Chemical Analysis Report

NW-DIST-2023-03-30-01

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

Event Description: **Blackwater Bay Run**
Request ID: **RQ-2023-03-27-08**
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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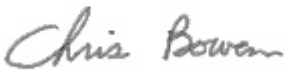
Certified by: Chris Bowen, Environmental Administrator

Date Certified: 14-APR-2023 11:58



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: 03/29/2023 09:45**

Field ID: G4NW0035 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2396958	EPA 200.7 Rev. 4.4	Calcium	75.0		mg/L	P428268	
		Chromium	3.0	U	ug/L	P428268	
		Iron	150	I	ug/L	P428268	
		Magnesium	231		mg/L	P428268	
		Potassium	71		mg/L	P428268	
		Sodium	1.96E+03		mg/L	P428268	
		Strontium	1.39E+03		ug/L	P428268	
		Tin	9.0	U	ug/L	P428268	
		Titanium	4.3	I	ug/L	P428268	
		Vanadium	6.0	U	ug/L	P428268	
		Zinc	15	U	ug/L	P428268	
	EPA 200.8 Rev. 5.4	Aluminum	129		ug/L	P428268	
		Antimony	0.20	U	ug/L	P428268	
		Arsenic	0.62	I	ug/L	P428268	
		Barium	10.4		ug/L	P428268	
		Beryllium	0.040	U	ug/L	P428268	
		Boron	774		ug/L	P428268	
		Cadmium	0.080	U	ug/L	P428268	
		Cobalt	0.38		ug/L	P428268	
		Copper	1.6	U	ug/L	P428268	
		Lead	0.80	U	ug/L	P428268	
		Manganese	6.7		ug/L	P428268	
		Molybdenum	2.3	I	ug/L	P428268	
		Nickel	2.0	U	ug/L	P428268	
		Selenium	0.80	U	ug/L	P428268	
		Silver	0.040	U	ug/L	P428268	
		Thallium	0.40	U	ug/L	P428268	
	SM 2340 B-2011	Hardness	1.14E+03		mg/L	P428268	

Ref. Method and Comment:
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for 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: P428268

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: P428268

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: P428268

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P428268

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	104		P	80 - 120
Antimony	107		P	80 - 120
Arsenic	103		P	80 - 120
Barium	105		P	80 - 120
Beryllium	90.6		P	80 - 120
Boron	105		P	80 - 120
Cadmium	104		P	80 - 120
Cobalt	105		P	80 - 120
Copper	101		P	80 - 120
Lead	105		P	80 - 120
Manganese	103		P	80 - 120
Molybdenum	103		P	80 - 120
Nickel	104		P	80 - 120
Selenium	103		P	80 - 120
Silver	106		P	80 - 120
Thallium	102		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P428268

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2396958	Calcium	98.7		P	70 - 130
2396958	Chromium	96.5	96.0	P/P	70 - 130
2396958	Iron	96.4	98.4	P/P	70 - 130
2396958	Strontium	96.5	98.6	P/P	70 - 130
2396958	Tin	91.0	88.7	P/P	70 - 130
2396958	Titanium	93.7	96.2	P/P	70 - 130
2396958	Vanadium	99.7	101	P/P	70 - 130
2396958	Zinc	98.9	98.8	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P428268

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2396958	Aluminum	106	107	P/P	80 - 120
2396958	Antimony	111	111	P/P	80 - 120
2396958	Arsenic	111	110	P/P	80 - 120
2396958	Barium	109	109	P/P	80 - 120
2396958	Beryllium	98.2	96.2	P/P	80 - 120
2396958	Boron	88.5	96.2	P/P	80 - 120
2396958	Cadmium	103	101	P/P	80 - 120
2396958	Cobalt	111	110	P/P	80 - 120
2396958	Copper	110	110	P/P	80 - 120
2396958	Lead	108	106	P/P	80 - 120
2396958	Manganese	96.5	97.0	P/P	80 - 120
2396958	Molybdenum	111	111	P/P	80 - 120
2396958	Nickel	113	112	P/P	80 - 120
2396958	Selenium	106	105	P/P	80 - 120
2396958	Silver	99.0	98.3	P/P	80 - 120
2396958	Thallium	108	108	P/P	70 - 130

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P428268

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2396958	Calcium	1.19	Spike	P	0 - 20
2396958	Chromium	0.599	Spike	P	0 - 20
2396958	Iron	1.95	Spike	P	0 - 20
2396958	Magnesium	1.05	Spike	P	0 - 20
2396958	Potassium	1.32	Spike	P	0 - 20
2396958	Sodium	1.33	Spike	P	0 - 20
2396958	Strontium	1.31	Spike	P	0 - 20
2396958	Tin	2.54	Spike	P	0 - 20
2396958	Titanium	2.32	Spike	P	0 - 20
2396958	Vanadium	1.08	Spike	P	0 - 20
2396958	Zinc	0.0642	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P428268

