

Chemical Analysis Report

BSSP-2018-08-22-01

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

Event Description: **Reference Lake Sampling**

Request ID: **RQ-2018-08-20-24**

Customer: **BSSP**

Project ID: **LAKESREF**

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Date Certified: 11-SEP-2018 11:28



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 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: Porter Pond

Collection Date/Time: 08/22/2018 12:07

Field ID: Porter Pond

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2019125	EPA 300.0	Bromide	0.013	U	mg Br/L	P350779	
	EPA 300.0 Rev. 2.1	Chloride	1.8		mg Cl/L	P350986	
		Sulfate	0.60	I	mg SO4/L	P350989	
		Color (true)	3.3	I	PCU	P350676	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P350902	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P350904	
2019126	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P350841	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.24		mg N/L	P350750	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P350854	
	EPA 365.1 Rev. 2.0	Total-P	0.003	I	mg P/L	P350765	
2019127	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P350695	
2019133	EPA 200.7 Rev. 4.4	Calcium	0.18	I	mg/L	P350680	
		Iron	120	I	ug/L	P350680	
		Magnesium	0.22		mg/L	P350680	
		Potassium	0.30	U	mg/L	P350680	
		Sodium	1.1	I	mg/L	P350680	
		Zinc	5.0	U	ug/L	P350680	
	EPA 200.8 Rev. 5.4	Arsenic	0.44		ug/L	P350680	
		Cadmium	0.020	U	ug/L	P350680	
		Chromium	0.40	U	ug/L	P350680	
		Copper	0.20	U	ug/L	P350680	
		Lead	0.30		ug/L	P350680	
		Nickel	0.20	U	ug/L	P350680	
		Silver	0.010	U	ug/L	P350680	

Collection Date/Time: 08/22/2018 12:25

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350680

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: P350680

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

Reference Method: EPA 300.0
Batch ID: P350779

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350986

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350989

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350841

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350750

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350752

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350854

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350765

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350695

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

Reference Method: SM 2120 B
Batch ID: P350676

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P350902

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 4500 F-C-97
Batch ID: P350904

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P351145

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350680

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	107		P	85 - 115
Iron	105		P	85 - 115
Magnesium	108		P	85 - 115
Potassium	102		P	85 - 115
Sodium	101		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350680

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	102		P	85 - 115
Cadmium	104		P	85 - 115
Chromium	98.9		P	85 - 115
Copper	97.6		P	85 - 115
Lead	102		P	85 - 115
Nickel	101		P	85 - 115
Silver	99.5		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P350779

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350986

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	105		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350989

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	104		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350841

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: P350750

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350752

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350854

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: P350765

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350695

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.7		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P350676

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.3		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P350902

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P350904

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.6		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P351145

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.5		P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019133	Calcium	108	109	P/P	80 - 120
2019133	Iron	106	107	P/P	80 - 120
2019133	Magnesium	109	110	P/P	80 - 120
2019133	Potassium	107	107	P/P	80 - 120
2019133	Sodium	102	102	P/P	80 - 120
2019133	Zinc	102	104	P/P	80 - 120
2019437	Calcium	105		P	80 - 120
2019437	Iron	104		P	80 - 120
2019437	Magnesium	103		P	80 - 120
2019437	Potassium	100		P	80 - 120
2019437	Sodium	97.9		P	80 - 120
2019437	Zinc	102		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019133	Arsenic	102	100	P/P	80 - 120
2019133	Cadmium	103	101	P/P	80 - 120
2019133	Chromium	97.3	97.7	P/P	80 - 120
2019133	Copper	98.8	96.9	P/P	80 - 120
2019133	Lead	102	99.3	P/P	80 - 120
2019133	Nickel	99.9	98.2	P/P	80 - 120
2019133	Silver	99.0	98.0	P/P	80 - 120
2019437	Arsenic	105		P	80 - 120
2019437	Cadmium	103		P	80 - 120
2019437	Chromium	98.2		P	80 - 120
2019437	Copper	97.0		P	80 - 120
2019437	Lead	103		P	80 - 120
2019437	Nickel	99.3		P	80 - 120
2019437	Silver	99.4		P	80 - 120

Reference Method: EPA 300.0
Batch ID: P350779

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019125	Bromide	97.0	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019112	Chloride	101		P	90 - 110
2019302	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350989

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019112	Sulfate	98.6		P	90 - 110
2019302	Sulfate	102		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350841

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019126	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350750

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019060	Kjeldahl Nitrogen	107	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350752

