Chemical Analysis Report

CEN-DIST-2020-12-18-01

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

Event Description: **SJR ABV Puzzle/Three Forks/Little Sawgrass**
Request ID: **RQ-2020-11-23-07**
Customer: **CEN-DIST**
Project ID: **SMP**

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3319 Maguire Blvd., Suite 232
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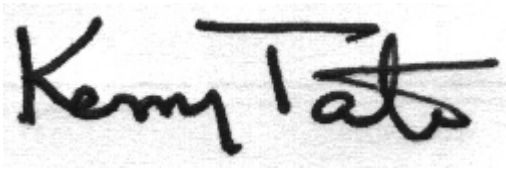
Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 11-JAN-2021 09:22



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 and Nutrients.

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: Lake Condel @ Center **Collection Date/Time: 12/17/2020 10:46**

Field ID: G4CE0177 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2214810	EPA 180.1 Rev. 2.0	Turbidity	8.5		NTU	P391458	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P391903	
		Sulfate	13		mg SO4/L	P391904	
	SM 2120 B-2011	Color (true)	30		PCU	P391465	
	SM 2320 B-2011	Total Alkalinity	45		mg CaCO3/L	P391576	
	SM 2540 C-2011	TDS	102		mg/L	P391869	
	SM 2540 D-2011	TSS	8	I	mg/L	P391767	
	SM 4500 F-C-2011	Fluoride	0.038	I	mg F/L	P391580	
2214811	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P391738	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P391784	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P391591	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P391688	
	SM 5310 B-2011	Organic Carbon	8.1		mg C/L	P391598	
2214812	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P391462	
2214815	EPA 200.7 Rev. 4.4	Barium	8.8		ug/L	P391631	
		Calcium	19.6		mg/L	P391631	
		Iron	58	I	ug/L	P391631	
		Magnesium	2.93		mg/L	P391631	
		Potassium	3.4		mg/L	P391631	
		Sodium	14.5		mg/L	P391631	
		Zinc	5.0	U	ug/L	P391631	
	EPA 200.8 Rev. 5.4	Aluminum	112		ug/L	P391631	
		Antimony	0.12	I	ug/L	P391631	
		Arsenic	0.95		ug/L	P391631	
		Beryllium	0.010	U	ug/L	P391631	
		Boron**	63.7		ug/L	P391631	
		Cadmium	0.020	U	ug/L	P391631	
		Chromium	0.40	U	ug/L	P391631	
		Copper	0.69	I	ug/L	P391631	
		Lead	0.83		ug/L	P391631	
		Nickel	0.53	I	ug/L	P391631	
		Selenium	0.20	U	ug/L	P391631	
		Silver	0.010	U	ug/L	P391631	
		Thallium	0.10	U	ug/L	P391631	
	SM 2340B	Hardness	60.9		mg/L	P391631	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for aluminum, copper and lead 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 180.1 Rev. 2.0
Batch ID: P391458

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P391631

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
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P391631

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	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
Copper	0.40	U	ug/L
Lead	0.20	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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391903

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391904

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P391738

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P391784

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P391591

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P391688

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P391462

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

Reference Method: SM 2120 B-2011
Batch ID: P391465

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P391576

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

Reference Method: SM 2540 C-2011
Batch ID: P391869

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P391767

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P391580

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: P391598

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: P391631

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	108		P	85 - 115
Calcium	103		P	85 - 115
Iron	107		P	85 - 115
Magnesium	107		P	85 - 115
Potassium	107		P	85 - 115
Sodium	111		P	85 - 115
Zinc	98.5		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P391631

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	97.0		P	85 - 115
Arsenic	94.6		P	85 - 115
Beryllium	101		P	85 - 115
Boron	88.7		P	85 - 115
Cadmium	90.2		P	85 - 115
Chromium	97.7		P	85 - 115
Copper	99.7		P	85 - 115
Lead	97.0		P	85 - 115
Nickel	91.7		P	85 - 115
Selenium	93.6		P	85 - 115
Silver	101		P	85 - 115
Thallium	95.4		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391903

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391904

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P391738

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P391784

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.1		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P391591

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P391688

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P391462

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	101		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P391465

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	90 - 110

Reference Method: SM 2320 B-2011
Batch ID: P391576

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.3		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P391580

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.7		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P391598

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P391631

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2214805	Barium	109		P	80 - 120
2214805	Calcium	106		P	80 - 120
2214805	Iron	111		P	80 - 120
2214805	Magnesium	111		P	80 - 120
2214805	Potassium	109		P	80 - 120
2214805	Sodium	107		P	80 - 120
2214805	Zinc	99.0		P	80 - 120
2214847	Barium	109	109	P/P	80 - 120
2214847	Calcium	105		P	80 - 120
2214847	Iron	108	108	P/P	80 - 120
2214847	Magnesium	108	107	P/P	80 - 120
2214847	Potassium	108	106	P/P	80 - 120
2214847	Sodium	109	105	P/P	80 - 120
2214847	Zinc	98.8	98.8	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P391631

