Chemical Analysis Report

NW-DIST-2023-09-29-01

Review Copy

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Blackwater Bay Run**
Request ID: **RQ-2023-09-25-09**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
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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: EAST BAY 1000 YDS WEST OF MOUTH **Collection Date/Time: 09/28/2023 10:10**

Field ID: G4NW0035 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2441681	EPA 200.7 Rev. 4.4	Calcium	222		mg/L	P435804	
		Iron	120	I	ug/L	P435804	
		Magnesium	661		mg/L	P435804	
		Potassium	227		mg/L	P435804	
		Sodium	5.82E+03		mg/L	P435804	
		Strontium	4.22E+03		ug/L	P435804	
		Tin	9.0	U	ug/L	P435804	
		Titanium	3.2	I	ug/L	P435804	
		Vanadium	6.0	U	ug/L	P435804	
		Zinc	15	U	ug/L	P435804	
	EPA 200.8 Rev. 5.4	Aluminum	182		ug/L	P435804	
		Antimony	0.20	U	ug/L	P435804	
		Arsenic	1.35		ug/L	P435804	
		Barium	13.9		ug/L	P435804	
		Beryllium	0.040	U	ug/L	P435804	
		Boron	2.54E+03		ug/L	P435804	
		Cadmium	0.080	U	ug/L	P435804	
		Chromium	1.6	U	ug/L	P435804	
		Cobalt	0.57		ug/L	P435804	
		Copper	1.6	U	ug/L	P435804	
		Lead	0.80	U	ug/L	P435804	
		Manganese	10.9		ug/L	P435804	
		Molybdenum	6.8		ug/L	P435804	
		Nickel	2.0	U	ug/L	P435804	
		Selenium	0.80	U	ug/L	P435804	
		Silver	0.040	U	ug/L	P435804	
		Thallium	0.40	U	ug/L	P435804	
	SM 2340 B-2011	Hardness	3.28E+03		mg/L	P435804	

Ref. Method and Comment:
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, magnesium, potassium and sodium are unavailable because of high analyte concentration in the QC sample.
EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for boron are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P435804

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
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P435804

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: P435804

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	102		P	80 - 120
Iron	103		P	80 - 120
Magnesium	100		P	80 - 120
Potassium	98.5		P	80 - 120
Sodium	100		P	80 - 120
Strontium	101		P	80 - 120
Tin	103		P	80 - 120
Titanium	101		P	80 - 120
Vanadium	101		P	80 - 120
Zinc	99.3		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P435804

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	103		P	85 - 115
Antimony	99.7		P	85 - 115
Arsenic	102		P	85 - 115
Barium	104		P	85 - 115
Beryllium	96.0		P	85 - 115
Boron	105		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	101		P	85 - 115
Cobalt	101		P	85 - 115
Copper	98.8		P	85 - 115
Lead	96.5		P	85 - 115
Manganese	104		P	85 - 115
Molybdenum	100		P	85 - 115
Nickel	99.9		P	85 - 115
Selenium	104		P	85 - 115
Silver	111		P	85 - 115
Thallium	103		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P435804

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2440935	Iron	105	99.8	P/P	70 - 130
2440935	Strontium	112	101	P/P	70 - 130
2440935	Tin	100	102	P/P	70 - 130
2440935	Titanium	101	104	P/P	70 - 130
2440935	Vanadium	102	102	P/P	70 - 130
2440935	Zinc	95.2	97.6	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P435804

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2440935	Aluminum	103	102	P/P	70 - 130
2440935	Antimony	99.2	101	P/P	70 - 130
2440935	Arsenic	112	114	P/P	70 - 130
2440935	Barium	105	107	P/P	70 - 130
2440935	Beryllium	108	103	P/P	70 - 130
2440935	Cadmium	92.9	98.2	P/P	70 - 130
2440935	Chromium	104	106	P/P	70 - 130
2440935	Cobalt	99.0	101	P/P	70 - 130
2440935	Copper	95.1	96.8	P/P	70 - 130
2440935	Lead	100	101	P/P	70 - 130
2440935	Manganese	105	105	P/P	70 - 130
2440935	Molybdenum	110	113	P/P	70 - 130
2440935	Nickel	96.7	98.2	P/P	70 - 130
2440935	Selenium	109	114	P/P	70 - 130
2440935	Silver	101	102	P/P	70 - 130
2440935	Thallium	106	108	P/P	70 - 130

