Chemical Analysis Report

NW-DIST-2023-05-24-01

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

Event Description: **Blackwater Bay Run**
Request ID: **RQ-2023-05-22-19**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government Street
Suite 208
Pensacola, FL 32502-5794
Attn: Myranda Butler

For additional information please contact
Colin Wright, Ph.D.
Chris Bowen, B.S.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
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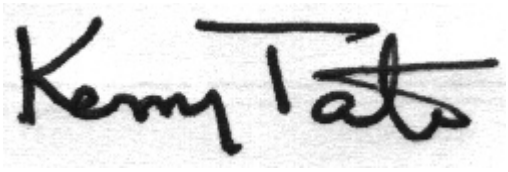
Phone (850) 245-8085

Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 05-JUN-2023 10:45



NON-CONFORMANCE REPORT INCLUDED

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: 05/22/2023 10:00**

Field ID: G4NW0035 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2412178	EPA 200.7 Rev. 4.4	Calcium	138		mg/L	P430551	
		Chromium	3.0	U	ug/L	P430551	
		Iron	90	U	ug/L	P430551	
		Magnesium	429		mg/L	P430551	
		Potassium	133		mg/L	P430551	
		Sodium	3.33E+03		mg/L	P430551	
		Strontium	2.53E+03		ug/L	P430551	
		Tin	9.0	U	ug/L	P430551	
		Titanium	2.2	U	ug/L	P430551	
		Vanadium	6.0	U	ug/L	P430551	
		Zinc	15	U	ug/L	P430551	
	EPA 200.8 Rev. 5.4	Aluminum	135		ug/L	P430551	
		Antimony	0.20	U	ug/L	P430551	
		Arsenic	0.92		ug/L	P430551	
		Barium	15.2		ug/L	P430551	
		Beryllium	0.040	U	ug/L	P430551	
		Boron	1.34E+03		ug/L	P430551	
		Cadmium	0.080	U	ug/L	P430551	
		Cobalt	0.17	I	ug/L	P430551	
		Copper	1.6	U	ug/L	P430551	
		Lead	0.80	U	ug/L	P430551	
		Manganese	9.1		ug/L	P430551	
		Molybdenum	4.2		ug/L	P430551	
		Nickel	2.0	U	ug/L	P430551	
		Selenium	0.80	U	ug/L	P430551	
		Silver	0.040	U	ug/L	P430551	
		Thallium	0.40	U	ug/L	P430551	
	SM 2340 B-2011	Hardness	2.11E+03		mg/L	P430551	

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

Non-Conformance Report

NCR ID: 9892

Event(s)	Job(s)	Sample(s)	Test(s)
NW-DIST-2023-05-24-01			

NCR Type: SHIPPING/RECEIVING **NCR Category: Samples arrived late**

Observation: Samples arrived late, samples received within the acceptable temperature range.

Resolution: Biology and Chemistry supervisors were notified by emailed.
Samples will be qualified as appropriate.

Authorized by/Date: Kyle Klug 5/31/2023

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P430551

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Chromium	1.0	U	ug/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: P430551

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
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: P430551

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Chromium	102		P	85 - 115
Iron	104		P	85 - 115
Magnesium	101		P	85 - 115
Potassium	104		P	85 - 115
Sodium	96.2		P	85 - 115
Strontium	102		P	85 - 115
Tin	103		P	85 - 115
Titanium	104		P	85 - 115
Vanadium	103		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P430551

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	98.6		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	98.9		P	85 - 115
Barium	101		P	85 - 115
Beryllium	91.9		P	85 - 115
Boron	102		P	85 - 115
Cadmium	99.9		P	85 - 115
Cobalt	99.6		P	85 - 115
Copper	98.2		P	85 - 115
Lead	96.0		P	85 - 115
Manganese	101		P	85 - 115
Molybdenum	97.9		P	85 - 115
Nickel	97.6		P	85 - 115
Selenium	99.1		P	85 - 115
Silver	100		P	85 - 115
Thallium	95.6		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P430551

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2412178	Chromium	96.7	99.1	P/P	70 - 130
2412178	Iron	104	105	P/P	70 - 130
2412178	Tin	76.8	78.0	P/P	70 - 130
2412178	Titanium	105	108	P/P	70 - 130
2412178	Vanadium	98.3	103	P/P	70 - 130
2412178	Zinc	96.4	97.8	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P430551

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2412178	Aluminum	106	108	P/P	70 - 130
2412178	Antimony	104	105	P/P	70 - 130
2412178	Arsenic	111	111	P/P	70 - 130
2412178	Barium	101	101	P/P	70 - 130
2412178	Beryllium	98.1	97.6	P/P	70 - 130
2412178	Boron	88.3	88.9	P/P	70 - 130
2412178	Cadmium	95.5	97.1	P/P	70 - 130
2412178	Cobalt	97.9	98.4	P/P	70 - 130
2412178	Copper	92.8	93.5	P/P	70 - 130
2412178	Lead	104	104	P/P	70 - 130
2412178	Manganese	90.5	88.9	P/P	70 - 130
2412178	Molybdenum	115	115	P/P	70 - 130
2412178	Nickel	94.4	94.5	P/P	70 - 130
2412178	Selenium	100	101	P/P	70 - 130
2412178	Silver	92.7	91.1	P/P	70 - 130
2412178	Thallium	100	103	P/P	70 - 130

