

Chemical Analysis Report

SW-DIST-2022-05-09-01

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

Event Description: **Metals**
Request ID: **RQ-2022-05-02-80**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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13051 N. Telecom Parkway
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 18-MAY-2022 09:59

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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: Dorset Lake @ Center

Collection Date/Time: 05/05/2022 11:40

Field ID: G2SW0083

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2325429	EPA 200.7 Rev. 4.4	Barium	7.2		ug/L	P413660	
		Calcium	13.8		mg/L	P413660	
		Iron	30	U	ug/L	P413660	
		Magnesium	1.23		mg/L	P413660	
		Potassium	2.0		mg/L	P413660	
		Sodium	21.2		mg/L	P413660	
		Strontium	28.3		ug/L	P413660	
		Tin	3.0	U	ug/L	P413660	
		Titanium	0.75	U	ug/L	P413660	
		Vanadium	2.0	U	ug/L	P413660	
		Zinc	5.0	U	ug/L	P413660	
	EPA 200.8 Rev. 5.4	Aluminum	19	I	ug/L	P413660	
		Antimony	0.13	I	ug/L	P413660	
		Arsenic	4.10		ug/L	P413660	
		Barium	7.41		ug/L	P413660	
		Beryllium	0.010	U	ug/L	P413660	
		Boron**	46.7		ug/L	P413660	
		Cadmium	0.020	U	ug/L	P413660	
		Chromium	0.44	I	ug/L	P413660	
		Cobalt	0.020	U	ug/L	P413660	
		Copper	0.40	U	ug/L	P413660	
		Lead	0.20	U	ug/L	P413660	
		Manganese	6.26		ug/L	P413660	
		Molybdenum	0.15	U	ug/L	P413660	
		Nickel	0.50	U	ug/L	P413660	
		Selenium	0.20	U	ug/L	P413660	MS
		Silver	0.010	U	ug/L	P413660	
		Thallium	0.10	U	ug/L	P413660	
	SM 2340 B-2011	Hardness	39.4		mg/L	P413660	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, magnesium, potassium and sodium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for boron and manganese are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: Harbor Lake @ Center

Collection Date/Time: 05/05/2022 12:50

Field ID: G1SW0126

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2325430	EPA 200.7 Rev. 4.4	Barium	2.0	I	ug/L	P413660	
		Calcium	26.7		mg/L	P413660	
		Iron	30	U	ug/L	P413660	
		Magnesium	2.47		mg/L	P413660	
		Potassium	3.9		mg/L	P413660	
		Sodium	28.1		mg/L	P413660	
		Strontium	84.9		ug/L	P413660	
		Tin	3.0	U	ug/L	P413660	
		Titanium	0.75	U	ug/L	P413660	
		Vanadium	2.3	I	ug/L	P413660	
		Zinc	5.0	U	ug/L	P413660	
		Aluminum	87		ug/L	P413660	
	EPA 200.8 Rev. 5.4	Antimony	0.23		ug/L	P413660	
		Arsenic	2.41		ug/L	P413660	
		Barium	2.04		ug/L	P413660	
		Beryllium	0.010	U	ug/L	P413660	
		Boron**	55.8		ug/L	P413660	
		Cadmium	0.020	U	ug/L	P413660	
		Chromium	0.40	U	ug/L	P413660	
		Cobalt	0.020	U	ug/L	P413660	
		Copper	1.75		ug/L	P413660	
		Lead	0.20	U	ug/L	P413660	
		Manganese	2.92		ug/L	P413660	
		Molybdenum	0.48	I	ug/L	P413660	
		Nickel	0.50	U	ug/L	P413660	
		Selenium	0.20	U	ug/L	P413660	MS
		Silver	0.010	U	ug/L	P413660	
		Thallium	0.10	U	ug/L	P413660	
	SM 2340 B-2011	Hardness	76.8		mg/L	P413660	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, magnesium, potassium and sodium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for boron and manganese are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: Field_Blank

