

Chemical Analysis Report

SW-DIST-2020-09-17-02

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

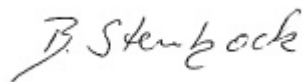
Event Description: **Run 14 North Pinellas**
Request ID: **RQ-2020-08-31-10**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Bne Paswater

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 06-OCT-2020 12:47



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: Moccasin Creek Tidal

Collection Date/Time: 09/14/2020 11:55

Field ID: G1SW0051

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2196660	EPA 200.7 Rev. 4.4	Iron	500		ug/L	P387692	
		Manganese	34.2		ug/L	P387692	
		Zinc	5.0	U	ug/L	P387692	
	EPA 200.8 Rev. 5.4	Aluminum	75		ug/L	P387692	
		Antimony	0.13	I	ug/L	P387692	
		Arsenic	2.30		ug/L	P387692	
		Barium	19.2		ug/L	P387692	
		Beryllium	0.010	I	ug/L	P387692	
		Boron**	47.9		ug/L	P387692	
		Cadmium	0.020	U	ug/L	P387692	
		Chromium	0.53	I	ug/L	P387692	
		Cobalt	0.096		ug/L	P387692	
		Copper	0.83		ug/L	P387692	
		Lead	0.24	I	ug/L	P387692	
		Molybdenum	0.58	I	ug/L	P387692	
		Nickel	0.75	I	ug/L	P387692	
		Selenium	0.20	U	ug/L	P387692	
		Silver	0.010	U	ug/L	P387692	
		Thallium	0.10	U	ug/L	P387692	
	SM 2340B	Hardness	159		mg/L	P387692	

Sample Location: Field_Blank

Collection Date/Time: 09/14/2020 09:00

Field ID: FB 09142020

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2196661	EPA 200.7 Rev. 4.4	Iron	30	U	ug/L	P387692	
		Manganese	1.0	U	ug/L	P387692	
		Zinc	5.0	U	ug/L	P387692	
	EPA 200.8 Rev. 5.4	Aluminum	5.0	U	ug/L	P387692	
		Antimony	0.050	U	ug/L	P387692	
		Arsenic	0.050	U	ug/L	P387692	
		Barium	0.20	U	ug/L	P387692	
		Beryllium	0.010	U	ug/L	P387692	
		Boron**	2.0	U	ug/L	P387692	
		Cadmium	0.020	U	ug/L	P387692	
		Chromium	0.40	U	ug/L	P387692	
		Cobalt	0.020	U	ug/L	P387692	
		Copper	0.40	U	ug/L	P387692	
		Lead	0.20	U	ug/L	P387692	
		Molybdenum	0.15	U	ug/L	P387692	
		Nickel	0.50	U	ug/L	P387692	
		Selenium	0.20	U	ug/L	P387692	
		Silver	0.010	U	ug/L	P387692	
		Thallium	0.10	U	ug/L	P387692	
	SM 2340B	Hardness	0.35	U	mg/L	P387692	

Non-Conformance Report

NCR ID: 8432

Event(s)

SW-DIST-2020-09-17-02

Job(s)

Sample(s)

Test(s)

NCR Type: SHIPPING/RECEIVING

NCR Category: Samples arrived late

Observation: Samples arrived one or more days late, by common carrier or hand delivery, samples received outside the acceptable temperature range.

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

Authorized by/Date: Joshua Ayres 9/29/2020

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: P387692

Component	Result	Code	Units
Iron	30	U	ug/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P387692

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
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: P387692

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	110		P	85 - 115
Manganese	106		P	85 - 115
Zinc	99.4		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P387692

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	100		P	85 - 115
Antimony	103		P	85 - 115
Arsenic	100		P	85 - 115
Barium	101		P	85 - 115
Beryllium	97.0		P	85 - 115
Boron	98.9		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	102		P	85 - 115
Cobalt	105		P	85 - 115
Copper	103		P	85 - 115
Lead	101		P	85 - 115
Molybdenum	102		P	85 - 115
Nickel	102		P	85 - 115
Selenium	97.6		P	85 - 115
Silver	98.9		P	85 - 115
Thallium	102		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P387692

