

Chemical Analysis Report

CEN-DIST-2021-02-19-03

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

Event Description: **Long Branch**
Request ID: **RQ-2021-02-08-19**
Customer: **CEN-DIST**
Project ID: **BMAP**

Send Reports to:
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Certified by: Colin Wright, Program Administrator

Date Certified: 12-MAR-2021 09:28

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular background.

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 groups are included in this report: Metals, Nutrients and Pesticides.

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: Long Branch @ 0.7 mi DS Of CR 13

Collection Date/Time: 02/18/2021 11:04

Field ID: G2CE0036

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2226097	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P394030	
	EPA 300.0 Rev. 2.1	Chloride	30		mg Cl/L	P394240	
		Sulfate	26		mg SO4/L	P394242	
		Color (true)	100	A	PCU	P394028	
	SM 2320 B-2011	Total Alkalinity	81		mg CaCO3/L	P394364	
	SM 2540 C-2011	TDS	214		mg/L	P394350	
	SM 2540 D-2011	TSS	2	U	mg/L	P394342	
	SM 4500 F-C-2011	Fluoride	0.080	I	mg F/L	P394163	
2226098	EPA 350.1 Rev. 2.0	Ammonia-N	0.032		mg N/L	P394297	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P394082	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P394047	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P394059	
	SM 5310 B-2011	Organic Carbon	15		mg C/L	P394609	
2226099	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.090		mg P/L	P394022	
2226103	EPA 8321B	Sucralose	0.33		ug/L	P393991	
2226107	EPA 200.7 Rev. 4.4	Calcium	47.6		mg/L	P394055	
		Iron	490		ug/L	P394055	
		Magnesium	2.73		mg/L	P394055	
		Potassium	1.9		mg/L	P394055	
		Sodium	17.8		mg/L	P394055	
		Zinc	5.0	U	ug/L	P394055	
		Arsenic	0.73		ug/L	P394055	
	EPA 200.8 Rev. 5.4	Cadmium	0.020	U	ug/L	P394055	
		Chromium	0.50	I	ug/L	P394055	
		Copper	0.79	I	ug/L	P394055	
		Lead	0.24	I	ug/L	P394055	
		Nickel	0.50	U	ug/L	P394055	
		Silver	0.010	U	ug/L	P394055	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 8321B: MS accuracy for sucralose could not be assessed due to high concentration of parameter in the spiked sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P394030

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P394055

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
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P394055

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394240

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394242

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394297

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P394082

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394047

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394059

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P394022

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: EPA 8321B
Batch ID: P393991

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B-2011
Batch ID: P394028

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P394364

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2540 C-2011
Batch ID: P394350

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P394342

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P394163

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P394609

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P394055

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	103		P	85 - 115
Magnesium	105		P	85 - 115
Potassium	98.7		P	85 - 115
Sodium	101		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P394055

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	101		P	85 - 115
Cadmium	97.6		P	85 - 115
Chromium	94.5		P	85 - 115
Copper	97.2		P	85 - 115
Lead	104		P	85 - 115
Nickel	95.5		P	85 - 115
Silver	103		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394240

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	94.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394242

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394297

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	102		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P394082

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394047

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	100		P	90 - 110

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394059

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	107		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P394022

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.4		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P393991

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	110		P	40 - 150

Reference Method: SM 2120 B-2011
Batch ID: P394028

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.1		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P394364

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	94.5		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P394163

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.3		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P394609

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.1		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P394055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2226020	Calcium	103		P	80 - 120
2226020	Iron	108		P	80 - 120
2226020	Magnesium	101		P	80 - 120
2226020	Potassium	97.7		P	80 - 120
2226020	Sodium	99.8		P	80 - 120
2226020	Zinc	108		P	80 - 120
2226078	Calcium	102		P	80 - 120
2226078	Iron	107	106	P/P	80 - 120
2226078	Magnesium	103		P	80 - 120
2226078	Potassium	103	100	P/P	80 - 120
2226078	Sodium	105	102	P/P	80 - 120
2226078	Zinc	108	109	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P394055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2226020	Arsenic	97.9		P	80 - 120
2226020	Cadmium	96.1		P	80 - 120
2226020	Chromium	93.9		P	80 - 120
2226020	Copper	93.0		P	80 - 120
2226020	Lead	106		P	80 - 120
2226020	Nickel	91.4		P	80 - 120
2226020	Silver	102		P	80 - 120
2226078	Arsenic	99.2	99.9	P/P	80 - 120
2226078	Cadmium	97.6	98.6	P/P	80 - 120
2226078	Chromium	93.8	94.6	P/P	80 - 120
2226078	Copper	92.4	92.3	P/P	80 - 120
2226078	Lead	102	103	P/P	80 - 120
2226078	Nickel	92.1	92.3	P/P	80 - 120
2226078	Silver	104	102	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P394240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2226053	Chloride	101		P	90 - 110
2226141	Chloride	98.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P394242