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2214805	Antimony	95.1		P	80 - 120
2214805	Arsenic	91.3		P	80 - 120
2214805	Beryllium	99.9		P	80 - 120
2214805	Boron	92.3		P	80 - 120
2214805	Cadmium	90.9		P	80 - 120
2214805	Chromium	94.7		P	80 - 120
2214805	Nickel	90.5		P	80 - 120
2214805	Selenium	88.7		P	80 - 120
2214805	Silver	100		P	80 - 120
2214805	Thallium	98.5		P	80 - 120
2214847	Aluminum	101	98.3	P/P	80 - 120
2214847	Antimony	98.1	99.1	P/P	80 - 120
2214847	Arsenic	94.2	93.1	P/P	80 - 120
2214847	Beryllium	99.7	99.3	P/P	80 - 120
2214847	Boron	87.8	88.9	P/P	80 - 120
2214847	Cadmium	91.4	92.2	P/P	80 - 120
2214847	Chromium	96.8	97.5	P/P	80 - 120
2214847	Copper	103	100	P/P	80 - 120
2214847	Lead	97.3	97.9	P/P	80 - 120
2214847	Nickel	92.5	91.9	P/P	80 - 120
2214847	Selenium	92.0	91.8	P/P	80 - 120
2214847	Silver	101	102	P/P	80 - 120
2214847	Thallium	96.7	98.9	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391903

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2214542	Chloride	102		P	90 - 110
2214796	Chloride	103		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391904

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2214542	Sulfate	103		P	90 - 110
2214796	Sulfate	104		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P391738

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2214835	Ammonia-N	95.2	96.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P391784

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2214791	Kjeldahl Nitrogen	99.2	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P391591

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2214680	NO2NO3-N	96.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P391688

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2213318	Total-P	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P391462

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2214792	O-Phosphate-P	99.0	101	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P391580

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2214795	Fluoride	98.3	98.3	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P391598

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2214708	Organic Carbon	98.0	97.4	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P391458

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2214796	Turbidity	9.47	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P391631

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2214847	Barium	0.155	Spike	P	0 - 20
2214847	Calcium	1.09	Spike	P	0 - 20
2214847	Iron	0.282	Spike	P	0 - 20
2214847	Magnesium	0.993	Spike	P	0 - 20
2214847	Potassium	1.82	Spike	P	0 - 20
2214847	Sodium	2.01	Spike	P	0 - 20
2214847	Zinc	0.0294	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P391631

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2214847	Aluminum	2.71	Spike	P	0 - 20
2214847	Antimony	1.05	Spike	P	0 - 20
2214847	Arsenic	1.19	Spike	P	0 - 20
2214847	Beryllium	0.395	Spike	P	0 - 20
2214847	Boron	1.09	Spike	P	0 - 20
2214847	Cadmium	0.919	Spike	P	0 - 20
2214847	Chromium	0.711	Spike	P	0 - 20
2214847	Copper	2.24	Spike	P	0 - 20
2214847	Lead	0.660	Spike	P	0 - 20
2214847	Nickel	0.673	Spike	P	0 - 20
2214847	Selenium	0.216	Spike	P	0 - 20
2214847	Silver	1.14	Spike	P	0 - 20
2214847	Thallium	2.28	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391903

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2214796	Chloride	0.487	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P391904

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2214796	Sulfate	0.745	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P391738

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2214835	Ammonia-N	1.17	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P391784

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2214791	Kjeldahl Nitrogen	3.11	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P391591

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2214680	NO2NO3-N	0.169	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P391688

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2213318	Total-P	1.37	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P391462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2214792	O-Phosphate-P	1.60	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P391465

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2214767	Color (true)	9.96	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P391576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2214795	Total Alkalinity	1.90	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P391869

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2214679	TDS	3.01	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P391580

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2214795	Fluoride	0.0	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P391598

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2214708	Organic Carbon	0.338	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A102677
Included Lab Sample IDs: 2214810

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A102678
Included Lab Sample IDs: 2214812

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.8	98.3	P/P	90 - 110

Reference Method: SM 2120 B-2011
Run ID: A102679
Included Lab Sample IDs: 2214810

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	101	P/P	85 - 115

Reference Method: SM 2320 B-2011
Run ID: A102709
Included Lab Sample IDs: 2214810

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	92.2	95.8	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A102709
Included Lab Sample IDs: 2214810

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A102715
Included Lab Sample IDs: 2214811

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

Reference Method: SM 5310 B-2011
Run ID: A102717
Included Lab Sample IDs: 2214811

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.6	97.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A102784
Included Lab Sample IDs: 2214811

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.9	97.8	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A102794
Included Lab Sample IDs: 2214811

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	98.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A102805
Included Lab Sample IDs: 2214815

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	95.9	96.6	P/P	90 - 110
Arsenic	93.6	93.1	P/P	90 - 110
Beryllium	104	104	P/P	90 - 110
Boron	97.3	96.8	P/P	90 - 110
Cadmium	94.4	94.5	P/P	90 - 110
Chromium	97.6	98.6	P/P	90 - 110
Lead	96.2	97.2	P/P	90 - 110
Nickel	90.4	90.4	P/P	90 - 110
Selenium	93.7	93.3	P/P	90 - 110
Silver	101	100	P/P	90 - 110
Thallium	99.7	98.9	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A102806
Included Lab Sample IDs: 2214815

