Chemical Analysis Report

NW-DIST-2023-02-14-02

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

Event Description: **Blackwater Bay Run**
Request ID: **RQ-2023-02-13-24**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government Street
Suite 208
Pensacola, FL 32502-5794
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Certified by: Colin Wright, Program Administrator

Date Certified: 02-MAR-2023 09:42

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: 02/13/2023 14:00**

Field ID: G4NW0035 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2387076	EPA 200.7 Rev. 4.4	Calcium	56.9		mg/L	P425797	
		Iron	250	I	ug/L	P425797	
		Magnesium	178		mg/L	P425797	
		Potassium	56		mg/L	P425797	
		Sodium	1.51E+03		mg/L	P425797	
		Strontium	1.05E+03		ug/L	P425797	
		Tin	9.0	U	ug/L	P425797	
		Titanium	4.4	I	ug/L	P425797	
		Vanadium	6.0	U	ug/L	P425797	
		Zinc	15	U	ug/L	P425797	
	EPA 200.8 Rev. 5.4	Aluminum	224		ug/L	P426238	
		Antimony	0.20	U	ug/L	P426238	
		Arsenic	0.45	I	ug/L	P426238	
		Barium	8.4		ug/L	P426238	
		Beryllium	0.040	U	ug/L	P426238	
		Boron	555		ug/L	P426238	
		Cadmium	0.080	U	ug/L	P426238	
		Chromium	4.0	U	ug/L	P425797	
		Cobalt	0.14	I	ug/L	P426238	
		Copper	1.6	U	ug/L	P426238	
		Lead	2.0	U	ug/L	P426238	
		Manganese	6.6		ug/L	P426238	
		Molybdenum	1.5	I	ug/L	P426238	
		Nickel	2.0	U	ug/L	P426238	
		Selenium	0.80	U	ug/L	P426238	
		Thallium	1.0	U	ug/L	P426238	
	SM 2340 B-2011	Hardness	877		mg/L	P425797	

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.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P425797

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: P425797

Component	Result	Code	Units
Chromium	0.40	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P426238

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
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
Thallium	0.10	U	ug/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P425797

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	104		P	85 - 115
Iron	106		P	85 - 115
Magnesium	103		P	85 - 115
Potassium	102		P	85 - 115
Sodium	102		P	85 - 115
Strontium	102		P	85 - 115
Tin	105		P	85 - 115
Titanium	103		P	85 - 115
Vanadium	104		P	85 - 115
Zinc	107		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P425797

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chromium	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P426238

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.7		P	85 - 115
Antimony	97.1		P	85 - 115
Arsenic	96.8		P	85 - 115
Barium	98.6		P	85 - 115
Beryllium	90.8		P	85 - 115
Boron	103		P	85 - 115
Cadmium	97.0		P	85 - 115
Cobalt	99.5		P	85 - 115
Copper	95.2		P	85 - 115
Lead	96.2		P	85 - 115
Manganese	95.8		P	85 - 115
Molybdenum	97.2		P	85 - 115
Nickel	96.5		P	85 - 115
Selenium	96.0		P	85 - 115
Thallium	98.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P425797

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2385831	Iron	101	100	P/P	70 - 130
2385831	Strontium	99.7	100	P/P	70 - 130
2385831	Tin	125	126	P/P	70 - 130
2385831	Titanium	101	101	P/P	70 - 130
2385831	Vanadium	103	104	P/P	70 - 130
2385831	Zinc	99.0	97.8	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P425797

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2385831	Chromium	103	106	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P426238

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2387076	Aluminum	96.9	100	P/P	70 - 130
2387076	Antimony	99.0	98.5	P/P	70 - 130
2387076	Arsenic	104	105	P/P	70 - 130
2387076	Barium	97.9	98.7	P/P	70 - 130
2387076	Beryllium	99.4	101	P/P	70 - 130
2387076	Boron	96.1	102	P/P	70 - 130
2387076	Cadmium	95.3	94.3	P/P	70 - 130
2387076	Cobalt	106	107	P/P	70 - 130
2387076	Copper	98.5	99.6	P/P	70 - 130
2387076	Lead	97.9	96.8	P/P	70 - 130
2387076	Manganese	90.8	91.7	P/P	70 - 130
2387076	Molybdenum	105	107	P/P	70 - 130
2387076	Nickel	102	104	P/P	70 - 130
2387076	Selenium	97.7	99.1	P/P	70 - 130
2387076	Thallium	99.1	98.1	P/P	70 - 130

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P425797

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2385831	Calcium	0.379	Spike	P	0 - 20
2385831	Iron	0.667	Spike	P	0 - 20
2385831	Magnesium	15.7	Spike	P	0 - 20
2385831	Potassium	12.6	Spike	P	0 - 20
2385831	Sodium	13.5	Spike	P	0 - 20
2385831	Strontium	0.393	Spike	P	0 - 20
2385831	Tin	1.37	Spike	P	0 - 20
2385831	Titanium	0.766	Spike	P	0 - 20
2385831	Vanadium	0.123	Spike	P	0 - 20
2385831	Zinc	1.13	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P425797

