

Chemical Analysis Report

BSSP-2016-08-25-01

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-2016-08-01-40**

Customer: **BSSP**

Project ID: **LAKESREF**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400
Attn: Nia Wellendorf, MS 6511

For additional information please contact
Timothy W. Fitzpatrick
Liang-Tsair Lin, Ph.D.
Colin Wright, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 19-SEP-2016 17:29



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: Big Blue Lake Z1-LL-10009

Collection Date/Time: 08/24/2016 11:00

Field ID: Big Blue Lake

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826916	EPA 300.0	Bromide**	0.016	U	mg Br/L	P310548	
	EPA 300.0 Rev. 2.1	Chloride	2.3		mg Cl/L	P310538	
		Sulfate	1.4		mg SO4/L	P310541	
		Color (true)	2.5	U	PCU	P310372	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P310444	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P310448	
1826918	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P310450	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.14	I	mg N/L	P310516	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P310740	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P310729	
1826920	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310353	
1826926	EPA 200.7 Rev. 4.4	Calcium	0.40		mg/L	P310571	
		Iron	30	U	ug/L	P310571	
		Magnesium	0.30		mg/L	P310571	
		Potassium	0.30	U	mg/L	P310571	
		Sodium	1.3	I	mg/L	P310571	
		Zinc	5.0	U	ug/L	P310571	
	EPA 200.8 Rev. 5.4	Arsenic	0.090	I	ug/L	P310571	
		Cadmium	0.020	U	ug/L	P310571	
		Chromium	0.062	I	ug/L	P310571	
		Copper	0.10	U	ug/L	P310571	
		Lead	0.13	I	ug/L	P310571	
		Nickel	0.050	U	ug/L	P310571	
		Silver	0.0050	U	ug/L	P310571	

Sample Location: Porter Pond Reference

Collection Date/Time: 08/24/2016 15:30

Field ID: Porter Pond

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826917	EPA 300.0	Bromide**	0.016	U	mg Br/L	P310548	
	EPA 300.0 Rev. 2.1	Chloride	1.6		mg Cl/L	P310538	
		Sulfate	0.89		mg SO4/L	P310541	
		Color (true)	4.1	I	PCU	P310372	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P310444	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P310448	
1826919	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P310450	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23		mg N/L	P310516	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P310740	
	EPA 365.1 Rev. 2.0	Total-P	0.003	I	mg P/L	P310729	
1826921	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310353	
1826927	EPA 200.7 Rev. 4.4	Calcium	0.17	I	mg/L	P310571	
		Iron	120		ug/L	P310571	
		Magnesium	0.22		mg/L	P310571	

Field ID: Porter Pond

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826927	EPA 200.7 Rev. 4.4	Potassium	0.30	U	mg/L	P310571	
		Sodium	0.99	I	mg/L	P310571	
		Zinc	5.0	U	ug/L	P310571	
	EPA 200.8 Rev. 5.4	Arsenic	0.47		ug/L	P310571	
		Cadmium	0.020	U	ug/L	P310571	
		Chromium	0.065	I	ug/L	P310571	
		Copper	0.18	I	ug/L	P310571	
		Lead	0.21		ug/L	P310571	
		Nickel	0.050	U	ug/L	P310571	
		Silver	0.0050	U	ug/L	P310571	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P310571

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: P310571

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.050	U	ug/L
Copper	0.10	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L

Reference Method: EPA 300.0
Batch ID: P310548

Component	Result	Code	Units
Bromide	0.016	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310538

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310541

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310541

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310450

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310516

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310740

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310729

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310353

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

Reference Method: SM 2120 B
Batch ID: P310372

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P310444

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

Reference Method: SM 4500 F-C-97
Batch ID: P310448

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: P310571

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	103		P	85 - 115
Magnesium	103		P	85 - 115
Potassium	102		P	85 - 115
Sodium	103		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P310571

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	102		P	85 - 115
Cadmium	99.2		P	85 - 115
Chromium	95.4		P	85 - 115
Copper	99.0		P	85 - 115
Lead	98.7		P	85 - 115
Nickel	101		P	85 - 115
Silver	100		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P310548

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310538

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310541

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310450

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310516

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310740

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310729

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: P310353

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

Reference Method: SM 2320 B-97
Batch ID: P310444

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P310448

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.9		P	92 - 103

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P310571

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826926	Calcium	103		P	80 - 120
1826926	Iron	104		P	80 - 120
1826926	Magnesium	104		P	80 - 120
1826926	Potassium	106		P	80 - 120
1826926	Sodium	102		P	80 - 120
1826926	Zinc	101		P	80 - 120
1827320	Calcium	109	106	P/P	80 - 120
1827320	Iron	107	105	P/P	80 - 120
1827320	Magnesium	109	107	P/P	80 - 120
1827320	Potassium	102	102	P/P	80 - 120
1827320	Sodium	105		P	80 - 120
1827320	Zinc	107	104	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P310571

