117		ug/L	P407537	
		Tin	3.0	U	ug/L	P407537	
		Titanium	0.75	U	ug/L	P407537	
		Vanadium	2.0	U	ug/L	P407537	
		Zinc	5.0	U	ug/L	P407869	
	EPA 200.8 Rev. 5.4	Aluminum	47		ug/L	P407537	
		Antimony	0.12	I	ug/L	P407537	
		Arsenic	0.68		ug/L	P407537	
		Barium	25.0		ug/L	P407537	
		Beryllium	0.010	U	ug/L	P407537	
		Boron**	36.0		ug/L	P407537	
		Cadmium	0.020	U	ug/L	P407537	
		Chromium	0.40	U	ug/L	P407537	
		Cobalt	0.095		ug/L	P407537	
		Copper	2.17		ug/L	P407537	
		Lead	0.20	U	ug/L	P407537	
		Manganese	12.0		ug/L	P407537	
		Molybdenum	0.67		ug/L	P407537	
		Nickel	0.50	U	ug/L	P407537	
		Selenium	0.20	U	ug/L	P407537	
		Silver	0.010	U	ug/L	P407537	
		Thallium	0.10	U	ug/L	P407537	
	SM 2340B	Hardness	72.9		mg/L	P407537	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P407537

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P407869

Component	Result	Code	Units
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P407537

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: P407537

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	107		P	85 - 115
Magnesium	110		P	85 - 115
Potassium	99.4		P	85 - 115
Sodium	101		P	85 - 115
Strontium	102		P	85 - 115
Tin	107		P	85 - 115
Titanium	106		P	85 - 115
Vanadium	106		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P407869

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Zinc	99.8		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P407537

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	104		P	85 - 115
Antimony	99.5		P	85 - 115
Arsenic	103		P	85 - 115
Barium	104		P	85 - 115
Beryllium	99.9		P	85 - 115
Boron	105		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	101		P	85 - 115
Cobalt	100		P	85 - 115
Copper	104		P	85 - 115
Lead	97.6		P	85 - 115
Manganese	100		P	85 - 115
Molybdenum	104		P	85 - 115
Nickel	104		P	85 - 115
Selenium	99.9		P	85 - 115
Silver	101		P	85 - 115
Thallium	105		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P407537

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2295090	Calcium	109		P	80 - 120
2295090	Iron	99.6	106	P/P	80 - 120
2295090	Magnesium	103	113	P/P	80 - 120
2295090	Potassium	93.1	101	P/P	80 - 120
2295090	Sodium	104		P	80 - 120
2295090	Strontium	93.0	100	P/P	80 - 120
2295090	Tin	96.6	105	P/P	80 - 120
2295090	Titanium	99.0	106	P/P	80 - 120
2295090	Vanadium	98.7	106	P/P	80 - 120
2295171	Calcium	102		P	80 - 120
2295171	Iron	108		P	80 - 120
2295171	Magnesium	101		P	80 - 120
2295171	Potassium	101		P	80 - 120
2295171	Sodium	99.8		P	80 - 120
2295171	Strontium	100		P	80 - 120
2295171	Tin	107		P	80 - 120
2295171	Titanium	106		P	80 - 120
2295171	Vanadium	107		P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P407869

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2295295	Zinc	95.1	96.8	P/P	80 - 120
2295421	Zinc	96.4		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P407537

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2295090	Aluminum	104	101	P/P	80 - 120
2295090	Antimony	102	101	P/P	80 - 120
2295090	Arsenic	108	105	P/P	80 - 120
2295090	Barium	110	109	P/P	80 - 120
2295090	Beryllium	106	103	P/P	80 - 120
2295090	Boron	102	99.6	P/P	80 - 120
2295090	Cadmium	106	104	P/P	80 - 120
2295090	Chromium	106	105	P/P	80 - 120
2295090	Cobalt	99.9	98.9	P/P	80 - 120
2295090	Copper	105	106	P/P	80 - 120
2295090	Lead	101	99.5	P/P	80 - 120
2295090	Manganese	105	107	P/P	80 - 120
2295090	Molybdenum	108	107	P/P	80 - 120
2295090	Nickel	107	107	P/P	80 - 120
2295090	Selenium	103	101	P/P	80 - 120
2295090	Silver	102	100	P/P	80 - 120
2295090	Thallium	109	109	P/P	80 - 120
2295171	Aluminum	102		P	80 - 120
2295171	Antimony	99.9		P	80 - 120
2295171	Arsenic	104		P	80 - 120
2295171	Barium	103		P	80 - 120
2295171	Beryllium	98.6		P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P407537

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2295171	Boron	106		P	80 - 120
2295171	Cadmium	103		P	80 - 120
2295171	Chromium	101		P	80 - 120
2295171	Copper	101		P	80 - 120
2295171	Lead	96.9		P	80 - 120
2295171	Manganese	98.9		P	80 - 120
2295171	Molybdenum	106		P	80 - 120
2295171	Nickel	102		P	80 - 120
2295171	Selenium	98.9		P	80 - 120
2295171	Silver	99.5		P	80 - 120
2295171	Thallium	106		P	80 - 120

