Chemical Analysis Report

SE-DIST-2022-02-01-01

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

Event Description: **Stuart Deploy Pickup**
Request ID: **RQ-2022-01-31-56**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Jordan Skaggs

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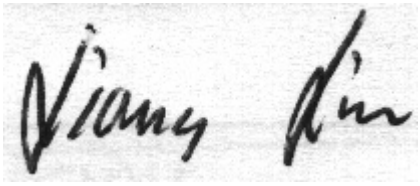
Certified by: Liang Lin, Environmental Administrator

Date Certified: 08-FEB-2022 16:01



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: Manatee Pocket North **Collection Date/Time: 01/31/2022 13:30**

Field ID: G2SE0063 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2302750	EPA 200.7 Rev. 4.4	Calcium	371		mg/L	P409246	
		Iron	120	U	ug/L	P409246	
		Magnesium	1.12E+03		mg/L	P409246	
		Strontium	6.81E+03		ug/L	P409246	
		Tin	150	U	ug/L	P409246	
		Titanium	5.7	I	ug/L	P409246	
		Vanadium	8.0	U	ug/L	P409246	
		Zinc	20	U	ug/L	P409246	
	EPA 200.8 Rev. 5.4	Aluminum	52	I	ug/L	P409246	
		Antimony	0.22	I	ug/L	P409246	
		Arsenic	2.44		ug/L	P409246	
		Beryllium	0.040	U	ug/L	P409246	
		Cadmium	0.080	U	ug/L	P409246	
		Chromium	1.6	U	ug/L	P409246	
		Cobalt	0.080	U	ug/L	P409246	
		Copper	7.4		ug/L	P409246	
		Lead	2.0	U	ug/L	P409246	
		Manganese	4.8		ug/L	P409246	
		Molybdenum	11.0		ug/L	P409246	
		Nickel	2.0	U	ug/L	P409246	
		Selenium	0.80	U	ug/L	P409246	
		Silver	0.040	U	ug/L	P409246	
		Thallium	1.0	U	ug/L	P409246	

Ref. Method and Comment:
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, magnesium and strontium 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 02/04/2022.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P409246

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	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: P409246

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
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: P409246

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	108		P	85 - 115
Iron	108		P	85 - 115
Magnesium	107		P	85 - 115
Strontium	104		P	85 - 115
Tin	109		P	85 - 115
Titanium	106		P	85 - 115
Vanadium	99.7		P	85 - 115
Zinc	110		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P409246

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	103		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	103		P	85 - 115
Beryllium	96.0		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	101		P	85 - 115
Cobalt	102		P	85 - 115
Copper	99.6		P	85 - 115
Lead	99.3		P	85 - 115
Manganese	102		P	85 - 115
Molybdenum	101		P	85 - 115
Nickel	102		P	85 - 115
Selenium	101		P	85 - 115
Silver	103		P	85 - 115
Thallium	107		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P409246

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2302750	Iron	107	103	P/P	70 - 130
2302750	Tin	97.4	107	P/P	70 - 130
2302750	Titanium	104	104	P/P	70 - 130
2302750	Vanadium	107	108	P/P	70 - 130
2302750	Zinc	105	105	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P409246

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2302750	Aluminum	113	120	P/P	70 - 130
2302750	Antimony	96.0	100	P/P	70 - 130
2302750	Arsenic	109	114	P/P	70 - 130
2302750	Beryllium	97.6	98.0	P/P	70 - 130
2302750	Cadmium	87.1	92.6	P/P	70 - 130
2302750	Chromium	96.8	103	P/P	70 - 130
2302750	Cobalt	117	123	P/P	70 - 130
2302750	Copper	99.0	105	P/P	70 - 130
2302750	Lead	103	103	P/P	70 - 130
2302750	Manganese	94.8	101	P/P	70 - 130
2302750	Molybdenum	112	121	P/P	70 - 130
2302750	Nickel	114	123	P/P	70 - 130
2302750	Selenium	93.5	97.6	P/P	70 - 130
2302750	Silver	88.7	94.2	P/P	70 - 130
2302750	Thallium	109	110	P/P	70 - 130