Collection Date/Time: 05/05/2022 10:50

Field ID: FB_05052022

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2325431	EPA 200.7 Rev. 4.4	Barium	1.0	U	ug/L	P413660	
		Calcium	0.075	U	mg/L	P413660	
		Iron	30	U	ug/L	P413660	
		Magnesium	0.040	U	mg/L	P413660	
		Potassium	0.30	U	mg/L	P413660	
		Sodium	0.50	U	mg/L	P413660	
		Strontium	2.0	U	ug/L	P413660	
		Tin	3.0	U	ug/L	P413660	
		Titanium	0.75	U	ug/L	P413660	
		Vanadium	2.0	U	ug/L	P413660	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P413660	
		Aluminum	5.0	U	ug/L	P413660	
		Antimony	0.050	U	ug/L	P413660	
		Arsenic	0.050	U	ug/L	P413660	
		Barium	0.20	U	ug/L	P413660	
		Beryllium	0.010	U	ug/L	P413660	
		Boron**	2.0	U	ug/L	P413660	
		Cadmium	0.020	U	ug/L	P413660	
		Chromium	0.40	U	ug/L	P413660	
		Cobalt	0.020	U	ug/L	P413660	
	SM 2340 B-2011	Copper	0.40	U	ug/L	P413660	
		Lead	0.20	U	ug/L	P413660	
		Manganese	0.10	U	ug/L	P413660	
		Molybdenum	0.15	U	ug/L	P413660	
		Nickel	0.50	U	ug/L	P413660	
		Selenium	0.20	U	ug/L	P413660	MS
		Silver	0.010	U	ug/L	P413660	
		Thallium	0.10	U	ug/L	P413660	
		Hardness	0.35	U	mg/L	P413660	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, magnesium, potassium and sodium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for boron and manganese are unavailable for one of two spiked samples 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: P413660

Component	Result	Code	Units
Barium	1.0	U	ug/L
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: P413660

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: P413660

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	106		P	85 - 115
Calcium	104		P	85 - 115
Iron	104		P	85 - 115
Magnesium	105		P	85 - 115
Potassium	104		P	85 - 115
Sodium	101		P	85 - 115
Strontium	99.4		P	85 - 115
Tin	102		P	85 - 115
Titanium	102		P	85 - 115
Vanadium	95.4		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P413660

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	101		P	85 - 115
Antimony	100		P	85 - 115
Arsenic	98.1		P	85 - 115
Barium	102		P	85 - 115
Beryllium	91.9		P	85 - 115
Boron	107		P	85 - 115
Cadmium	99.6		P	85 - 115
Chromium	97.5		P	85 - 115
Cobalt	97.1		P	85 - 115
Copper	96.2		P	85 - 115
Lead	100		P	85 - 115
Manganese	97.2		P	85 - 115
Molybdenum	98.6		P	85 - 115
Nickel	97.4		P	85 - 115
Selenium	97.2		P	85 - 115
Silver	98.8		P	85 - 115
Thallium	101		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P413660

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2324873	Barium	105	109	P/P	80 - 120
2324873	Calcium	103		P	80 - 120
2324873	Iron	104	115	P/P	80 - 120
2324873	Magnesium	108	107	P/P	80 - 120
2324873	Potassium	105	104	P/P	80 - 120
2324873	Sodium	101		P	80 - 120
2324873	Strontium	101	101	P/P	80 - 120
2324873	Tin	102	104	P/P	80 - 120
2324873	Titanium	101	109	P/P	80 - 120
2324873	Vanadium	97.2	101	P/P	80 - 120
2324873	Zinc	102	106	P/P	80 - 120
2325666	Barium	98.8		P	75 - 125
2325666	Iron	99.5		P	75 - 125
2325666	Strontium	102		P	75 - 125
2325666	Tin	98.9		P	75 - 125
2325666	Titanium	97.3		P	75 - 125
2325666	Vanadium	96.8		P	75 - 125
2325666	Zinc	91.9		P	75 - 125

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P413660

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2324873	Aluminum	103	104	P/P	80 - 120
2324873	Antimony	101	101	P/P	80 - 120
2324873	Arsenic	97.7	97.0	P/P	80 - 120
2324873	Barium	102	104	P/P	80 - 120
2324873	Beryllium	97.0	93.3	P/P	80 - 120
2324873	Boron	110	110	P/P	80 - 120
2324873	Cadmium	101	102	P/P	80 - 120
2324873	Chromium	98.0	97.8	P/P	80 - 120
2324873	Cobalt	97.1	96.5	P/P	80 - 120
2324873	Copper	97.8	96.7	P/P	80 - 120
2324873	Lead	102	102	P/P	80 - 120
2324873	Molybdenum	101	101	P/P	80 - 120
2324873	Nickel	96.9	95.7	P/P	80 - 120
2324873	Selenium	96.2	94.9	P/P	80 - 120
2324873	Silver	99.8	99.6	P/P	80 - 120
2324873	Thallium	104	104	P/P	80 - 120
2325666	Aluminum	104		P	75 - 125
2325666	Antimony	103		P	75 - 125
2325666	Arsenic	106		P	75 - 125
2325666	Barium	107		P	75 - 125
2325666	Beryllium	98.8		P	75 - 125
2325666	Cadmium	89.6		P	75 - 125
2325666	Chromium	78.6		P	75 - 125
2325666	Cobalt	116		P	75 - 125
2325666	Copper	94.4		P	75 - 125
2325666	Lead	103		P	75 - 125
2325666	Manganese	98.1		P	75 - 125
2325666	Molybdenum	115		P	75 - 125
2325666	Nickel	111		P	75 - 125

