

Chemical Analysis Report

SO-DIST-2024-04-10-02

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

Event Description: **2024 SMP : Caloosa Creeks (Bee Branch)**
Request ID: **RQ-2024-01-08-50**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 314
Fort Myers, FL 33901-3381
Attn: Nicole Reistad

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Certified by: Marek Topolski, Environmental Administrator

Date Certified: 23-APR-2024 12:20



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: BEE BRANCH AT LOBLOLLY BAY RD

Collection Date/Time: 04/09/2024 11:20

Field ID: G3SD0085

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2481407	EPA 200.7 Rev. 4.4	Calcium	16.3	Y	mg/L	P444127	
		Iron	680	Y	ug/L	P444127	
		Magnesium	4.39	Y	mg/L	P444127	
		Potassium	2.2	Y	mg/L	P444127	
		Sodium	17.8	Y	mg/L	P444127	
		Strontium	340	Y	ug/L	P444127	
		Tin	3.0	UY	ug/L	P444127	
		Titanium	0.86	IY	ug/L	P444127	
		Vanadium	2.0	UY	ug/L	P444127	
		Zinc	5.0	Y	ug/L	P444127	
	EPA 200.8 Rev. 5.4	Aluminum	117	Y	ug/L	P444127	
		Antimony	0.070	IY	ug/L	P444127	
		Arsenic	0.67	Y	ug/L	P444127	
		Barium	16.1	Y	ug/L	P444127	
		Beryllium	0.010	UY	ug/L	P444127	
		Boron	29.0	Y	ug/L	P444127	
		Cadmium	0.020	UY	ug/L	P444127	
		Chromium	0.89	IY	ug/L	P444127	
		Cobalt	0.282	Y	ug/L	P444127	
		Copper	0.58	IY	ug/L	P444127	
	SM 2340 B-2011	Lead	0.43	Y	ug/L	P444127	
		Manganese	43.2	Y	ug/L	P444127	
		Molybdenum	0.15	UY	ug/L	P444127	
		Nickel	0.50	UY	ug/L	P444127	
		Selenium	0.20	UY	ug/L	P444127	
		Silver	0.010	UY	ug/L	P444127	
		Thallium	0.10	UY	ug/L	P444127	
		Hardness	58.8	Y	mg/L	P444127	

Ref. Method and Comment:
EPA 200.7 Rev. 4.4: The sample was preserved after being received in the laboratory. The sample was digested 3 hours before the 24 hour preparation window elapsed.
EPA 200.8 Rev. 5.4: The sample was preserved after being received in the laboratory. The sample was digested 3 hours before the 24 hour preparation window elapsed.
SM 2340 B-2011: The sample was preserved after being received in the laboratory. The sample was digested 3 hours before the 24 hour preparation window elapsed.

Non-Conformance Report

NCR ID: 10385

<u>Event(s)</u>	<u>Job(s)</u>	<u>Sample(s)</u>	<u>Test(s)</u>
SO-DIST-2024-04-10-02	TLH-2024-04-10-101	2481407	
NCR Type: SHIPPING/RECEIVING		NCR Category: Preservation Not Intact	
Observation: Sample not preserved to pH < 2.			
Resolution: Sample preserved in the laboratory with nitric acid on 04/10/2024 at 15:11. HNO3 Lot# 3123030 Expiration Date: 05/10/2024			

Authorized by/Date: Kyle Klug 4/15/2024

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: P444127

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: P444127

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: P444127

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	110		P	85 - 115
Magnesium	110		P	85 - 115
Potassium	100		P	85 - 115
Sodium	98.7		P	85 - 115
Strontium	96.9		P	85 - 115
Tin	96.9		P	85 - 115
Titanium	101		P	85 - 115
Vanadium	99.3		P	85 - 115
Zinc	98.5		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P444127

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.4		P	85 - 115
Antimony	99.6		P	85 - 115
Arsenic	95.5		P	85 - 115
Barium	99.9		P	85 - 115
Beryllium	93.8		P	85 - 115
Boron	99.8		P	85 - 115
Cadmium	98.7		P	85 - 115
Chromium	94.0		P	85 - 115
Cobalt	92.5		P	85 - 115
Copper	92.7		P	85 - 115
Lead	95.4		P	85 - 115
Manganese	98.7		P	85 - 115
Molybdenum	95.2		P	85 - 115
Nickel	92.4		P	85 - 115
Selenium	97.9		P	85 - 115
Silver	101		P	85 - 115
Thallium	94.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P444127

