Chemical Analysis Report

CEN-DIST-2020-10-22-01

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

Event Description: **Lake Henry LVI**
Request ID: **RQ-2020-10-19-69**
Customer: **CEN-DIST**
Project ID: **SMP**

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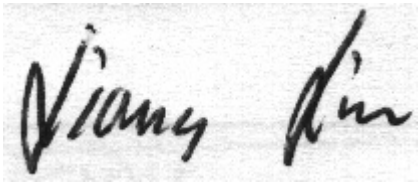
Date Certified: 13-NOV-2020 11:51



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 Henry @ Center **Collection Date/Time: 10/21/2020 12:40**

Field ID: G3CE0040 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2204131	EPA 180.1 Rev. 2.0	Turbidity	8.9		NTU	P389132	
	EPA 300.0 Rev. 2.1	Chloride	25		mg Cl/L	P389473	
		Sulfate	10		mg SO4/L	P389476	
	SM 2120 B-2011	Color (true)	180		PCU	P389101	
	SM 2320 B-2011	Total Alkalinity	12		mg CaCO3/L	P389230	
	SM 2540 C-2011	TDS	122		mg/L	P389605	
	SM 2540 D-2011	TSS	5	I	mg/L	P389602	
	SM 4500 F-C-2011	Fluoride	0.16		mg F/L	P389236	
2204132	EPA 350.1 Rev. 2.0	Ammonia-N	0.031		mg N/L	P389212	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.93		mg N/L	P389492	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.056		mg N/L	P389249	
	EPA 365.1 Rev. 2.0	Total-P	0.090		mg P/L	P389507	
	SM 5310 B-2011	Organic Carbon	16		mg C/L	P389222	
2204133	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.045		mg P/L	P389120	
2204135	EPA 200.7 Rev. 4.4	Barium	10.2		ug/L	P389277	
		Calcium	6.56		mg/L	P389277	
		Iron	190		ug/L	P389277	
		Magnesium	3.89		mg/L	P389277	
		Potassium	5.2		mg/L	P389277	
		Sodium	13.9		mg/L	P389277	
		Zinc	5.0	U	ug/L	P389277	
	EPA 200.8 Rev. 5.4	Aluminum	180		ug/L	P389277	
		Antimony	0.12	I	ug/L	P389277	
		Arsenic	2.96		ug/L	P389277	
		Beryllium	0.016	I	ug/L	P389277	
		Boron**	50.0		ug/L	P389277	
		Cadmium	0.020	U	ug/L	P389277	
		Chromium	0.40	U	ug/L	P389277	
		Copper	1.48		ug/L	P389277	
		Lead	0.55		ug/L	P389277	
		Nickel	0.50	U	ug/L	P389277	
		Selenium	0.20	U	ug/L	P389277	
		Silver	0.010	U	ug/L	P389277	
		Thallium	0.10	U	ug/L	P389277	
	SM 2340B	Hardness	32.4		mg/L	P389277	

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P389132

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P389277

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: P389277

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: P389473

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389476

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389212

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: P389492

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389249

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389507

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389120

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

Reference Method: SM 2120 B-2011
Batch ID: P389101

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P389230

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

Reference Method: SM 2540 C-2011
Batch ID: P389605

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P389602

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P389236

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: P389222

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: P389277

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	93.0		P	80 - 120
Calcium	97.1		P	80 - 120
Iron	95.7		P	80 - 120
Magnesium	95.1		P	80 - 120
Potassium	93.0		P	80 - 120
Sodium	91.1		P	80 - 120
Zinc	92.2		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P389277

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.2		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	100		P	85 - 115
Beryllium	99.3		P	85 - 115
Boron	96.4		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	101		P	85 - 115
Copper	99.6		P	85 - 115
Lead	94.5		P	85 - 115
Nickel	101		P	85 - 115
Selenium	98.3		P	85 - 115
Silver	96.7		P	85 - 115
Thallium	102		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389473

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389476

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389212

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389492

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389249

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389507

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: P389120

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

Reference Method: SM 2120 B-2011
Batch ID: P389101

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

Reference Method: SM 2320 B-2011
Batch ID: P389230

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P389236

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.6		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P389222

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P389277

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204127	Barium	100	99.1	P/P	80 - 120
2204127	Calcium	98.9	102	P/P	80 - 120
2204127	Iron	102	104	P/P	80 - 120
2204127	Magnesium	100	103	P/P	80 - 120
2204127	Potassium	97.9	98.9	P/P	80 - 120
2204127	Sodium	100	98.7	P/P	80 - 120
2204127	Zinc	97.7	96.6	P/P	80 - 120
2204636	Barium	98.9		P	80 - 120
2204636	Calcium	100		P	80 - 120
2204636	Iron	98.2		P	80 - 120
2204636	Magnesium	102		P	80 - 120
2204636	Potassium	104		P	80 - 120
2204636	Sodium	101		P	80 - 120
2204636	Zinc	93.5		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P389277