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P435804

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2440935	Calcium	4.84	Spike	P	0 - 20
2440935	Iron	4.77	Spike	P	0 - 20
2440935	Magnesium	4.85	Spike	P	0 - 20
2440935	Potassium	1.16	Spike	P	0 - 20
2440935	Sodium	2.10	Spike	P	0 - 20
2440935	Strontium	4.04	Spike	P	0 - 20
2440935	Tin	1.60	Spike	P	0 - 20
2440935	Titanium	2.80	Spike	P	0 - 20
2440935	Vanadium	0.277	Spike	P	0 - 20
2440935	Zinc	2.51	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P435804

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2440935	Aluminum	1.32	Spike	P	0 - 20
2440935	Antimony	1.86	Spike	P	0 - 20
2440935	Arsenic	1.77	Spike	P	0 - 20
2440935	Barium	1.57	Spike	P	0 - 20
2440935	Beryllium	4.71	Spike	P	0 - 20
2440935	Boron	0.0573	Spike	P	0 - 20
2440935	Cadmium	5.57	Spike	P	0 - 20
2440935	Chromium	1.12	Spike	P	0 - 20
2440935	Cobalt	2.07	Spike	P	0 - 20
2440935	Copper	1.73	Spike	P	0 - 20
2440935	Lead	0.948	Spike	P	0 - 20
2440935	Manganese	0.448	Spike	P	0 - 20
2440935	Molybdenum	2.33	Spike	P	0 - 20
2440935	Nickel	1.62	Spike	P	0 - 20
2440935	Selenium	4.04	Spike	P	0 - 20
2440935	Silver	1.40	Spike	P	0 - 20
2440935	Thallium	1.95	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: A121931
Included Lab Sample IDs: 2441681

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	104	P/P	90 - 110
Antimony	94.0	95.0	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Barium	99.6	102	P/P	90 - 110
Beryllium	98.2	100	P/P	90 - 110
Cadmium	98.6	98.3	P/P	90 - 110
Chromium	98.6	103	P/P	90 - 110
Cobalt	101	98.9	P/P	90 - 110
Copper	99.6	97.2	P/P	90 - 110
Lead	93.6	92.8	P/P	90 - 110
Manganese	98.9	106	P/P	90 - 110
Molybdenum	98.7	97.5	P/P	90 - 110
Nickel	99.8	98.2	P/P	90 - 110
Selenium	99.0	103	P/P	90 - 110
Silver	100	99.1	P/P	90 - 110
Thallium	97.9	97.1	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A121939
Included Lab Sample IDs: 2441681

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	100	P/P	90 - 110
Iron	101	100	P/P	90 - 110
Magnesium	98.0	96.5	P/P	90 - 110
Potassium	103	105	P/P	90 - 110
Sodium	102	104	P/P	90 - 110
Strontium	99.5	99.0	P/P	90 - 110
Tin	97.3	98.3	P/P	90 - 110
Titanium	98.6	98.6	P/P	90 - 110
Vanadium	96.8	97.2	P/P	90 - 110
Zinc	97.2	96.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A121963
Included Lab Sample IDs: 2441681

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Boron	102	104	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	102					4.84
	Iron	103	105	99.8			4.77
	Magnesium	100					4.85
	Potassium	98.5					1.16
	Sodium	100					2.10
	Strontium	101	112	101			4.04
	Tin	103	100	102			1.60
	Titanium	101	101	104			2.80
	Vanadium	101	102	102			0.277
	Zinc	99.3	95.2	97.6			2.51
EPA 200.8 Rev. 5.4	Aluminum	103	103	102			1.32
	Antimony	99.7	99.2	101			1.86
	Arsenic	102	112	114			1.77
	Barium	104	105	107			1.57
	Beryllium	96.0	108	103			4.71
	Boron	105					0.0573
	Cadmium	103	92.9	98.2			5.57
	Chromium	101	104	106			1.12
	Cobalt	101	99.0	101			2.07
	Copper	98.8	95.1	96.8			1.73
	Lead	96.5	100	101			0.948
	Manganese	104	105	105			0.448
	Molybdenum	100	110	113			2.33
	Nickel	99.9	96.7	98.2			1.62
	Selenium	104	109	114			4.04
	Silver	111	101	102			1.40
	Thallium	103	106	108			1.95

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	2441681
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2441681
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2441681

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	09/29/2023	10/02/2023 12:30	George D Taylor	10/03/2023 10:46	McKinley C Carter	2441681
	09/29/2023	10/02/2023 12:30	George D Taylor	10/03/2023 10:54	McKinley C Carter	2441681
EPA 200.8 Rev. 5.4	09/29/2023	10/02/2023 12:30	George D Taylor	10/03/2023 17:04	Emily M Philpot	2441681
	09/29/2023	10/02/2023 12:30	George D Taylor	10/04/2023 15:22	Emily M Philpot	2441681
SM 2340 B-2011	09/29/2023			10/03/2023 10:54	McKinley C Carter	2441681