Chemical Analysis Report

SE-DIST-2021-08-10-01

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

Event Description: **SMP - IRC Boat 2**
Request ID: **RQ-2021-04-05-18**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
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FL Dept. of Environmental Protection
2199 South Rock Road
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Certified by: Colin Wright, Program Administrator

Date Certified: 31-AUG-2021 14:33

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: South IRL outside Bob Summers Park **Collection Date/Time: 08/09/2021 11:15**

Field ID: G5SE0088 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2268323	EPA 200.7 Rev. 4.4	Calcium	201		mg/L	P402681	
		Iron	1.42E+03		ug/L	P402681	
		Magnesium	530		mg/L	P402681	
		Manganese	70		ug/L	P402681	
		Zinc	84		ug/L	P402681	
	EPA 200.8 Rev. 5.4	Aluminum	82		ug/L	P402681	
		Antimony	0.20	U	ug/L	P402681	
		Arsenic	2.53		ug/L	P402681	
		Beryllium	0.040	U	ug/L	P402681	
		Cadmium	0.080	U	ug/L	P402681	
		Chromium	1.6	U	ug/L	P402681	
		Copper	8.8		ug/L	P402681	
		Lead	0.80	U	ug/L	P402681	
		Nickel	2.0	U	ug/L	P402681	
		Selenium	0.80	U	ug/L	P402681	
		Silver	0.040	U	ug/L	P402681	
		Thallium	0.40	U	ug/L	P402681	

Ref. Method and Comment:
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium and magnesium are unavailable because of high analyte concentration in the QC sample.
EPA 200.8 Rev. 5.4: The copper result was confirmed in the undigested sample on 08/25/2021.

Sample Location: South IRL outside Vero Beach Yacht Club **Collection Date/Time: 08/09/2021 11:30**

Field ID: G5SE0089 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2268324	EPA 200.7 Rev. 4.4	Calcium	242		mg/L	P402681	
		Iron	440		ug/L	P402681	
		Magnesium	665		mg/L	P402681	
		Manganese	27		ug/L	P402681	
		Zinc	18	I	ug/L	P402681	
	EPA 200.8 Rev. 5.4	Aluminum	67	I	ug/L	P402681	
		Antimony	0.20	I	ug/L	P402681	
		Arsenic	2.43		ug/L	P402681	
		Beryllium	0.040	U	ug/L	P402681	
		Cadmium	0.080	U	ug/L	P402681	
		Chromium	1.6	U	ug/L	P402681	
		Copper	5.5		ug/L	P402681	
		Lead	0.80	U	ug/L	P402681	
		Nickel	2.0	U	ug/L	P402681	
		Selenium	0.80	U	ug/L	P402681	
		Silver	0.040	U	ug/L	P402681	
		Thallium	0.40	U	ug/L	P402681	

Ref. Method and Comment:
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium and magnesium are unavailable because of high analyte concentration in the QC sample.
EPA 200.8 Rev. 5.4: The copper result was confirmed in the undigested sample on 08/25/2021.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P402681

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
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P402681

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
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: P402681

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	105		P	85 - 115
Iron	108		P	85 - 115
Magnesium	102		P	85 - 115
Manganese	101		P	85 - 115
Zinc	107		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P402681

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	103		P	85 - 115
Antimony	102		P	85 - 115
Arsenic	97.8		P	85 - 115
Beryllium	93.1		P	85 - 115
Cadmium	98.5		P	85 - 115
Chromium	103		P	85 - 115
Copper	98.1		P	85 - 115
Lead	97.8		P	85 - 115
Nickel	99.9		P	85 - 115
Selenium	101		P	85 - 115
Silver	101		P	85 - 115
Thallium	100		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P402681

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2268323	Iron	107	108	P/P	70 - 130
2268323	Manganese	99.5	101	P/P	70 - 130
2268323	Zinc	110	110	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P402681

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2268323	Aluminum	117	116	P/P	70 - 130
2268323	Antimony	105	105	P/P	70 - 130
2268323	Arsenic	111	113	P/P	70 - 130
2268323	Beryllium	104	108	P/P	70 - 130
2268323	Cadmium	95.2	95.8	P/P	70 - 130
2268323	Chromium	107	107	P/P	70 - 130
2268323	Copper	105	108	P/P	70 - 130
2268323	Lead	110	110	P/P	70 - 130
2268323	Nickel	116	116	P/P	70 - 130
2268323	Selenium	102	104	P/P	70 - 130
2268323	Silver	94.0	94.4	P/P	70 - 130
2268323	Thallium	112	113	P/P	70 - 130

