

Chemical Analysis Report

NW-DIST-2023-10-18-03

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

Event Description: **Blackwater Bay Run**
Request ID: **RQ-2023-10-16-21**
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: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 27-OCT-2023 16:41



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: 10/17/2023 09:40

Field ID: G4NW0035

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2445772	EPA 200.7 Rev. 4.4	Calcium	53.4		mg/L	P436809	
		Iron	180	I	ug/L	P436809	
		Magnesium	163		mg/L	P436809	
		Potassium	55.9		mg/L	P436809	
		Sodium	1.53E+03		mg/L	P436809	
		Strontium	949		ug/L	P436809	
		Tin	9.0	U	ug/L	P436809	
		Titanium	2.3	I	ug/L	P436809	
		Vanadium	6.0	U	ug/L	P436809	
		Zinc	15	U	ug/L	P436809	
	EPA 200.8 Rev. 5.4	Aluminum	120		ug/L	P436809	
		Antimony	0.20	U	ug/L	P436809	
		Arsenic	0.39	I	ug/L	P436809	
		Barium	6.2		ug/L	P436809	
		Beryllium	0.040	U	ug/L	P436809	
		Boron	540		ug/L	P436809	
		Cadmium	0.080	U	ug/L	P436809	
		Chromium	1.6	U	ug/L	P436809	
		Cobalt	0.12	I	ug/L	P436809	
		Copper	1.6	U	ug/L	P436809	
		Lead	0.80	U	ug/L	P436809	
		Manganese	5.0		ug/L	P436809	
		Molybdenum	1.5	U	ug/L	P436809	
		Nickel	2.0	U	ug/L	P436809	
		Selenium	0.80	U	ug/L	P436809	
		Silver	0.040	U	ug/L	P436809	
		Thallium	0.40	U	ug/L	P436809	
	SM 2340 B-2011	Hardness	805		mg/L	P436809	

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: P436809

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: P436809

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: P436809

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	102		P	85 - 115
Iron	102		P	85 - 115
Magnesium	102		P	85 - 115
Potassium	95.9		P	85 - 115
Sodium	101		P	85 - 115
Strontium	96.6		P	85 - 115
Tin	106		P	85 - 115
Titanium	102		P	85 - 115
Vanadium	103		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P436809

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	100		P	85 - 115
Antimony	96.9		P	85 - 115
Arsenic	98.1		P	85 - 115
Barium	99.5		P	85 - 115
Beryllium	90.0		P	85 - 115
Boron	107		P	85 - 115
Cadmium	98.3		P	85 - 115
Chromium	96.6		P	85 - 115
Cobalt	94.9		P	85 - 115
Copper	97.3		P	85 - 115
Lead	93.4		P	85 - 115
Manganese	100		P	85 - 115
Molybdenum	96.6		P	85 - 115
Nickel	95.2		P	85 - 115
Selenium	97.0		P	85 - 115
Silver	105		P	85 - 115
Thallium	100		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P436809

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2445338	Iron	102	100	P/P	80 - 120
2445338	Strontium	94.5	94.4	P/P	80 - 120
2445338	Tin	100	108	P/P	80 - 120
2445338	Titanium	100	98.0	P/P	80 - 120
2445338	Vanadium	107	105	P/P	80 - 120
2445338	Zinc	102	102	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P436809

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2445338	Aluminum	102	99.5	P/P	70 - 130
2445338	Antimony	96.0	96.0	P/P	70 - 130
2445338	Arsenic	108	108	P/P	70 - 130
2445338	Barium	97.4	97.9	P/P	70 - 130
2445338	Beryllium	94.0	97.5	P/P	70 - 130
2445338	Boron	108	95.8	P/P	70 - 130
2445338	Cadmium	93.9	94.5	P/P	70 - 130
2445338	Chromium	93.5	91.5	P/P	70 - 130
2445338	Cobalt	91.6	91.2	P/P	70 - 130
2445338	Copper	104	105	P/P	70 - 130
2445338	Lead	96.3	96.1	P/P	70 - 130
2445338	Manganese	94.7	94.3	P/P	70 - 130
2445338	Molybdenum	100	104	P/P	70 - 130
2445338	Nickel	93.8	93.1	P/P	70 - 130
2445338	Selenium	97.9	100	P/P	70 - 130
2445338	Silver	95.3	95.2	P/P	70 - 130
2445338	Thallium	102	102	P/P	70 - 130

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P436809

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2445338	Calcium	0.898	Spike	P	0 - 20
2445338	Iron	1.41	Spike	P	0 - 20
2445338	Magnesium	0.110	Spike	P	0 - 20
2445338	Potassium	0.786	Spike	P	0 - 20
2445338	Sodium	2.54	Spike	P	0 - 20
2445338	Strontium	0.0227	Spike	P	0 - 20
2445338	Tin	7.03	Spike	P	0 - 20
2445338	Titanium	2.08	Spike	P	0 - 20
2445338	Vanadium	1.35	Spike	P	0 - 20
2445338	Zinc	0.195	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P436809