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2396958	Aluminum	0.675	Spike	P	0 - 20
2396958	Antimony	0.177	Spike	P	0 - 20
2396958	Arsenic	0.0793	Spike	P	0 - 20
2396958	Barium	0.0984	Spike	P	0 - 20
2396958	Beryllium	2.04	Spike	P	0 - 20
2396958	Boron	1.60	Spike	P	0 - 20
2396958	Cadmium	1.53	Spike	P	0 - 20
2396958	Cobalt	0.577	Spike	P	0 - 20
2396958	Copper	0.244	Spike	P	0 - 20
2396958	Lead	1.53	Spike	P	0 - 20
2396958	Manganese	0.507	Spike	P	0 - 20
2396958	Molybdenum	0.244	Spike	P	0 - 20
2396958	Nickel	0.877	Spike	P	0 - 20
2396958	Selenium	0.635	Spike	P	0 - 20
2396958	Silver	0.722	Spike	P	0 - 20
2396958	Thallium	0.372	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: A118512
Included Lab Sample IDs: 2396958

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	100	P/P	95 - 105
Chromium	103	103	P/P	95 - 105
Iron	102	98.4	P/P	95 - 105
Magnesium	101	98.2	P/P	95 - 105
Potassium	99.1	101	P/P	90 - 110
Sodium	103	101	P/P	90 - 110
Strontium	103	104	P/P	95 - 105
Tin	104	105	P/P	95 - 105
Titanium	102	103	P/P	95 - 105
Vanadium	102	102	P/P	95 - 105
Zinc	101	101	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A118514
Included Lab Sample IDs: 2396958

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	103	P/P	90 - 110
Antimony	105	105	P/P	90 - 110
Arsenic	103	103	P/P	90 - 110
Barium	103	104	P/P	90 - 110
Beryllium	97.5	98.1	P/P	90 - 110
Boron	99.2	99.8	P/P	90 - 110
Cadmium	102	102	P/P	90 - 110
Cobalt	103	104	P/P	90 - 110
Copper	102	102	P/P	90 - 110
Lead	102	103	P/P	90 - 110
Manganese	100	100	P/P	90 - 110
Molybdenum	101	102	P/P	90 - 110
Nickel	103	104	P/P	90 - 110
Selenium	103	104	P/P	90 - 110
Silver	104	104	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A118541
Included Lab Sample IDs: 2396958

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Thallium	97.7	97.9	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	103	98.7				1.19
	Chromium	103	96.5	96.0			0.599
	Iron	102	96.4	98.4			1.95
	Magnesium	103					1.05
	Potassium	102					1.32
	Sodium	104					1.33
	Strontium	102	96.5	98.6			1.31
	Tin	106	91.0	88.7			2.54
	Titanium	103	93.7	96.2			2.32
	Vanadium	102	99.7	101			1.08
	Zinc	103	98.9	98.8			0.0642
EPA 200.8 Rev. 5.4	Aluminum	104	106	107			0.675
	Antimony	107	111	111			0.177
	Arsenic	103	111	110			0.0793
	Barium	105	109	109			0.0984
	Beryllium	90.6	98.2	96.2			2.04
	Boron	105	88.5	96.2			1.60
	Cadmium	104	103	101			1.53
	Cobalt	105	111	110			0.577
	Copper	101	110	110			0.244
	Lead	105	108	106			1.53
	Manganese	103	96.5	97.0			0.507
	Molybdenum	103	111	111			0.244
	Nickel	104	113	112			0.877
	Selenium	103	106	105			0.635
	Silver	106	99.0	98.3			0.722
	Thallium	102	108	108			0.372

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	2396958
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2396958
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2396958

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	03/30/2023	04/10/2023 11:45	George D Taylor	04/11/2023 17:51	McKinley C Carter	2396958
	03/30/2023	04/10/2023 11:45	George D Taylor	04/11/2023 18:49	McKinley C Carter	2396958
EPA 200.8 Rev. 5.4	03/30/2023	04/10/2023 11:45	George D Taylor	04/11/2023 15:58	Conrad Hartmann	2396958
	03/30/2023	04/10/2023 11:45	George D Taylor	04/11/2023 17:19	Conrad Hartmann	2396958
	03/30/2023	04/10/2023 11:45	George D Taylor	04/12/2023 23:09	Conrad Hartmann	2396958
SM 2340 B-2011	03/30/2023			04/11/2023 17:51	McKinley C Carter	2396958