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2196364	Iron	106		P	80 - 120
2196364	Manganese	102		P	80 - 120
2196364	Zinc	99.2		P	80 - 120
2197193	Iron	111	110	P/P	80 - 120
2197193	Manganese	107	106	P/P	80 - 120
2197193	Zinc	102	100	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P387692

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2196364	Aluminum	99.7		P	80 - 120
2196364	Antimony	103		P	80 - 120
2196364	Arsenic	100		P	80 - 120
2196364	Barium	99.6		P	80 - 120
2196364	Beryllium	97.8		P	80 - 120
2196364	Boron	105		P	80 - 120
2196364	Cadmium	101		P	80 - 120
2196364	Chromium	104		P	80 - 120
2196364	Cobalt	102		P	80 - 120
2196364	Copper	98.6		P	80 - 120
2196364	Lead	101		P	80 - 120
2196364	Molybdenum	103		P	80 - 120
2196364	Nickel	99.5		P	80 - 120
2196364	Selenium	94.2		P	80 - 120
2196364	Silver	117		P	80 - 120
2196364	Thallium	103		P	80 - 120
2197193	Aluminum	98.9	99.2	P/P	80 - 120
2197193	Antimony	103	104	P/P	80 - 120
2197193	Arsenic	99.4	99.3	P/P	80 - 120
2197193	Barium	101	101	P/P	80 - 120
2197193	Beryllium	94.6	97.7	P/P	80 - 120
2197193	Boron	100	98.5	P/P	80 - 120
2197193	Cadmium	101	101	P/P	80 - 120
2197193	Chromium	103	102	P/P	80 - 120
2197193	Cobalt	103	104	P/P	80 - 120
2197193	Copper	101	101	P/P	80 - 120
2197193	Lead	99.9	101	P/P	80 - 120
2197193	Molybdenum	102	102	P/P	80 - 120
2197193	Nickel	100	100	P/P	80 - 120
2197193	Selenium	96.0	95.6	P/P	80 - 120
2197193	Silver	98.5	98.6	P/P	80 - 120
2197193	Thallium	102	103	P/P	80 - 120

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P387692

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197193	Iron	0.994	Spike	P	0 - 20
2197193	Manganese	1.07	Spike	P	0 - 20
2197193	Zinc	2.05	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P387692

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197193	Aluminum	0.262	Spike	P	0 - 20
2197193	Antimony	0.385	Spike	P	0 - 20
2197193	Arsenic	0.131	Spike	P	0 - 20
2197193	Barium	0.0815	Spike	P	0 - 20
2197193	Beryllium	3.27	Spike	P	0 - 20
2197193	Boron	1.35	Spike	P	0 - 20
2197193	Cadmium	0.0458	Spike	P	0 - 20
2197193	Chromium	0.497	Spike	P	0 - 20
2197193	Cobalt	0.290	Spike	P	0 - 20
2197193	Copper	0.364	Spike	P	0 - 20
2197193	Lead	0.996	Spike	P	0 - 20
2197193	Molybdenum	0.123	Spike	P	0 - 20
2197193	Nickel	0.285	Spike	P	0 - 20
2197193	Selenium	0.450	Spike	P	0 - 20
2197193	Silver	0.124	Spike	P	0 - 20
2197193	Thallium	1.63	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: A101217

Included Lab Sample IDs: 2196660, 2196661

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	103	105	P/P	95 - 105
Iron	105	102	P/P	90 - 110
Manganese	103	99.7	P/P	95 - 105
Manganese	99.7	105	P/P	90 - 110
Zinc	96.3	101	P/P	90 - 110
Zinc	98.3	96.3	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A101342