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2480626	Calcium	103		P	80 - 120
2480626	Iron	108	107	P/P	80 - 120
2480626	Magnesium	107	105	P/P	80 - 120
2480626	Potassium	100	99.6	P/P	80 - 120
2480626	Sodium	99.1		P	80 - 120
2480626	Strontium	95.0	95.4	P/P	80 - 120
2480626	Tin	92.9	93.6	P/P	80 - 120
2480626	Titanium	97.7	97.1	P/P	80 - 120
2480626	Vanadium	98.6	99.0	P/P	80 - 120
2480626	Zinc	98.5	98.3	P/P	80 - 120
2481062	Calcium	103		P	80 - 120
2481062	Iron	108		P	80 - 120
2481062	Magnesium	108		P	80 - 120
2481062	Potassium	99.4		P	80 - 120
2481062	Sodium	102		P	80 - 120
2481062	Strontium	96.7		P	80 - 120
2481062	Tin	95.2		P	80 - 120
2481062	Titanium	101		P	80 - 120
2481062	Vanadium	98.8		P	80 - 120
2481062	Zinc	96.4		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P444127

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2480626	Aluminum	98.0	96.4	P/P	80 - 120
2480626	Antimony	100	99.4	P/P	80 - 120
2480626	Arsenic	95.8	93.6	P/P	80 - 120
2480626	Barium	101	100	P/P	80 - 120
2480626	Beryllium	99.5	98.8	P/P	80 - 120
2480626	Boron	98.2	98.0	P/P	80 - 120
2480626	Cadmium	100	97.5	P/P	80 - 120
2480626	Chromium	95.8	93.7	P/P	80 - 120
2480626	Cobalt	92.4	90.6	P/P	80 - 120
2480626	Copper	94.0	91.5	P/P	80 - 120
2480626	Lead	98.3	96.7	P/P	80 - 120
2480626	Manganese	101	98.3	P/P	80 - 120
2480626	Molybdenum	97.8	95.5	P/P	80 - 120
2480626	Nickel	94.8	92.7	P/P	80 - 120
2480626	Selenium	97.2	94.5	P/P	80 - 120
2480626	Silver	99.7	98.3	P/P	80 - 120
2480626	Thallium	98.4	96.9	P/P	80 - 120
2481062	Aluminum	97.4		P	80 - 120
2481062	Antimony	101		P	80 - 120
2481062	Arsenic	94.9		P	80 - 120
2481062	Barium	100		P	80 - 120
2481062	Beryllium	97.7		P	80 - 120
2481062	Boron	102		P	80 - 120
2481062	Cadmium	101		P	80 - 120
2481062	Chromium	95.9		P	80 - 120
2481062	Cobalt	92.6		P	80 - 120
2481062	Copper	91.4		P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P444127

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481062	Lead	96.5		P	80 - 120
2481062	Manganese	102		P	80 - 120
2481062	Molybdenum	97.4		P	80 - 120
2481062	Nickel	92.9		P	80 - 120
2481062	Selenium	95.9		P	80 - 120
2481062	Silver	101		P	80 - 120
2481062	Thallium	97.0		P	80 - 120

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P444127

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2480626	Calcium	0.0996	Spike	P	0 - 20
2480626	Iron	0.975	Spike	P	0 - 20
2480626	Magnesium	1.29	Spike	P	0 - 20
2480626	Potassium	0.236	Spike	P	0 - 20
2480626	Sodium	0.350	Spike	P	0 - 20
2480626	Strontium	0.385	Spike	P	0 - 20
2480626	Tin	0.811	Spike	P	0 - 20
2480626	Titanium	0.531	Spike	P	0 - 20
2480626	Vanadium	0.391	Spike	P	0 - 20
2480626	Zinc	0.240	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P444127

