Chemical Analysis Report

BSSP-2017-07-25-02

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

Event Description: **Reference Lake Sampling 2 Lakes**
Request ID: **RQ-2017-07-24-22**
Customer: **BSSP**
Project ID: **LAKESREF**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400
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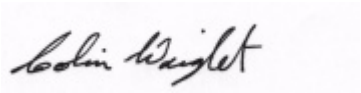
Certified by: Colin Wright, Program Administrator

Date Certified: 11-AUG-2017 12:38



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: Unnamed small Lake, Leon Co, ANF **Collection Date/Time: 07/25/2017 11:30**

Field ID: ANF Unnamed small Lake Ref Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1916184	EPA 300.0	Bromide**	0.016	U	mg Br/L	P329150	
	EPA 300.0 Rev. 2.1	Chloride	1.6		mg Cl/L	P329120	
		Sulfate	0.20	U	mg SO4/L	P329123	
	SM 2120 B	Color (true)	40	A	PCU	P329062	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P329383	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P329385	
1916185	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P329229	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P329173	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P329322	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P329225	
1916186	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P329074	
1916189	EPA 200.7 Rev. 4.4	Calcium	0.15	I	mg/L	P329076	
		Iron	95	I	ug/L	P329076	
		Magnesium	0.15	I	mg/L	P329076	
		Potassium	0.30	U	mg/L	P329076	
		Sodium	0.98	I	mg/L	P329076	
		Zinc	5.0	U	ug/L	P329076	
	EPA 200.8 Rev. 5.4	Arsenic	0.12	I	ug/L	P329076	
		Cadmium	0.020	U	ug/L	P329076	
		Chromium	0.40	U	ug/L	P329076	
		Copper	0.20	U	ug/L	P329076	
		Lead	0.28		ug/L	P329076	
		Nickel	0.20	U	ug/L	P329076	
		Silver	0.010	U	ug/L	P329076	

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P329076

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: P329076

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P329076

Component	Result	Code	Units
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: P329150

Component	Result	Code	Units
Bromide	0.016	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329120

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329123

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329229

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329173

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329322

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329225

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329074

Component	Result	Code	Units

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329074

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

Reference Method: SM 2120 B
Batch ID: P329062

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P329383

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

Reference Method: SM 4500 F-C-97
Batch ID: P329385

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: P329076

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	109		P	85 - 115
Iron	107		P	85 - 115
Magnesium	109		P	85 - 115
Potassium	101		P	85 - 115
Sodium	105		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P329076

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	103		P	85 - 115
Cadmium	105		P	85 - 115
Chromium	101		P	85 - 115
Copper	99.1		P	85 - 115
Lead	99.8		P	85 - 115
Nickel	102		P	85 - 115
Silver	101		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P329150

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Bromide	94.8		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329120

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329123

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329229

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329173

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329322

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329225

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329074

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

Reference Method: SM 2320 B-97
Batch ID: P329383

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P329385

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.4		P	92 - 103

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P329076

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915893	Iron	108		P	80 - 120
1915893	Magnesium	112		P	80 - 120
1915893	Zinc	106		P	80 - 120
1915965	Calcium	105	106	P/P	80 - 120
1915965	Iron	108	109	P/P	80 - 120
1915965	Magnesium	108	109	P/P	80 - 120
1915965	Potassium	98.9	100	P/P	80 - 120
1915965	Sodium	106	106	P/P	80 - 120
1915965	Zinc	108	108	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P329076

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915893	Arsenic	110		P	80 - 120
1915893	Cadmium	106		P	80 - 120
1915893	Chromium	93.2		P	80 - 120
1915893	Copper	98.7		P	80 - 120
1915893	Lead	103		P	80 - 120
1915893	Nickel	98.7		P	80 - 120
1915893	Silver	99.9		P	80 - 120
1915965	Arsenic	103	104	P/P	80 - 120
1915965	Cadmium	106	107	P/P	80 - 120
1915965	Chromium	98.6	99.5	P/P	80 - 120
1915965	Copper	101	102	P/P	80 - 120
1915965	Lead	99.9	99.8	P/P	80 - 120
1915965	Nickel	102	102	P/P	80 - 120
1915965	Silver	101	100	P/P	80 - 120

Reference Method: EPA 300.0
Batch ID: P329150

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915311	Bromide	101	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329120

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915912	Chloride	100		P	90 - 110
1915913	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329123

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915912	Sulfate	96.6		P	90 - 110
1915913	Sulfate	98.5		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329229

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915961	Ammonia-N	104	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329173

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916075	Kjeldahl Nitrogen	104	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329322

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916185	NO2NO3-N	106	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329225

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916196	Total-P	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329074

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916186	O-Phosphate-P	96.0	97.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P329385

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916231	Fluoride	95.2	97.2	P/P	91 - 105

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P329076

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915965	Calcium	0.680	Spike	P	0 - 20
1915965	Iron	0.667	Spike	P	0 - 20
1915965	Magnesium	0.950	Spike	P	0 - 20
1915965	Potassium	0.821	Spike	P	0 - 20
1915965	Sodium	0.0662	Spike	P	0 - 20
1915965	Zinc	0.402	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P329076

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915965	Arsenic	0.683	Spike	P	0 - 20
1915965	Cadmium	0.931	Spike	P	0 - 20
1915965	Chromium	0.834	Spike	P	0 - 20
1915965	Copper	1.12	Spike	P	0 - 20
1915965	Lead	0.107	Spike	P	0 - 20
1915965	Nickel	0.513	Spike	P	0 - 20
1915965	Silver	0.110	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P329150