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204127	Aluminum	96.2	96.0	P/P	80 - 120
2204127	Antimony	98.4	97.9	P/P	80 - 120
2204127	Arsenic	96.7	97.4	P/P	80 - 120
2204127	Beryllium	90.5	95.1	P/P	80 - 120
2204127	Boron	94.7	93.7	P/P	80 - 120
2204127	Cadmium	97.1	98.9	P/P	80 - 120
2204127	Chromium	98.2	98.5	P/P	80 - 120
2204127	Copper	98.5	98.7	P/P	80 - 120
2204127	Lead	93.9	93.9	P/P	80 - 120
2204127	Nickel	101	100	P/P	80 - 120
2204127	Selenium	96.0	96.5	P/P	80 - 120
2204127	Silver	95.3	95.3	P/P	80 - 120
2204127	Thallium	101	101	P/P	80 - 120
2204636	Aluminum	95.5		P	80 - 120
2204636	Antimony	99.8		P	80 - 120
2204636	Arsenic	97.1		P	80 - 120
2204636	Beryllium	96.3		P	80 - 120
2204636	Boron	93.1		P	80 - 120
2204636	Cadmium	100		P	80 - 120
2204636	Chromium	99.2		P	80 - 120
2204636	Copper	97.4		P	80 - 120
2204636	Lead	95.0		P	80 - 120
2204636	Nickel	97.4		P	80 - 120
2204636	Selenium	93.1		P	80 - 120
2204636	Silver	94.9		P	80 - 120
2204636	Thallium	102		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389473

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204000	Chloride	101		P	90 - 110
2204104	Chloride	100		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389476

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204000	Sulfate	102		P	90 - 110
2204104	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389212

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204244	Ammonia-N	98.7	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389492

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204123	Kjeldahl Nitrogen	113	115	F/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389249

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204010	NO2NO3-N	97.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389507

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204124	Total-P	104	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389120

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204107	O-Phosphate-P	94.8	94.8	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P389236

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204041	Fluoride	99.7	98.0	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P389222

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2203987	Organic Carbon	101	101	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P389132

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204140	Turbidity	3.22	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P389277

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204127	Barium	0.976	Spike	P	0 - 20
2204127	Calcium	2.59	Spike	P	0 - 20
2204127	Iron	2.37	Spike	P	0 - 20
2204127	Magnesium	2.07	Spike	P	0 - 20
2204127	Potassium	0.944	Spike	P	0 - 20
2204127	Sodium	0.828	Spike	P	0 - 20
2204127	Zinc	1.12	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P389277

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204127	Aluminum	0.159	Spike	P	0 - 20
2204127	Antimony	0.564	Spike	P	0 - 20
2204127	Arsenic	0.803	Spike	P	0 - 20
2204127	Beryllium	4.57	Spike	P	0 - 20
2204127	Boron	0.934	Spike	P	0 - 20
2204127	Cadmium	1.79	Spike	P	0 - 20
2204127	Chromium	0.266	Spike	P	0 - 20
2204127	Copper	0.203	Spike	P	0 - 20
2204127	Lead	0.0170	Spike	P	0 - 20
2204127	Nickel	0.802	Spike	P	0 - 20
2204127	Selenium	0.558	Spike	P	0 - 20
2204127	Silver	0.00448	Spike	P	0 - 20
2204127	Thallium	0.306	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389473

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204104	Chloride	0.0268	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389476

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204104	Sulfate	0.388	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389212

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204244	Ammonia-N	0.705	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389492

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204123	Kjeldahl Nitrogen	1.57	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389249

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204010	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389507

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204124	Total-P	2.63	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389120

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204107	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P389101

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204103	Color (true)	0.462	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P389230

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204041	Total Alkalinity	5.18	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P389605

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204242	TDS	1.04	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P389236

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204041	Fluoride	1.50	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P389222

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2203987	Organic Carbon	0.222	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2120 B-2011
Run ID: A101692
Included Lab Sample IDs: 2204131

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	104	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A101695
Included Lab Sample IDs: 2204133

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.3	99.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A101705
Included Lab Sample IDs: 2204131

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.0	99.5	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A101740
Included Lab Sample IDs: 2204132

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.0	98.2	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A101747
Included Lab Sample IDs: 2204132

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	101	99.6	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A101749
Included Lab Sample IDs: 2204131

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.3	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A101749
Included Lab Sample IDs: 2204131

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A101763
Included Lab Sample IDs: 2204132

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A101798
Included Lab Sample IDs: 2204131

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Sulfate	101	102	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A101807
Included Lab Sample IDs: 2204135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	96.3	97.8	P/P	90 - 110
Calcium	96.7	98.1	P/P	90 - 110
Iron	98.1	99.7	P/P	90 - 110
Magnesium	96.3	97.5	P/P	90 - 110
Potassium	95.9	97.1	P/P	90 - 110
Sodium	96.4	96.6	P/P	90 - 110
Zinc	95.4	96.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A101871
Included Lab Sample IDs: 2204135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	96.8	95.4	P/P	90 - 110
Antimony	99.5	98.4	P/P	90 - 110
Arsenic	98.5	96.7	P/P	90 - 110
Boron	96.0	97.4	P/P	90 - 110
Cadmium	99.9	99.5	P/P	90 - 110
Chromium	97.2	96.4	P/P	90 - 110
Copper	98.7	96.9	P/P	90 - 110
Lead	95.4	94.5	P/P	90 - 110
Nickel	98.8	96.3	P/P	90 - 110
Selenium	99.2	96.4	P/P	90 - 110
Silver	99.0	99.8	P/P	90 - 110
Thallium	97.4	97.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A101882
Included Lab Sample IDs: 2204132