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2226053	Sulfate	98.1		P	90 - 110
2226141	Sulfate	98.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P394297

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2226074	Ammonia-N	101	100	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P394082

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2226084	Kjeldahl Nitrogen	105	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394047

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2226067	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394059

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2226054	Total-P	108	109	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P394022

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2226241	O-Phosphate-P	97.1	96.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P394163

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2226073	Fluoride	101	100	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P394609

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2226085	Organic Carbon	94.6	93.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P394030

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226082	Turbidity	1.83	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P394055

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226078	Calcium	0.0859	Spike	P	0 - 20
2226078	Iron	0.878	Spike	P	0 - 20
2226078	Magnesium	0.965	Spike	P	0 - 20
2226078	Potassium	2.49	Spike	P	0 - 20
2226078	Sodium	2.18	Spike	P	0 - 20
2226078	Zinc	0.547	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P394055

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226078	Arsenic	0.637	Spike	P	0 - 20
2226078	Cadmium	0.972	Spike	P	0 - 20
2226078	Chromium	0.852	Spike	P	0 - 20
2226078	Copper	0.0178	Spike	P	0 - 20
2226078	Lead	0.571	Spike	P	0 - 20
2226078	Nickel	0.196	Spike	P	0 - 20
2226078	Silver	1.63	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P394240

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226053	Chloride	0.431	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P394242

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226053	Sulfate	0.498	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P394297

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226074	Ammonia-N	0.598	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P394082

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226084	Kjeldahl Nitrogen	0.620	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P394047

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226067	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P394059

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226054	Total-P	0.755	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P394022

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226241	O-Phosphate-P	0.561	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P393991

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2225494	Sucralose	11.3	Spike	P	0 - 30

Reference Method: SM 2120 B-2011
Batch ID: P394028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226097	Color (true)	1.65	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P394364

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226104	Total Alkalinity	1.51	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P394350

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226066	TDS	2.51	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P394163

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226073	Fluoride	0.472	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P394609

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2226085	Organic Carbon	0.496	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Surrogates

Lab Sample ID: 2226103
Field Sample ID: G2CE0036

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	99.8	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A103693

Included Lab Sample IDs: 2226099

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.6	97.4	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A103695

Included Lab Sample IDs: 2226097

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A103696

Included Lab Sample IDs: 2226097

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	102	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A103705

Included Lab Sample IDs: 2226098

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A103708

Included Lab Sample IDs: 2226103

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	105	131	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A103718

Included Lab Sample IDs: 2226098

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	98.6	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A103732

Included Lab Sample IDs: 2226107

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	101	P/P	90 - 110
Iron	102	100	P/P	90 - 110
Magnesium	102	98.8	P/P	90 - 110
Potassium	99.2	95.8	P/P	90 - 110
Sodium	99.2	98.8	P/P	90 - 110
Zinc	107	105	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A103737

Included Lab Sample IDs: 2226097

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.6	99.3	P/P	90 - 110
Sulfate	98.9	98.6	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A103744

Included Lab Sample IDs: 2226097

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	96.0	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A103774

Included Lab Sample IDs: 2226098

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.9	93.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A103808

Included Lab Sample IDs: 2226098

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.2	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A103841

Included Lab Sample IDs: 2226097

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	92.7	94.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A103899

Included Lab Sample IDs: 2226107

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.7	97.1	P/P	90 - 110
Cadmium	98.9	98.7	P/P	90 - 110
Chromium	94.4	92.5	P/P	90 - 110
Copper	94.8	93.0	P/P	90 - 110
Lead	104	105	P/P	90 - 110
Nickel	95.0	93.3	P/P	90 - 110
Silver	99.3	99.3	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A103939