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915311	Bromide	0.929	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329120

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915912	Chloride	3.44	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915912	Sulfate	16.5	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329229

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915961	Ammonia-N	0.220	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329173

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916075	Kjeldahl Nitrogen	2.16	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329322

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916185	NO2NO3-N	0.943	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329225

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916196	Total-P	0.361	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329074

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916186	O-Phosphate-P	1.45	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P329062

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916184	Color (true)	0.800	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P329383

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916231	Total Alkalinity	0.286	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P329385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916231	Fluoride	1.45	Spike	P	0 - 3.0

* 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: SM 2120 B
Run ID: A77934
Included Lab Sample IDs: 1916184

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A77937
Included Lab Sample IDs: 1916186

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	98.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A77948
Included Lab Sample IDs: 1916184

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	99.7	P/P	90 - 110
Sulfate	104	99.1	P/P	90 - 110

Reference Method: EPA 300.0
Run ID: A77965
Included Lab Sample IDs: 1916184

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A77973
Included Lab Sample IDs: 1916189

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	104	105	P/P	90 - 110
Cadmium	106	106	P/P	90 - 110
Chromium	100	101	P/P	90 - 110
Copper	103	103	P/P	90 - 110
Lead	100	100	P/P	90 - 110
Nickel	102	103	P/P	90 - 110
Silver	100	102	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A77975
Included Lab Sample IDs: 1916189

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	105	101	P/P	90 - 110
Iron	107	102	P/P	90 - 110
Magnesium	106	102	P/P	90 - 110
Potassium	103	99.9	P/P	90 - 110
Sodium	103	99.5	P/P	90 - 110
Zinc	102	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A77993
Included Lab Sample IDs: 1916185

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A78018
Included Lab Sample IDs: 1916185

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A78022
Included Lab Sample IDs: 1916185

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

Reference Method: SM 2320 B-97
Run ID: A78044
Included Lab Sample IDs: 1916184

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A78044
Included Lab Sample IDs: 1916184

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	95.2	96.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A78047
Included Lab Sample IDs: 1916185

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	98.5	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 200.7 Rev. 4.4	Calcium	109	105	106				0.680
	Iron	107	108	108	109			0.667
	Magnesium	109	112	108	109			0.950
	Potassium	101	98.9	100				0.821
	Sodium	105	106	106				0.0662
	Zinc	104	106	108	108			0.402
EPA 200.8 Rev. 5.4	Arsenic	103	110	103	104			0.683
	Cadmium	105	106	106	107			0.931
	Chromium	101	93.2	98.6	99.5			0.834
	Copper	99.1	98.7	101	102			1.12
	Lead	99.8	103	99.9	99.8			0.107
	Nickel	102	98.7	102	102			0.513
	Silver	101	99.9	101	100			0.110
EPA 300.0	Bromide	94.8	101	100				0.929
EPA 300.0 Rev. 2.1	Chloride	101	100	102			3.44	
	Sulfate	98.2	96.6	98.5			16.5	
EPA 350.1 Rev. 2.0	Ammonia-N	103	104	103				0.220
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	104	100				2.16

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 353.2 Rev. 2.0	NO2NO3-N	106	106	106			0.943
EPA 365.1 Rev. 2.0	Total-P	98.2	101	100			0.361
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	96.0	97.4			1.45
SM 2120 B	Color (true)					0.800	
SM 2320 B-97	Total Alkalinity	102				0.286	
SM 4500 F-C-97	Fluoride	94.4	95.2	97.2			1.45

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	1916189
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1916189
EPA 300.0 / E31780	Bromide in aqueous matrices	1916184
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1916184
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1916184
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1916185
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1916185
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1916185
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1916185
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1916186
SM 2120 B / E31780	True Color measured at 450 nm	1916184
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1916184
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1916184

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	07/25/2017	07/25/2017	Elliott D. Healy	07/26/2017	Betina Topolski	1916189
EPA 200.8 Rev. 5.4	07/25/2017	07/25/2017	Elliott D. Healy	07/26/2017	Nadine Brooks	1916189
EPA 300.0	07/25/2017			07/27/2017	Julia Storbeck	1916184
EPA 300.0 Rev. 2.1	07/25/2017			07/26/2017	Julia Storbeck	1916184
EPA 350.1 Rev. 2.0	07/25/2017			07/26/2017	Sofia Elnemr	1916185
EPA 351.2 Rev. 2.0	07/25/2017	07/27/2017	Adrian Shelby	07/28/2017	Tanya Welborn	1916185
EPA 353.2 Rev. 2.0	07/25/2017			07/28/2017	Beverly Y. Sanders	1916185
EPA 365.1 Rev. 2.0	07/25/2017	07/27/2017	Adrian Shelby	07/28/2017	Lipi Saha	1916185
EPA 365.1 Rev. 2.0 dissolved	07/25/2017			07/25/2017 15:16	Ping Hua	1916186
SM 2120 B	07/25/2017			07/25/2017 15:20	Tanya Welborn	1916184
SM 2320 B-97	07/25/2017			07/28/2017	Dale L. Simmons	1916184
SM 4500 F-C-97	07/25/2017			07/28/2017	Dale L. Simmons	1916184