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P413660

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2325666	Selenium	48.4		F	75 - 125
2325666	Silver	82.3		P	75 - 125
2325666	Thallium	105		P	75 - 125

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P413660

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2324873	Barium	3.36	Spike	P	0 - 20
2324873	Calcium	0.736	Spike	P	0 - 20
2324873	Iron	7.40	Spike	P	0 - 20
2324873	Magnesium	0.248	Spike	P	0 - 20
2324873	Potassium	0.701	Spike	P	0 - 20
2324873	Sodium	0.820	Spike	P	0 - 20
2324873	Strontium	0.129	Spike	P	0 - 20
2324873	Tin	2.21	Spike	P	0 - 20
2324873	Titanium	6.81	Spike	P	0 - 20
2324873	Vanadium	3.98	Spike	P	0 - 20
2324873	Zinc	3.37	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P413660

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2324873	Aluminum	1.58	Spike	P	0 - 20
2324873	Antimony	0.0351	Spike	P	0 - 20
2324873	Arsenic	0.674	Spike	P	0 - 20
2324873	Barium	1.24	Spike	P	0 - 20
2324873	Beryllium	3.33	Spike	P	0 - 20
2324873	Boron	0.0423	Spike	P	0 - 20
2324873	Cadmium	0.367	Spike	P	0 - 20
2324873	Chromium	0.177	Spike	P	0 - 20
2324873	Cobalt	0.641	Spike	P	0 - 20
2324873	Copper	1.11	Spike	P	0 - 20
2324873	Lead	0.547	Spike	P	0 - 20
2324873	Manganese	1.04	Spike	P	0 - 20
2324873	Molybdenum	0.723	Spike	P	0 - 20
2324873	Nickel	1.25	Spike	P	0 - 20
2324873	Selenium	1.45	Spike	P	0 - 20
2324873	Silver	0.180	Spike	P	0 - 20
2324873	Thallium	0.272	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: A112092

Included Lab Sample IDs: 2325429, 2325430, 2325431

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	103	101	P/P	90 - 110
Barium	105	104	P/P	90 - 110
Calcium	101	101	P/P	90 - 110
Calcium	102	103	P/P	90 - 110
Iron	102	102	P/P	90 - 110
Iron	103	103	P/P	90 - 110
Magnesium	101	102	P/P	90 - 110
Magnesium	102	103	P/P	90 - 110
Potassium	100	101	P/P	90 - 110
Potassium	101	101	P/P	90 - 110
Sodium	100	101	P/P	90 - 110
Sodium	102	101	P/P	90 - 110
Strontium	99.2	98.7	P/P	90 - 110
Strontium	99.9	99.7	P/P	90 - 110
Tin	101	101	P/P	90 - 110
Tin	100	99.4	P/P	90 - 110
Titanium	101	100	P/P	90 - 110
Titanium	98.9	97.7	P/P	90 - 110
Vanadium	101	99.2	P/P	90 - 110
Vanadium	102	101	P/P	90 - 110
Zinc	102	100	P/P	90 - 110
Zinc	103	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A112109

Included Lab Sample IDs: 2325429, 2325430, 2325431

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	100	106	P/P	90 - 110
Aluminum	100	100	P/P	90 - 110
Aluminum	101	100	P/P	90 - 110
Antimony	99.2	103	P/P	90 - 110
Antimony	99.4	99.5	P/P	90 - 110
Antimony	99.5	99.2	P/P	90 - 110
Arsenic	95.9	98.9	P/P	90 - 110
Arsenic	98.7	95.9	P/P	90 - 110
Arsenic	99.8	98.7	P/P	90 - 110
Barium	99.0	105	P/P	90 - 110
Barium	99.6	99.0	P/P	90 - 110
Barium	99.7	99.6	P/P	90 - 110
Beryllium	95.3	98.1	P/P	90 - 110
Beryllium	98.1	95.6	P/P	90 - 110
Boron	101	103	P/P	90 - 110
Boron	103	104	P/P	90 - 110
Boron	104	102	P/P	90 - 110
Cadmium	100	100	P/P	90 - 110
Cadmium	100	99.8	P/P	90 - 110
Cadmium	99.7	100	P/P	90 - 110
Chromium	96.8	105	P/P	90 - 110
Chromium	97.1	98.2	P/P	90 - 110
Chromium	98.2	96.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A112109