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	104	104	P/P	90 - 110
Calcium	103	102	P/P	90 - 110
Iron	102	101	P/P	90 - 110
Magnesium	102	100	P/P	90 - 110
Potassium	105	104	P/P	90 - 110
Sodium	105	104	P/P	90 - 110
Zinc	95.2	96.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A102820
Included Lab Sample IDs: 2214811

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	98.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A102823
Included Lab Sample IDs: 2214815

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	103	104	P/P	90 - 110
Copper	95.8	96.6	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A102826
Included Lab Sample IDs: 2214810

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	100	P/P	90 - 110
Sulfate	101	101	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		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						9.47	
EPA 200.7 Rev. 4.4	Barium	108	109	109	109			0.155
	Calcium	103	106	105				1.09
	Iron	107	111	108	108			0.282
	Magnesium	107	111	108	107			0.993
	Potassium	107	109	108	106			1.82
	Sodium	111	107	109	105			2.01
	Zinc	98.5	99.0	98.8	98.8			0.0294
EPA 200.8 Rev. 5.4	Aluminum	102	101	98.3				2.71
	Antimony	97.0	98.1	99.1	95.1			1.05
	Arsenic	94.6	94.2	93.1	91.3			1.19
	Beryllium	101	99.7	99.3	99.9			0.395
	Boron	88.7	87.8	88.9	92.3			1.09
	Cadmium	90.2	91.4	92.2	90.9			0.919
	Chromium	97.7	96.8	97.5	94.7			0.711
	Copper	99.7	103	100				2.24
	Lead	97.0	97.3	97.9				0.660
	Nickel	91.7	92.5	91.9	90.5			0.673
	Selenium	93.6	92.0	91.8	88.7			0.216
	Silver	101	101	102	100			1.14
	Thallium	95.4	96.7	98.9	98.5			2.28
EPA 300.0 Rev. 2.1	Chloride	101	103	102			0.487	
	Sulfate	103	104	103			0.745	
EPA 350.1 Rev. 2.0	Ammonia-N	96.4	95.2	96.4				1.17
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.1	99.2	104				3.11
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	96.2					0.169
EPA 365.1 Rev. 2.0	Total-P	102	101	102				1.37
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	99.0	101				1.60
SM 2120 B-2011	Color (true)	101					9.96	
SM 2320 B-2011	Total Alkalinity	97.3					1.90	
SM 2540 C-2011	TDS						3.01	
SM 4500 F-C-2011	Fluoride	97.7	98.3	98.3				0.0
SM 5310 B-2011	Organic Carbon	97.8	98.0	97.4				0.338

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2214810
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2214815
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2214815
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2214810
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2214810
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2214811
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2214811
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2214811
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2214811
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2214812
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2214810
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2214810
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2214815

Reference Method Descriptions

Method	Description	Associated Samples
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2214810
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2214810
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2214810
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2214811

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	12/18/2020			12/18/2020 15:42	Yen Ta	2214810
EPA 200.7 Rev. 4.4	12/18/2020	12/22/2020 16:35	Elliott D. Healy	12/29/2020 00:57	Betina Topolski	2214815
EPA 200.8 Rev. 5.4	12/18/2020	12/22/2020 16:35	Elliott D. Healy	12/28/2020 18:11	Alexander Thompson	2214815
	12/18/2020	12/22/2020 16:35	Elliott D. Healy	12/29/2020 12:33	Alexander Thompson	2214815
EPA 300.0 Rev. 2.1	12/18/2020			12/30/2020 19:23	Lipi Saha	2214810
EPA 350.1 Rev. 2.0	12/18/2020			12/27/2020 18:11	Ping Hua	2214811
EPA 351.2 Rev. 2.0	12/18/2020	12/28/2020 14:25	David Boose	12/29/2020 15:00	Julia Storbeck	2214811
EPA 353.2 Rev. 2.0	12/18/2020			12/22/2020 09:54	Beverly Y. Sanders	2214811
EPA 365.1 Rev. 2.0	12/18/2020	12/23/2020 10:14	Yen Ta	12/28/2020 10:39	Benjamin T. Nordmann	2214811
EPA 365.1 Rev. 2.0 dissolved	12/18/2020			12/18/2020 16:26	Ping Hua	2214812
SM 2120 B-2011	12/18/2020			12/18/2020 17:13	Benjamin T. Nordmann	2214810
SM 2320 B-2011	12/18/2020			12/21/2020 21:54	Dale L. Simmons	2214810
SM 2340B	12/18/2020			12/29/2020 00:57	Betina Topolski	2214815
SM 2540 C-2011	12/18/2020			12/22/2020 13:52	Yijie Li	2214810
SM 2540 D-2011	12/18/2020			12/22/2020 13:52	Yijie Li	2214810
SM 4500 F-C-2011	12/18/2020			12/21/2020 21:54	Dale L. Simmons	2214810
SM 5310 B-2011	12/18/2020			12/22/2020 05:58	Madeline Gruver	2214811