Included Lab Sample IDs: 2226098

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.5	94.8	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 180.1 Rev. 2.0	Turbidity					1.83	
EPA 200.7 Rev. 4.4	Calcium	106	103	102			0.0859
	Iron	103	108	107	106		0.878
	Magnesium	105	101	103			0.965
	Potassium	98.7	97.7	103	100		2.49
	Sodium	101	99.8	105	102		2.18
	Zinc	104	108	108	109		0.547
EPA 200.8 Rev. 5.4	Arsenic	101	99.2	99.9	97.9		0.637
	Cadmium	97.6	97.6	98.6	96.1		0.972
	Chromium	94.5	93.8	94.6	93.9		0.852
	Copper	97.2	92.4	92.3	93.0		0.0178
	Lead	104	102	103	106		0.571
	Nickel	95.5	92.1	92.3	91.4		0.196
	Silver	103	104	102	102		1.63
EPA 300.0 Rev. 2.1	Chloride	94.4	101	98.6		0.431	
	Sulfate	99.2	98.1	98.0		0.498	
EPA 350.1 Rev. 2.0	Ammonia-N	102	101	100			0.598
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.8	105	104			0.620
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	101	101			0.0
EPA 365.1 Rev. 2.0	Total-P	107	108	109			0.755
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.4	97.1	96.5			0.561
EPA 8321B	Sucralose	110					11.3
SM 2120 B-2011	Color (true)	99.1				1.65	
SM 2320 B-2011	Total Alkalinity	94.5				1.51	
SM 2540 C-2011	TDS					2.51	
SM 4500 F-C-2011	Fluoride	99.3	101	100			0.472
SM 5310 B-2011	Organic Carbon	94.1	94.6	93.9			0.496

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2226097
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2226107
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2226107
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2226097
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2226097
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2226098
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2226098
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2226098
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2226098
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2226099
EPA 8321B	Water soluble organic compounds by HPLC/MS/MS	2226103
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2226097
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2226097
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2226097
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2226097
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2226097
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2226098

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	02/19/2021			02/19/2021 14:29	Yen Ta	2226097
EPA 200.7 Rev. 4.4	02/19/2021	02/22/2021 14:55	Elliott D. Healy	02/23/2021 16:53	Betina Topolski	2226107
EPA 200.8 Rev. 5.4	02/19/2021	02/22/2021 14:55	Elliott D. Healy	03/04/2021 16:50	Alexander Thompson	2226107
EPA 300.0 Rev. 2.1	02/19/2021			02/24/2021 17:04	Lipi Saha	2226097
EPA 350.1 Rev. 2.0	02/19/2021			02/27/2021 10:49	Ping Hua	2226098
EPA 351.2 Rev. 2.0	02/19/2021	02/23/2021 12:00	Yen Ta	02/25/2021 14:32	Julia Storbeck	2226098
EPA 353.2 Rev. 2.0	02/19/2021			02/22/2021 09:38	Beverly Y. Sanders	2226098
EPA 365.1 Rev. 2.0	02/19/2021	02/22/2021 12:30	Yen Ta	02/23/2021 11:34	Shengyu Wang	2226098
EPA 365.1 Rev. 2.0 dissolved	02/19/2021			02/19/2021 14:05	Samantha Davila	2226099
EPA 8321B	02/19/2021	02/19/2021 16:30	Rebecca Ware	02/19/2021 17:32	Rebecca Ware	2226103
SM 2120 B-2011	02/19/2021			02/19/2021 16:32	Benjamin T. Nordmann	2226097
SM 2320 B-2011	02/19/2021			02/27/2021 08:02	Dale L. Simmons	2226097
SM 2540 C-2011	02/19/2021			02/22/2021 14:12	Yijie Li	2226097
SM 2540 D-2011	02/19/2021			02/22/2021 14:12	Yijie Li	2226097
SM 4500 F-C-2011	02/19/2021			02/23/2021 22:42	Dale L. Simmons	2226097
SM 5310 B-2011	02/19/2021			03/06/2021 01:15	Madeline Gruver	2226098