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	96.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A101891
Included Lab Sample IDs: 2204135

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A101924
Included Lab Sample IDs: 2204132

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	105	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						3.22	
EPA 200.7 Rev. 4.4	Barium	93.0	100	99.1	98.9			0.976
	Calcium	97.1	98.9	102	100			2.59
	Iron	95.7	102	104	98.2			2.37
	Magnesium	95.1	100	103	102			2.07
	Potassium	93.0	97.9	98.9	104			0.944
	Sodium	91.1	100	98.7	101			0.828
	Zinc	92.2	97.7	96.6	93.5			1.12
EPA 200.8 Rev. 5.4	Aluminum	99.2	96.2	96.0	95.5			0.159
	Antimony	101	98.4	97.9	99.8			0.564
	Arsenic	100	96.7	97.4	97.1			0.803
	Beryllium	99.3	90.5	95.1	96.3			4.57
	Boron	96.4	94.7	93.7	93.1			0.934
	Cadmium	101	97.1	98.9	100			1.79
	Chromium	101	98.2	98.5	99.2			0.266
	Copper	99.6	98.5	98.7	97.4			0.203
	Lead	94.5	93.9	93.9	95.0			0.0170
	Nickel	101	101	100	97.4			0.802
	Selenium	98.3	96.0	96.5	93.1			0.558
	Silver	96.7	95.3	95.3	94.9			0.0044
	Thallium	102	101	101	102			0.306
EPA 300.0 Rev. 2.1	Chloride	101	100	101			0.0268	
	Sulfate	101	101	102			0.388	
EPA 350.1 Rev. 2.0	Ammonia-N	97.1	98.7	97.8				0.705
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	113	115				1.57
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	97.8					0.0
EPA 365.1 Rev. 2.0	Total-P	107	104	107				2.63
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.4	94.8	94.8				0.0
SM 2120 B-2011	Color (true)	101					0.462	
SM 2320 B-2011	Total Alkalinity	102					5.18	
SM 2540 C-2011	TDS						1.04	
SM 4500 F-C-2011	Fluoride	97.6	99.7	98.0				1.50
SM 5310 B-2011	Organic Carbon	102	101	101				0.222

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2204131
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2204135
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2204135
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2204131
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2204131
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2204132
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2204132
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2204132
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2204132
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2204133
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2204131
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2204131
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2204135

Reference Method Descriptions

Method	Description	Associated Samples
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2204131
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2204131
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2204131
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2204132

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	10/22/2020			10/22/2020 13:37	Blanca Fach	2204131
EPA 200.7 Rev. 4.4	10/22/2020	10/26/2020 17:00	Elliott D. Healy	10/27/2020 19:18	Betina Topolski	2204135
EPA 200.8 Rev. 5.4	10/22/2020	10/26/2020 17:00	Elliott D. Healy	10/29/2020 16:18	Alexander Thompson	2204135
	10/22/2020	10/26/2020 17:00	Elliott D. Healy	10/30/2020 11:16	Alexander Thompson	2204135
EPA 300.0 Rev. 2.1	10/22/2020			10/28/2020 18:45	Lipi Saha	2204131
EPA 350.1 Rev. 2.0	10/22/2020			10/25/2020 12:42	Ping Hua	2204132
EPA 351.2 Rev. 2.0	10/22/2020	10/29/2020 13:45	David Boose	10/30/2020 12:55	Elliott Rodriguez	2204132
EPA 353.2 Rev. 2.0	10/22/2020			10/26/2020 11:47	Beverly Y. Sanders	2204132
EPA 365.1 Rev. 2.0	10/22/2020	10/29/2020 15:54	Yen Ta	11/02/2020 12:14	Benjamin T. Nordmann	2204132
EPA 365.1 Rev. 2.0 dissolved	10/22/2020			10/22/2020 15:44	Virginia P. Brown	2204133
SM 2120 B-2011	10/22/2020			10/22/2020 15:14	Benjamin T. Nordmann	2204131
SM 2320 B-2011	10/22/2020			10/24/2020 05:10	Samantha Davila	2204131
SM 2340B	10/22/2020			10/27/2020 19:18	Betina Topolski	2204135
SM 2540 C-2011	10/22/2020			10/23/2020 17:40	Madeline Gruver	2204131
SM 2540 D-2011	10/22/2020			10/27/2020 19:45	Madeline Gruver	2204131
SM 4500 F-C-2011	10/22/2020			10/24/2020 05:10	Samantha Davila	2204131
SM 5310 B-2011	10/22/2020			10/24/2020 03:34	Lauren Lees	2204132