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P407537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2295090	Calcium	6.88	Spike	P	0 - 20
2295090	Iron	5.45	Spike	P	0 - 20
2295090	Magnesium	5.17	Spike	P	0 - 20
2295090	Potassium	5.01	Spike	P	0 - 20
2295090	Sodium	4.13	Spike	P	0 - 20
2295090	Strontium	6.81	Spike	P	0 - 20
2295090	Tin	8.74	Spike	P	0 - 20
2295090	Titanium	7.21	Spike	P	0 - 20
2295090	Vanadium	7.28	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P407869

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2295295	Zinc	1.73	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P407537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2295090	Aluminum	2.54	Spike	P	0 - 20
2295090	Antimony	1.21	Spike	P	0 - 20
2295090	Arsenic	2.10	Spike	P	0 - 20
2295090	Barium	1.16	Spike	P	0 - 20
2295090	Beryllium	3.39	Spike	P	0 - 20
2295090	Boron	1.77	Spike	P	0 - 20
2295090	Cadmium	2.24	Spike	P	0 - 20
2295090	Chromium	1.07	Spike	P	0 - 20
2295090	Cobalt	0.965	Spike	P	0 - 20
2295090	Copper	1.13	Spike	P	0 - 20
2295090	Lead	1.31	Spike	P	0 - 20
2295090	Manganese	1.54	Spike	P	0 - 20
2295090	Molybdenum	0.638	Spike	P	0 - 20
2295090	Nickel	0.770	Spike	P	0 - 20
2295090	Selenium	1.61	Spike	P	0 - 20
2295090	Silver	2.04	Spike	P	0 - 20
2295090	Thallium	0.0588	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: A109520
Included Lab Sample IDs: 2295090

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	102	P/P	90 - 110
Iron	103	101	P/P	90 - 110
Magnesium	104	102	P/P	90 - 110
Potassium	97.0	94.9	P/P	90 - 110
Sodium	101	98.8	P/P	90 - 110
Strontium	102	100	P/P	90 - 110
Tin	104	103	P/P	90 - 110
Titanium	99.9	102	P/P	90 - 110
Vanadium	100	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A109523
Included Lab Sample IDs: 2295090

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	94.3	92.5	P/P	90 - 110
Arsenic	96.1	96.3	P/P	90 - 110
Barium	90.9	93.7	P/P	90 - 110
Beryllium	91.2	91.9	P/P	90 - 110
Boron	96.1	90.7	P/P	90 - 110
Cadmium	95.4	95.5	P/P	90 - 110
Chromium	91.1	93.3	P/P	90 - 110
Copper	93.9	93.7	P/P	90 - 110
Manganese	91.3	93.2	P/P	90 - 110
Molybdenum	92.7	93.4	P/P	90 - 110
Nickel	92.9	93.3	P/P	90 - 110
Selenium	94.1	95.3	P/P	90 - 110
Silver	94.6	95.2	P/P	90 - 110
Thallium	96.0	96.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A109571
Included Lab Sample IDs: 2295090

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	96300	95200	P/P	90 - 110
Cobalt	97000	94100	P/P	90 - 110
Lead	92600	92600	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A109642
Included Lab Sample IDs: 2295090

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Zinc	95.1	93.5	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	Calcium	106	109	102				6.88
	Iron	107	99.6	106	108			5.45
	Magnesium	110	103	113	101			5.17
	Potassium	99.4	93.1	101	101			5.01
	Sodium	101	104	99.8				4.13
	Strontium	102	93.0	100	100			6.81
	Tin	107	96.6	105	107			8.74
	Titanium	106	99.0	106	106			7.21
	Vanadium	106	98.7	106	107			7.28
	Zinc	99.8	95.1	96.8	96.4			1.73
EPA 200.8 Rev. 5.4	Aluminum	104	102	104	101			2.54
	Antimony	99.5	102	101	99.9			1.21
	Arsenic	103	104	108	105			2.10
	Barium	104	103	110	109			1.16
	Beryllium	99.9	98.6	106	103			3.39
	Boron	105	106	102	99.6			1.77
	Cadmium	102	103	106	104			2.24
	Chromium	101	101	106	105			1.07
	Cobalt	100	99.9	98.9				0.965
	Copper	104	101	105	106			1.13
	Lead	97.6	101	99.5	96.9			1.31
	Manganese	100	98.9	105	107			1.54
	Molybdenum	104	106	108	107			0.638
	Nickel	104	102	107	107			0.770
	Selenium	99.9	98.9	103	101			1.61
	Silver	101	99.5	102	100			2.04
	Thallium	105	106	109	109			0.0588

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	2295090
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2295090
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2295090

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	12/14/2021	12/16/2021 10:35	Vijayalakshmi Reddy	12/21/2021 15:55	Josef B Mick	2295090
	12/14/2021	12/27/2021 11:00	Vijayalakshmi Reddy	01/03/2022 17:11	Josef B Mick	2295090
EPA 200.8 Rev. 5.4	12/14/2021	12/16/2021 10:35	Vijayalakshmi Reddy	12/21/2021 21:58	Alexander Thompson	2295090
	12/14/2021	12/16/2021 10:35	Vijayalakshmi Reddy	12/27/2021 15:16	Alexander Thompson	2295090
SM 2340B	12/14/2021			12/21/2021 15:55	Josef B Mick	2295090