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019144	Kjeldahl Nitrogen	106	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350854

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019061	NO2NO3-N	97.0	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350765

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019113	Total-P	97.2	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350695

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019127	O-Phosphate-P	96.9	97.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P350904

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019112	Fluoride	98.4	98.4	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P351145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019575	Fluoride	104	104	P/P	91 - 105

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019133	Calcium	1.41	Spike	P	0 - 20
2019133	Iron	1.41	Spike	P	0 - 20
2019133	Magnesium	0.918	Spike	P	0 - 20
2019133	Potassium	0.732	Spike	P	0 - 20
2019133	Sodium	0.0594	Spike	P	0 - 20
2019133	Zinc	2.00	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019133	Arsenic	1.96	Spike	P	0 - 20
2019133	Cadmium	2.05	Spike	P	0 - 20
2019133	Chromium	0.403	Spike	P	0 - 20
2019133	Copper	1.97	Spike	P	0 - 20
2019133	Lead	2.82	Spike	P	0 - 20
2019133	Nickel	1.74	Spike	P	0 - 20
2019133	Silver	1.02	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P350779

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019125	Bromide	3.52	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019112	Chloride	0.922	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350989

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019112	Sulfate	0.483	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350841

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019126	Ammonia-N	1.35	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350750

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019060	Kjeldahl Nitrogen	1.87	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350752

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019144	Kjeldahl Nitrogen	1.19	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350854

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019061	NO2NO3-N	1.55	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350765

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019113	Total-P	0.295	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350695

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019127	O-Phosphate-P	0.515	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P350676

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019139	Color (true)	1.83	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P350902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019112	Total Alkalinity	0.187	Sample	P	0 - 1.6

Reference Method: SM 4500 F-C-97
Batch ID: P350904

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019112	Fluoride	0.0	Spike	P	0 - 3.5

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P351145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019575	Fluoride	0.0	Spike	P	0 - 3.5

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0

Run ID: A86045

Included Lab Sample IDs: 2019125, 2019128

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	96.9	100	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A86089

Included Lab Sample IDs: 2019125

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.5	98.5	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A86099

Included Lab Sample IDs: 2019127, 2019130

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	98.2	P/P	90 - 110
O-Phosphate-P	99.7	99.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A86111

Included Lab Sample IDs: 2019133, 2019134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	98.2	103	P/P	90 - 110
Calcium	99.1	98.2	P/P	95 - 105
Iron	99.3	99.5	P/P	95 - 105
Iron	99.5	103	P/P	90 - 110
Magnesium	98.5	102	P/P	90 - 110
Magnesium	98.5	98.5	P/P	95 - 105
Potassium	97.3	101	P/P	90 - 110
Potassium	97.7	97.3	P/P	95 - 105
Sodium	95.8	98.6	P/P	90 - 110
Sodium	96.8	95.8	P/P	95 - 105
Zinc	98.5	98.9	P/P	95 - 105
Zinc	98.9	95.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86147

Included Lab Sample IDs: 2019126, 2019129

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86149

Included Lab Sample IDs: 2019129

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A86153

Included Lab Sample IDs: 2019126, 2019129

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A86155

Included Lab Sample IDs: 2019126, 2019129

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86169

Included Lab Sample IDs: 2019126

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	97.3	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A86172

Included Lab Sample IDs: 2019125

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A86172

Included Lab Sample IDs: 2019125

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	99.5	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A86194

Included Lab Sample IDs: 2019125, 2019128

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	106	102	P/P	90 - 110
Sulfate	105	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86223

Included Lab Sample IDs: 2019133, 2019134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	95.7	95.9	P/P	90 - 110
Arsenic	96.7	95.7	P/P	90 - 110
Cadmium	95.0	94.6	P/P	90 - 110
Cadmium	95.5	95.0	P/P	90 - 110
Chromium	92.7	92.9	P/P	90 - 110
Chromium	92.9	92.6	P/P	90 - 110
Copper	93.7	93.3	P/P	90 - 110
Copper	94.2	93.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86223

Included Lab Sample IDs: 2019133, 2019134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	101	101	P/P	90 - 110
Lead	102	101	P/P	90 - 110
Nickel	93.6	94.0	P/P	90 - 110
Nickel	94.8	93.6	P/P	90 - 110
Silver	94.0	94.2	P/P	90 - 110
Silver	94.3	94.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A86303