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P430551

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412178	Calcium	1.38	Spike	P	0 - 20
2412178	Chromium	2.51	Spike	P	0 - 20
2412178	Iron	0.632	Spike	P	0 - 20
2412178	Magnesium	2.48	Spike	P	0 - 20
2412178	Potassium	2.29	Spike	P	0 - 20
2412178	Sodium	0.638	Spike	P	0 - 20
2412178	Strontium	1.19	Spike	P	0 - 20
2412178	Tin	1.52	Spike	P	0 - 20
2412178	Titanium	3.02	Spike	P	0 - 20
2412178	Vanadium	4.28	Spike	P	0 - 20
2412178	Zinc	1.44	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P430551

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412178	Aluminum	1.68	Spike	P	0 - 20
2412178	Antimony	0.454	Spike	P	0 - 20
2412178	Arsenic	0.667	Spike	P	0 - 20
2412178	Barium	0.256	Spike	P	0 - 20
2412178	Beryllium	0.501	Spike	P	0 - 20
2412178	Boron	0.0844	Spike	P	0 - 20
2412178	Cadmium	1.60	Spike	P	0 - 20
2412178	Cobalt	0.522	Spike	P	0 - 20
2412178	Copper	0.682	Spike	P	0 - 20
2412178	Lead	0.402	Spike	P	0 - 20
2412178	Manganese	1.60	Spike	P	0 - 20
2412178	Molybdenum	0.256	Spike	P	0 - 20
2412178	Nickel	0.0814	Spike	P	0 - 20
2412178	Selenium	0.529	Spike	P	0 - 20
2412178	Silver	1.77	Spike	P	0 - 20
2412178	Thallium	2.67	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: A119501
Included Lab Sample IDs: 2412178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.9	99.5	P/P	90 - 110
Antimony	98.9	101	P/P	90 - 110
Arsenic	100	101	P/P	90 - 110
Barium	98.4	101	P/P	90 - 110
Beryllium	101	103	P/P	90 - 110
Boron	96.3	96.4	P/P	90 - 110
Cadmium	97.4	98.9	P/P	90 - 110
Cobalt	100	101	P/P	90 - 110
Copper	98.3	98.4	P/P	90 - 110
Lead	93.1	94.0	P/P	90 - 110
Manganese	102	99.6	P/P	90 - 110
Molybdenum	97.4	97.8	P/P	90 - 110
Nickel	99.0	99.0	P/P	90 - 110
Selenium	97.6	99.3	P/P	90 - 110
Silver	98.6	100	P/P	90 - 110
Thallium	95.7	97.2	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A119529
Included Lab Sample IDs: 2412178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	100	102	P/P	90 - 110
Chromium	98.9	101	P/P	90 - 110
Iron	102	102	P/P	90 - 110
Magnesium	101	101	P/P	90 - 110
Potassium	103	101	P/P	90 - 110
Sodium	95.7	96.2	P/P	90 - 110
Strontium	101	100	P/P	90 - 110
Tin	101	102	P/P	90 - 110
Titanium	101	102	P/P	90 - 110
Vanadium	100	101	P/P	90 - 110
Zinc	98.4	101	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	101					1.38
	Chromium	102	96.7	99.1			2.51
	Iron	104	104	105			0.632
	Magnesium	101					2.48
	Potassium	104					2.29
	Sodium	96.2					0.638
	Strontium	102					1.19
	Tin	103	76.8	78.0			1.52
	Titanium	104	105	108			3.02
	Vanadium	103	98.3	103			4.28
	Zinc	102	96.4	97.8			1.44
EPA 200.8 Rev. 5.4	Aluminum	98.6	106	108			1.68
	Antimony	101	104	105			0.454
	Arsenic	98.9	111	111			0.667
	Barium	101	101	101			0.256
	Beryllium	91.9	98.1	97.6			0.501
	Boron	102	88.3	88.9			0.0844
	Cadmium	99.9	95.5	97.1			1.60
	Cobalt	99.6	97.9	98.4			0.522
	Copper	98.2	92.8	93.5			0.682
	Lead	96.0	104	104			0.402
	Manganese	101	90.5	88.9			1.60
	Molybdenum	97.9	115	115			0.256
	Nickel	97.6	94.4	94.5			0.0814
	Selenium	99.1	100	101			0.529
	Silver	100	92.7	91.1			1.77
	Thallium	95.6	100	103			2.67

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	2412178
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2412178
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2412178

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	05/24/2023	05/30/2023 11:35	George D Taylor	06/02/2023 02:16	McKinley C Carter	2412178
	05/24/2023	05/30/2023 11:35	George D Taylor	06/02/2023 02:47	McKinley C Carter	2412178
EPA 200.8 Rev. 5.4	05/24/2023	05/30/2023 11:35	George D Taylor	06/01/2023 00:14	Emily M Philpot	2412178
	05/24/2023	05/30/2023 11:35	George D Taylor	06/01/2023 01:31	Emily M Philpot	2412178
SM 2340 B-2011	05/24/2023			06/02/2023 02:47	McKinley C Carter	2412178