Included Lab Sample IDs: 2196660, 2196661

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.7	97.9	P/P	90 - 110
Aluminum	97.9	99.1	P/P	90 - 110
Antimony	104	104	P/P	90 - 110
Antimony	104	105	P/P	90 - 110
Arsenic	98.2	97.2	P/P	90 - 110
Arsenic	98.5	98.2	P/P	90 - 110
Barium	98.9	98.6	P/P	90 - 110
Barium	99.2	98.9	P/P	90 - 110
Beryllium	98.7	99.2	P/P	90 - 110
Beryllium	99.2	99.5	P/P	90 - 110
Boron	100	100	P/P	90 - 110
Boron	95.1	100	P/P	90 - 110
Cadmium	98.6	98.7	P/P	90 - 110
Cadmium	98.7	99.3	P/P	90 - 110
Chromium	100	101	P/P	90 - 110
Chromium	101	101	P/P	90 - 110
Cobalt	102	100	P/P	90 - 110
Copper	96.7	96.5	P/P	90 - 110
Copper	99.1	96.7	P/P	90 - 110
Lead	100	101	P/P	90 - 110
Lead	99.7	100	P/P	90 - 110
Molybdenum	102	101	P/P	90 - 110
Molybdenum	102	102	P/P	90 - 110
Nickel	97.1	96.7	P/P	90 - 110
Nickel	99.2	97.1	P/P	90 - 110
Selenium	96.2	96.4	P/P	90 - 110
Selenium	96.4	95.3	P/P	90 - 110
Thallium	96.6	98.7	P/P	90 - 110
Thallium	98.7	99.1	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A101367

Included Lab Sample IDs: 2196660, 2196661

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	99.4	96.9	P/P	90 - 110
Silver	99.5	99.4	P/P	90 - 110

Quality Assurance Report

Calibration Verification

* 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	Iron	110	106	111	110		0.994
	Manganese	106	102	107	106		1.07
	Zinc	99.4	99.2	102	100		2.05
EPA 200.8 Rev. 5.4	Aluminum	100	98.9	99.2	99.7		0.262
	Antimony	103	103	104	103		0.385
	Arsenic	100	99.4	99.3	100		0.131
	Barium	101	101	101	99.6		0.0815
	Beryllium	97.0	94.6	97.7	97.8		3.27
	Boron	98.9	100	98.5	105		1.35
	Cadmium	102	101	101	101		0.0458
	Chromium	102	103	102	104		0.497
	Cobalt	105	103	104	102		0.290
	Copper	103	101	101	98.6		0.364
	Lead	101	99.9	101	101		0.996
	Molybdenum	102	102	102	103		0.123
	Nickel	102	100	100	99.5		0.285
	Selenium	97.6	96.0	95.6	94.2		0.450
	Silver	98.9	98.5	98.6	117		0.124
	Thallium	102	102	103	103		1.63

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2196660, 2196661
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2196660, 2196661
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2196660, 2196661

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	09/17/2020	09/22/2020 14:45	Elliott D. Healy	09/25/2020 12:00	Betina Topolski	2196661
	09/17/2020	09/22/2020 14:45	Elliott D. Healy	09/25/2020 14:09	Betina Topolski	2196660
EPA 200.8 Rev. 5.4	09/17/2020	09/22/2020 14:45	Elliott D. Healy	10/02/2020 14:38	Alexander Thompson	2196661
	09/17/2020	09/22/2020 14:45	Elliott D. Healy	10/02/2020 16:54	Alexander Thompson	2196660
	09/17/2020	09/22/2020 14:45	Elliott D. Healy	10/02/2020 17:02	Alexander Thompson	2196661
	09/17/2020	09/22/2020 14:45	Elliott D. Healy	10/05/2020 12:35	Alexander Thompson	2196661
	09/17/2020	09/22/2020 14:45	Elliott D. Healy	10/05/2020 13:49	Alexander Thompson	2196660
SM 2340B	09/17/2020			09/25/2020 12:00	Betina Topolski	2196661
	09/17/2020			09/25/2020 14:09	Betina Topolski	2196660