Included Lab Sample IDs: 2019128

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.1	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 SMP	MS
			LCS				
EPA 200.7 Rev. 4.4	Calcium	107	108	109	105		1.41
	Iron	105	106	107	104		1.41
	Magnesium	108	109	110	103		0.918
	Potassium	102	107	107	100		0.732
	Sodium	101	102	102	97.9		0.0594
	Zinc	102	102	104	102		2.00
EPA 200.8 Rev. 5.4	Arsenic	102	102	100	105		1.96
	Cadmium	104	103	101	103		2.05
	Chromium	98.9	97.3	97.7	98.2		0.403
	Copper	97.6	98.8	96.9	97.0		1.97
	Lead	102	102	99.3	103		2.82
	Nickel	101	99.9	98.2	99.3		1.74
	Silver	99.5	99.0	98.0	99.4		1.02
EPA 300.0	Bromide	101	97.0	100			3.52
EPA 300.0 Rev. 2.1	Chloride	105	101	100		0.922	
	Sulfate	104	98.6	102		0.483	
EPA 350.1 Rev. 2.0	Ammonia-N	97.1	101	102			1.35
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.5	107	103			1.87
	Kjeldahl Nitrogen	105	106	108			1.19
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.0	97.0	99.0			1.55
EPA 365.1 Rev. 2.0	Total-P	96.8	97.2	97.5			0.295
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.7	96.9	97.4			0.515
SM 2120 B	Color (true)	98.3				1.83	
SM 2320 B-97	Total Alkalinity	104				0.187	
SM 4500 F-C-97	Fluoride	96.6	98.4	98.4			0.0
	Fluoride	98.5	104	104			0.0

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2019133, 2019134
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2019133, 2019134
EPA 300.0 / E31780	Bromide in aqueous matrices	2019125, 2019128
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2019125, 2019128
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2019125, 2019128
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2019126, 2019129
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2019126, 2019129
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2019126, 2019129
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2019126, 2019129
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2019127, 2019130
SM 2120 B / E31780	True Color measured at 450 nm	2019125
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2019125
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2019125, 2019128

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	08/22/2018	08/23/2018 17:30	Elliott D. Healy	08/24/2018 12:28	Betina Topolski	2019134
	08/22/2018	08/23/2018 17:30	Elliott D. Healy	08/24/2018 14:01	Betina Topolski	2019133
EPA 200.8 Rev. 5.4	08/22/2018	08/23/2018 17:30	Elliott D. Healy	08/30/2018 19:21	Allison Taylor	2019134
	08/22/2018	08/23/2018 17:30	Elliott D. Healy	08/30/2018 21:26	Allison Taylor	2019133
EPA 300.0	08/22/2018			08/23/2018 12:59	Lipi Saha	2019125
	08/22/2018			08/23/2018 13:50	Lipi Saha	2019128
EPA 300.0 Rev. 2.1	08/22/2018			08/30/2018 13:32	Lipi Saha	2019125
	08/22/2018			08/30/2018 13:44	Lipi Saha	2019128
EPA 350.1 Rev. 2.0	08/22/2018			08/27/2018 12:07	Ping Hua	2019126
	08/22/2018			08/27/2018 12:12	Ping Hua	2019129
EPA 351.2 Rev. 2.0	08/22/2018	08/27/2018 11:00	Adrian Shelby	08/28/2018 12:12	Joseph Suarez	2019129
	08/22/2018	08/27/2018 11:00	Adrian Shelby	08/29/2018 10:10	Joseph Suarez	2019126
EPA 353.2 Rev. 2.0	08/22/2018			08/28/2018 12:12	Lauren Bottorf	2019129
	08/22/2018			08/28/2018 12:19	Lauren Bottorf	2019126
EPA 365.1 Rev. 2.0	08/22/2018	08/27/2018 12:15	Sima Feizi	08/28/2018 12:20	Beverly Y. Sanders	2019129
	08/22/2018	08/27/2018 12:15	Sima Feizi	08/28/2018 12:21	Beverly Y. Sanders	2019126
EPA 365.1 Rev. 2.0 dissolved	08/22/2018			08/23/2018 13:55	Julia Storbeck	2019127
	08/22/2018			08/23/2018 14:19	Julia Storbeck	2019130
SM 2120 B	08/22/2018			08/23/2018 15:37	William L. Brown IV	2019125
SM 2320 B-97	08/22/2018			08/28/2018 19:32	Dale L. Simmons	2019125
SM 4500 F-C-97	08/22/2018			08/28/2018 19:32	Dale L. Simmons	2019125
	08/22/2018			09/05/2018 16:12	Dale L. Simmons	2019128