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2385831	Chromium	2.60	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P426238

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2387076	Aluminum	3.13	Spike	P	0 - 20
2387076	Antimony	0.445	Spike	P	0 - 20
2387076	Arsenic	0.724	Spike	P	0 - 20
2387076	Barium	0.711	Spike	P	0 - 20
2387076	Beryllium	1.52	Spike	P	0 - 20
2387076	Boron	1.64	Spike	P	0 - 20
2387076	Cadmium	1.09	Spike	P	0 - 20
2387076	Cobalt	0.681	Spike	P	0 - 20
2387076	Copper	1.11	Spike	P	0 - 20
2387076	Lead	1.14	Spike	P	0 - 20
2387076	Manganese	0.861	Spike	P	0 - 20
2387076	Molybdenum	1.71	Spike	P	0 - 20
2387076	Nickel	2.03	Spike	P	0 - 20
2387076	Selenium	1.45	Spike	P	0 - 20
2387076	Thallium	0.980	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: A117494
Included Lab Sample IDs: 2387076

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	99.8	P/P	90 - 110
Iron	103	100	P/P	90 - 110
Magnesium	102	100	P/P	90 - 110
Potassium	104	102	P/P	90 - 110
Sodium	103	102	P/P	90 - 110
Strontium	106	105	P/P	90 - 110
Tin	105	107	P/P	90 - 110
Titanium	102	104	P/P	90 - 110
Vanadium	103	106	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A117535
Included Lab Sample IDs: 2387076

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	104	101	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A117641
Included Lab Sample IDs: 2387076

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Zinc	100	101	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A117672
Included Lab Sample IDs: 2387076

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	95.5	95.0	P/P	90 - 110
Antimony	93.6	93.3	P/P	90 - 110
Arsenic	94.3	95.9	P/P	90 - 110
Barium	94.7	93.8	P/P	90 - 110
Beryllium	94.3	96.0	P/P	90 - 110
Boron	96.0	95.6	P/P	90 - 110
Cadmium	93.4	93.2	P/P	90 - 110
Cobalt	97.5	96.3	P/P	90 - 110
Copper	94.8	93.6	P/P	90 - 110
Lead	94.8	93.9	P/P	90 - 110
Manganese	93.3	91.8	P/P	90 - 110
Molybdenum	93.3	93.6	P/P	90 - 110
Nickel	95.3	94.9	P/P	90 - 110
Selenium	94.4	94.4	P/P	90 - 110
Thallium	95.2	94.2	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	104					0.379
	Iron	106	101	100			0.667
	Magnesium	103					15.7
	Potassium	102					12.6
	Sodium	102					13.5
	Strontium	102	99.7	100			0.393
	Tin	105	125	126			1.37
	Titanium	103	101	101			0.766
	Vanadium	104	103	104			0.123
	Zinc	107	99.0	97.8			1.13
EPA 200.8 Rev. 5.4	Aluminum	97.7	96.9	100			3.13
	Antimony	97.1	99.0	98.5			0.445
	Arsenic	96.8	104	105			0.724
	Barium	98.6	97.9	98.7			0.711
	Beryllium	90.8	99.4	101			1.52
	Boron	103	96.1	102			1.64
	Cadmium	97.0	95.3	94.3			1.09
	Chromium	102	103	106			2.60
	Cobalt	99.5	106	107			0.681
	Copper	95.2	98.5	99.6			1.11
	Lead	96.2	97.9	96.8			1.14
	Manganese	95.8	90.8	91.7			0.861
	Molybdenum	97.2	105	107			1.71
	Nickel	96.5	102	104			2.03
	Selenium	96.0	97.7	99.1			1.45
	Thallium	98.8	99.1	98.1			0.980

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	2387076
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2387076
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2387076

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	02/14/2023	02/15/2023 12:50	George D Taylor	02/16/2023 21:30	McKinley C Carter	2387076
	02/14/2023	02/15/2023 12:50	George D Taylor	02/16/2023 21:37	McKinley C Carter	2387076
	02/14/2023	02/15/2023 12:50	George D Taylor	02/22/2023 12:55	McKinley C Carter	2387076
EPA 200.8 Rev. 5.4	02/14/2023	02/15/2023 12:50	George D Taylor	02/17/2023 18:54	Emily M Philpot	2387076
	02/14/2023	02/22/2023 14:00	George D Taylor	02/24/2023 17:05	Emily M Philpot	2387076
	02/14/2023	02/22/2023 14:00	George D Taylor	02/24/2023 19:07	Emily M Philpot	2387076
SM 2340 B-2011	02/14/2023			02/16/2023 21:30	McKinley C Carter	2387076