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2480626	Aluminum	1.50	Spike	P	0 - 20
2480626	Antimony	1.15	Spike	P	0 - 20
2480626	Arsenic	2.33	Spike	P	0 - 20
2480626	Barium	0.836	Spike	P	0 - 20
2480626	Beryllium	0.748	Spike	P	0 - 20
2480626	Boron	0.159	Spike	P	0 - 20
2480626	Cadmium	2.79	Spike	P	0 - 20
2480626	Chromium	2.21	Spike	P	0 - 20
2480626	Cobalt	2.01	Spike	P	0 - 20
2480626	Copper	2.61	Spike	P	0 - 20
2480626	Lead	1.62	Spike	P	0 - 20
2480626	Manganese	2.38	Spike	P	0 - 20
2480626	Molybdenum	2.30	Spike	P	0 - 20
2480626	Nickel	2.28	Spike	P	0 - 20
2480626	Selenium	2.80	Spike	P	0 - 20
2480626	Silver	1.38	Spike	P	0 - 20
2480626	Thallium	1.52	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: A125316

Included Lab Sample IDs: 2481407

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	102	P/P	90 - 110
Iron	102	101	P/P	90 - 110
Magnesium	102	101	P/P	90 - 110
Potassium	99.6	99.7	P/P	90 - 110
Sodium	98.5	98.0	P/P	90 - 110
Strontium	96.1	97.6	P/P	90 - 110
Tin	98.6	97.9	P/P	90 - 110
Titanium	101	100	P/P	90 - 110
Vanadium	100	99.1	P/P	90 - 110
Zinc	102	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A125317

Included Lab Sample IDs: 2481407

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.3	97.4	P/P	90 - 110
Antimony	99.4	100	P/P	90 - 110
Arsenic	95.7	96.0	P/P	90 - 110
Barium	99.7	99.4	P/P	90 - 110
Beryllium	96.7	98.9	P/P	90 - 110
Boron	100	97.4	P/P	90 - 110
Cadmium	99.0	100	P/P	90 - 110
Chromium	94.6	94.0	P/P	90 - 110
Cobalt	93.9	93.4	P/P	90 - 110
Copper	93.0	93.4	P/P	90 - 110
Lead	97.2	96.5	P/P	90 - 110
Manganese	97.4	97.4	P/P	90 - 110
Molybdenum	95.5	96.6	P/P	90 - 110
Nickel	93.1	92.6	P/P	90 - 110
Selenium	97.9	98.2	P/P	90 - 110
Silver	95.7	97.3	P/P	90 - 110
Thallium	98.5	96.4	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			Precision SMP	MS
			LCS				
EPA 200.7 Rev. 4.4	Calcium	103	103	103			0.0996
	Iron	110	108	107	108		0.975
	Magnesium	110	107	105	108		1.29
	Potassium	100	100	99.6	99.4		0.236
	Sodium	98.7	99.1	102			0.350
	Strontium	96.9	95.0	95.4	96.7		0.385
	Tin	96.9	92.9	93.6	95.2		0.811
	Titanium	101	97.7	97.1	101		0.531
	Vanadium	99.3	98.6	99.0	98.8		0.391
	Zinc	98.5	98.5	98.3	96.4		0.240
EPA 200.8 Rev. 5.4	Aluminum	97.4	98.0	96.4	97.4		1.50
	Antimony	99.6	100	99.4	101		1.15
	Arsenic	95.5	95.8	93.6	94.9		2.33
	Barium	99.9	101	100	100		0.836
	Beryllium	93.8	99.5	98.8	97.7		0.748
	Boron	99.8	98.2	98.0	102		0.159
	Cadmium	98.7	100	97.5	101		2.79
	Chromium	94.0	95.8	93.7	95.9		2.21
	Cobalt	92.5	92.4	90.6	92.6		2.01
	Copper	92.7	94.0	91.5	91.4		2.61
	Lead	95.4	98.3	96.7	96.5		1.62
	Manganese	98.7	101	98.3	102		2.38
	Molybdenum	95.2	97.8	95.5	97.4		2.30
	Nickel	92.4	94.8	92.7	92.9		2.28
	Selenium	97.9	97.2	94.5	95.9		2.80
	Silver	101	99.7	98.3	101		1.38
	Thallium	94.6	98.4	96.9	97.0		1.52

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	2481407
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2481407
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2481407

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	04/10/2024	04/11/2024 12:35	George D Taylor	04/12/2024 19:58	Conrad Hartmann	2481407
EPA 200.8 Rev. 5.4	04/10/2024	04/11/2024 12:35	George D Taylor	04/13/2024 00:58	Emily M Philpot	2481407
SM 2340 B-2011	04/10/2024			04/12/2024 19:58	Conrad Hartmann	2481407