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P402681

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2268323	Calcium	1.63	Spike	P	0 - 20
2268323	Iron	0.791	Spike	P	0 - 20
2268323	Magnesium	2.33	Spike	P	0 - 20
2268323	Manganese	0.817	Spike	P	0 - 20
2268323	Zinc	0.331	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P402681

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2268323	Aluminum	0.485	Spike	P	0 - 20
2268323	Antimony	0.0611	Spike	P	0 - 20
2268323	Arsenic	1.57	Spike	P	0 - 20
2268323	Beryllium	3.03	Spike	P	0 - 20
2268323	Cadmium	0.660	Spike	P	0 - 20
2268323	Chromium	0.0825	Spike	P	0 - 20
2268323	Copper	1.65	Spike	P	0 - 20
2268323	Lead	0.133	Spike	P	0 - 20
2268323	Nickel	0.667	Spike	P	0 - 20
2268323	Selenium	1.73	Spike	P	0 - 20
2268323	Silver	0.410	Spike	P	0 - 20
2268323	Thallium	0.944	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: A107446
Included Lab Sample IDs: 2268323, 2268324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	104	105	P/P	90 - 110
Antimony	99.0	100	P/P	90 - 110
Arsenic	97.7	98.3	P/P	90 - 110
Beryllium	94.6	93.5	P/P	90 - 110
Cadmium	97.3	97.2	P/P	90 - 110
Chromium	101	100	P/P	90 - 110
Copper	97.3	99.3	P/P	90 - 110
Lead	96.7	95.2	P/P	90 - 110
Nickel	98.9	101	P/P	90 - 110
Selenium	97.3	101	P/P	90 - 110
Silver	94.9	95.5	P/P	90 - 110
Thallium	98.9	97.7	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A107492
Included Lab Sample IDs: 2268323, 2268324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	97.8	98.9	P/P	90 - 110
Calcium	98.9	96.0	P/P	90 - 110
Iron	95.9	97.3	P/P	90 - 110
Iron	97.3	94.5	P/P	90 - 110
Magnesium	97.2	94.6	P/P	90 - 110
Manganese	100	98.5	P/P	90 - 110
Manganese	98.7	100	P/P	90 - 110
Zinc	105	106	P/P	90 - 110
Zinc	106	104	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A107531
Included Lab Sample IDs: 2268324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Magnesium	98.4	95.8	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	105					1.63
	Iron	108	107	108			0.791
	Magnesium	102					2.33
	Manganese	101	99.5	101			0.817
	Zinc	107	110	110			0.331
EPA 200.8 Rev. 5.4	Aluminum	103	117	116			0.485
	Antimony	102	105	105			0.0611
	Arsenic	97.8	111	113			1.57
	Beryllium	93.1	104	108			3.03
	Cadmium	98.5	95.2	95.8			0.660
	Chromium	103	107	107			0.0825
	Copper	98.1	105	108			1.65
	Lead	97.8	110	110			0.133
	Nickel	99.9	116	116			0.667
	Selenium	101	102	104			1.73
	Silver	101	94.4	94.0			0.410
	Thallium	100	112	113			0.944

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	2268323, 2268324
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2268323, 2268324

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	08/10/2021	08/19/2021 13:30	Elliott D. Healy	08/26/2021 20:53	Betina Topolski	2268323
	08/10/2021	08/19/2021 13:30	Elliott D. Healy	08/26/2021 22:09	Betina Topolski	2268323
	08/10/2021	08/19/2021 13:30	Elliott D. Healy	08/26/2021 22:32	Betina Topolski	2268324
	08/10/2021	08/19/2021 13:30	Elliott D. Healy	08/29/2021 15:22	Josef B Mick	2268324
EPA 200.8 Rev. 5.4	08/10/2021	08/19/2021 13:30	Elliott D. Healy	08/24/2021 15:18	Alexander Thompson	2268324
	08/10/2021	08/19/2021 13:30	Elliott D. Healy	08/24/2021 15:37	Alexander Thompson	2268323