Included Lab Sample IDs: 2325429, 2325430, 2325431

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cobalt	95.7	104	P/P	90 - 110
Cobalt	97.3	95.7	P/P	90 - 110
Cobalt	97.3	97.3	P/P	90 - 110
Copper	95.6	103	P/P	90 - 110
Copper	97.1	95.6	P/P	90 - 110
Copper	97.5	97.1	P/P	90 - 110
Lead	99.1	98.0	P/P	90 - 110
Lead	99.6	100	P/P	90 - 110
Lead	100	99.1	P/P	90 - 110
Manganese	98.2	106	P/P	90 - 110
Manganese	98.3	98.7	P/P	90 - 110
Manganese	98.7	98.2	P/P	90 - 110
Molybdenum	98.2	97.6	P/P	90 - 110
Molybdenum	98.7	98.2	P/P	90 - 110
Molybdenum	99.6	98.7	P/P	90 - 110
Nickel	96.2	104	P/P	90 - 110
Nickel	98.1	98.5	P/P	90 - 110
Nickel	98.5	96.2	P/P	90 - 110
Selenium	97.8	101	P/P	90 - 110
Selenium	98.1	97.8	P/P	90 - 110
Selenium	99.1	98.1	P/P	90 - 110
Silver	98.8	98.7	P/P	90 - 110
Silver	99.0	98.8	P/P	90 - 110
Silver	99.5	99.0	P/P	90 - 110
Thallium	100	99.6	P/P	90 - 110
Thallium	100	98.2	P/P	90 - 110
Thallium	99.6	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A112146

Included Lab Sample IDs: 2325430

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	94.2	108	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	Barium	106	105	109	98.8			3.36
	Calcium	104	103					0.736
	Iron	104	99.5	104	115			7.40
	Magnesium	105	108	107				0.248
	Potassium	104	105	104				0.701
	Sodium	101	101					0.820
	Strontium	99.4	101	101	102			0.129
	Tin	102	102	104	98.9			2.21
	Titanium	102	97.3	101	109			6.81
	Vanadium	95.4	97.2	101	96.8			3.98
	Zinc	103	102	106	91.9			3.37
EPA 200.8 Rev. 5.4	Aluminum	101	103	104	104			1.58
	Antimony	100	103	101	101			0.0351
	Arsenic	98.1	106	97.7	97.0			0.674
	Barium	102	107	102	104			1.24
	Beryllium	91.9	98.8	97.0	93.3			3.33
	Boron	107	110	110				0.0423
	Cadmium	99.6	89.6	101	102			0.367
	Chromium	97.5	78.6	98.0	97.8			0.177
	Cobalt	97.1	116	97.1	96.5			0.641
	Copper	96.2	94.4	97.8	96.7			1.11
	Lead	100	103	102	102			0.547
	Manganese	97.2	98.1					1.04
	Molybdenum	98.6	115	101	101			0.723
	Nickel	97.4	111	96.9	95.7			1.25
	Selenium	97.2	48.4	96.2	94.9			1.45
	Silver	98.8	82.3	99.8	99.6			0.180
	Thallium	101	105	104	104			0.272

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	2325429, 2325430, 2325431
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2325429, 2325430, 2325431
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2325429, 2325430, 2325431

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	05/06/2022	05/11/2022 10:15	Megan Whitefoot	05/11/2022 18:54	McKinley C Carter	2325431
	05/06/2022	05/11/2022 10:15	Megan Whitefoot	05/11/2022 22:15	McKinley C Carter	2325429
	05/06/2022	05/11/2022 10:15	Megan Whitefoot	05/11/2022 22:23	McKinley C Carter	2325430
EPA 200.8 Rev. 5.4	05/06/2022	05/11/2022 10:15	Megan Whitefoot	05/12/2022 13:19	Alexander Thompson	2325431
	05/06/2022	05/11/2022 10:15	Megan Whitefoot	05/12/2022 15:53	Alexander Thompson	2325429
	05/06/2022	05/11/2022 10:15	Megan Whitefoot	05/12/2022 17:01	Alexander Thompson	2325430
	05/06/2022	05/11/2022 10:15	Megan Whitefoot	05/13/2022 12:46	Alexander Thompson	2325430
SM 2340 B-2011	05/06/2022			05/11/2022 18:54	McKinley C Carter	2325431
	05/06/2022			05/11/2022 22:15	McKinley C Carter	2325429
	05/06/2022			05/11/2022 22:23	McKinley C Carter	2325430