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2445338	Aluminum	2.07	Spike	P	0 - 20
2445338	Antimony	0.0708	Spike	P	0 - 20
2445338	Arsenic	0.790	Spike	P	0 - 20
2445338	Barium	0.536	Spike	P	0 - 20
2445338	Beryllium	3.68	Spike	P	0 - 20
2445338	Boron	2.51	Spike	P	0 - 20
2445338	Cadmium	0.556	Spike	P	0 - 20
2445338	Chromium	2.15	Spike	P	0 - 20
2445338	Cobalt	0.429	Spike	P	0 - 20
2445338	Copper	0.722	Spike	P	0 - 20
2445338	Lead	0.164	Spike	P	0 - 20
2445338	Manganese	0.365	Spike	P	0 - 20
2445338	Molybdenum	3.10	Spike	P	0 - 20
2445338	Nickel	0.784	Spike	P	0 - 20
2445338	Selenium	2.54	Spike	P	0 - 20
2445338	Silver	0.179	Spike	P	0 - 20
2445338	Thallium	0.0289	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: A122297

Included Lab Sample IDs: 2445772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.6	98.7	P/P	90 - 110
Antimony	94.6	92.6	P/P	90 - 110
Arsenic	98.3	97.5	P/P	90 - 110
Barium	96.2	94.9	P/P	90 - 110
Beryllium	96.2	95.4	P/P	90 - 110
Boron	94.2	97.8	P/P	90 - 110
Cadmium	97.4	95.5	P/P	90 - 110
Cobalt	95.9	94.6	P/P	90 - 110
Copper	97.5	97.2	P/P	90 - 110
Lead	91.0	90.5	P/P	90 - 110
Manganese	95.4	96.2	P/P	90 - 110
Molybdenum	96.4	96.2	P/P	90 - 110
Nickel	97.1	96.3	P/P	90 - 110
Selenium	98.0	97.0	P/P	90 - 110
Silver	96.3	94.7	P/P	90 - 110
Thallium	96.2	96.1	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A122325

Included Lab Sample IDs: 2445772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	101	P/P	90 - 110
Iron	101	101	P/P	90 - 110
Magnesium	99.3	98.9	P/P	90 - 110
Potassium	100	101	P/P	90 - 110
Sodium	104	106	P/P	90 - 110
Strontium	98.2	100	P/P	90 - 110
Tin	103	102	P/P	90 - 110
Titanium	102	102	P/P	90 - 110
Vanadium	103	103	P/P	90 - 110
Zinc	104	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A122343

Included Lab Sample IDs: 2445772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	98.9	97.4	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		LCS	Precision SMP	MS
EPA 200.7 Rev. 4.4	Calcium	102					0.898
	Iron	102	102	100			1.41
	Magnesium	102					0.110
	Potassium	95.9					0.786
	Sodium	101					2.54
	Strontium	96.6	94.5	94.4			0.0227
	Tin	106	100	108			7.03
	Titanium	102	100	98.0			2.08
	Vanadium	103	107	105			1.35
	Zinc	104	102	102			0.195
EPA 200.8 Rev. 5.4	Aluminum	100	102	99.5			2.07
	Antimony	96.9	96.0	96.0			0.0708
	Arsenic	98.1	108	108			0.790
	Barium	99.5	97.4	97.9			0.536
	Beryllium	90.0	94.0	97.5			3.68
	Boron	107	108	95.8			2.51
	Cadmium	98.3	93.9	94.5			0.556
	Chromium	96.6	93.5	91.5			2.15
	Cobalt	94.9	91.6	91.2			0.429
	Copper	97.3	104	105			0.722
	Lead	93.4	96.3	96.1			0.164
	Manganese	100	94.7	94.3			0.365
	Molybdenum	96.6	100	104			3.10
	Nickel	95.2	93.8	93.1			0.784
	Selenium	97.0	97.9	100			2.54
	Silver	105	95.3	95.2			0.179
	Thallium	100	102	102			0.0289

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	2445772
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2445772
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2445772

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	10/18/2023	10/20/2023 12:55	George D Taylor	10/24/2023 15:17	Samatha Luckman	2445772
	10/18/2023	10/20/2023 12:55	George D Taylor	10/24/2023 15:26	Samatha Luckman	2445772
EPA 200.8 Rev. 5.4	10/18/2023	10/20/2023 12:55	George D Taylor	10/23/2023 22:30	Conrad Hartmann	2445772
	10/18/2023	10/20/2023 12:55	George D Taylor	10/24/2023 01:13	Conrad Hartmann	2445772
	10/18/2023	10/20/2023 12:55	George D Taylor	10/24/2023 14:24	Conrad Hartmann	2445772
SM 2340 B-2011	10/18/2023			10/24/2023 15:17	Samatha Luckman	2445772