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P409246

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2302750	Calcium	0.411	Spike	P	0 - 20
2302750	Iron	3.08	Spike	P	0 - 20
2302750	Magnesium	1.01	Spike	P	0 - 20
2302750	Strontium	0.187	Spike	P	0 - 20
2302750	Tin	9.16	Spike	P	0 - 20
2302750	Titanium	0.424	Spike	P	0 - 20
2302750	Vanadium	0.662	Spike	P	0 - 20
2302750	Zinc	0.750	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P409246

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2302750	Aluminum	6.04	Spike	P	0 - 20
2302750	Antimony	4.52	Spike	P	0 - 20
2302750	Arsenic	4.43	Spike	P	0 - 20
2302750	Beryllium	0.420	Spike	P	0 - 20
2302750	Cadmium	6.17	Spike	P	0 - 20
2302750	Chromium	6.60	Spike	P	0 - 20
2302750	Cobalt	5.32	Spike	P	0 - 20
2302750	Copper	5.21	Spike	P	0 - 20
2302750	Lead	0.142	Spike	P	0 - 20
2302750	Manganese	6.30	Spike	P	0 - 20
2302750	Molybdenum	5.29	Spike	P	0 - 20
2302750	Nickel	7.06	Spike	P	0 - 20
2302750	Selenium	4.25	Spike	P	0 - 20
2302750	Silver	6.07	Spike	P	0 - 20
2302750	Thallium	0.775	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: A110187
Included Lab Sample IDs: 2302750

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	104	104	P/P	90 - 110
Iron	104	104	P/P	90 - 110
Magnesium	104	103	P/P	90 - 110
Strontium	105	104	P/P	90 - 110
Tin	105	106	P/P	90 - 110
Titanium	105	104	P/P	90 - 110
Vanadium	105	104	P/P	90 - 110
Zinc	108	106	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A110217
Included Lab Sample IDs: 2302750

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	102	P/P	90 - 110
Antimony	92.3	95.2	P/P	90 - 110
Arsenic	99.4	100	P/P	90 - 110
Beryllium	96.5	99.5	P/P	90 - 110
Cadmium	96.6	97.5	P/P	90 - 110
Chromium	95.8	97.1	P/P	90 - 110
Cobalt	100	101	P/P	90 - 110
Copper	100	101	P/P	90 - 110
Lead	94.3	94.3	P/P	90 - 110
Manganese	95.6	98.4	P/P	90 - 110
Molybdenum	97.0	97.6	P/P	90 - 110
Nickel	102	103	P/P	90 - 110
Selenium	97.7	100	P/P	90 - 110
Thallium	103	102	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A110249
Included Lab Sample IDs: 2302750

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	96.7	95.4	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	108					0.411
	Iron	108	107	103			3.08
	Magnesium	107					1.01
	Strontium	104					0.187
	Tin	109	97.4	107			9.16
	Titanium	106	104	104			0.424
	Vanadium	99.7	107	108			0.662
	Zinc	110	105	105			0.750
EPA 200.8 Rev. 5.4	Aluminum	103	113	120			6.04
	Antimony	101	96.0	100			4.52
	Arsenic	103	109	114			4.43
	Beryllium	96.0	97.6	98.0			0.420
	Cadmium	102	87.1	92.6			6.17
	Chromium	101	96.8	103			6.60
	Cobalt	102	117	123			5.32
	Copper	99.6	99.0	105			5.21
	Lead	99.3	103	103			0.142
	Manganese	102	94.8	101			6.30
	Molybdenum	101	112	121			5.29
	Nickel	102	114	123			7.06
	Selenium	101	93.5	97.6			4.25
	Silver	103	88.7	94.2			6.07
	Thallium	107	109	110			0.775

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	2302750
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2302750

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	02/01/2022	02/02/2022 10:30	Vijayalakshmi Reddy	02/02/2022 18:58	Josef B Mick	2302750
	02/01/2022	02/02/2022 10:30	Vijayalakshmi Reddy	02/02/2022 20:01	Josef B Mick	2302750
EPA 200.8 Rev. 5.4	02/01/2022	02/02/2022 10:30	Vijayalakshmi Reddy	02/03/2022 15:32	Alexander Thompson	2302750
	02/01/2022	02/02/2022 10:30	Vijayalakshmi Reddy	02/03/2022 17:17	Alexander Thompson	2302750
	02/01/2022	02/02/2022 10:30	Vijayalakshmi Reddy	02/04/2022 13:05	Alexander Thompson	2302750