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826926	Arsenic	100		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P310571

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826926	Cadmium	100		P	80 - 120
1826926	Chromium	96.5		P	80 - 120
1826926	Copper	99.9		P	80 - 120
1826926	Lead	101		P	80 - 120
1826926	Nickel	101		P	80 - 120
1826926	Silver	102		P	80 - 120
1827320	Arsenic	98.9	99.9	P/P	80 - 120
1827320	Cadmium	101	102	P/P	80 - 120
1827320	Chromium	95.6	98.2	P/P	80 - 120
1827320	Copper	96.7	97.0	P/P	80 - 120
1827320	Lead	102	103	P/P	80 - 120
1827320	Nickel	96.3	98.5	P/P	80 - 120
1827320	Silver	101	102	P/P	80 - 120

Reference Method: EPA 300.0
Batch ID: P310548

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826916	Bromide	108	105	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310538

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826916	Chloride	101	100	P/P	90 - 110
1826917	Chloride	99.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310541

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826916	Sulfate	101	100	P/P	90 - 110
1826917	Sulfate	99.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310450

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826918	Ammonia-N	103	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310516

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826919	Kjeldahl Nitrogen	102	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310740

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826918	NO2NO3-N	106	108	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310729

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826918	Total-P	97.8	93.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310353

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826921	O-Phosphate-P	98.1	98.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P310448

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826851	Fluoride	97.9	97.9	P/P	91 - 105

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P310571

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1827320	Calcium	2.08	Spike	P	0 - 20
1827320	Iron	1.77	Spike	P	0 - 20
1827320	Magnesium	1.67	Spike	P	0 - 20
1827320	Potassium	0.112	Spike	P	0 - 20
1827320	Sodium	1.05	Spike	P	0 - 20
1827320	Zinc	3.14	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P310571

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1827320	Arsenic	1.00	Spike	P	0 - 20
1827320	Cadmium	1.40	Spike	P	0 - 20
1827320	Chromium	2.65	Spike	P	0 - 20
1827320	Copper	0.257	Spike	P	0 - 20
1827320	Lead	0.945	Spike	P	0 - 20
1827320	Nickel	2.21	Spike	P	0 - 20
1827320	Silver	1.56	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P310548

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826916	Bromide	3.37	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310538

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826916	Chloride	1.10	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310541

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826916	Sulfate	0.856	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310450

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826918	Ammonia-N	0.858	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310516

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826919	Kjeldahl Nitrogen	1.59	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310740

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826918	NO2NO3-N	1.88	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310729

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826918	Total-P	4.12	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310353

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826921	O-Phosphate-P	0.711	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P310372

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826932	Color (true)	0.748	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P310444

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826851	Total Alkalinity	0.354	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P310448

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826851	Fluoride	0.0	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: EPA 365.1 Rev. 2.0 dissolved
Run ID: A71326
Included Lab Sample IDs: 1826920, 1826921

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.4	98.0	P/P	90 - 110
O-Phosphate-P	98.6	98.6	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A71333
Included Lab Sample IDs: 1826916, 1826917

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	95.8	96.4	P/P	85 - 115

Reference Method: EPA 300.0
Run ID: A71337
Included Lab Sample IDs: 1826916, 1826917

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	95.2	99.7	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A71337
Included Lab Sample IDs: 1826916, 1826917

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.8	100	P/P	90 - 110
Sulfate	99.5	99.6	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A71361
Included Lab Sample IDs: 1826916, 1826917

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A71361

Included Lab Sample IDs: 1826916, 1826917

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	105	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A71361

Included Lab Sample IDs: 1826916, 1826917

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A71364

Included Lab Sample IDs: 1826918, 1826919

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A71419

Included Lab Sample IDs: 1826918, 1826919

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	109	P/P	90 - 110
Kjeldahl Nitrogen	108	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71461

Included Lab Sample IDs: 1826918, 1826919

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A71474

Included Lab Sample IDs: 1826926, 1826927

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	102	P/P	90 - 110
Calcium	104	103	P/P	90 - 110
Iron	101	101	P/P	90 - 110
Iron	101	101	P/P	90 - 110
Magnesium	101	101	P/P	90 - 110
Magnesium	101	102	P/P	90 - 110
Potassium	102	102	P/P	90 - 110
Potassium	102	102	P/P	90 - 110
Sodium	101	100	P/P	90 - 110
Sodium	99.9	101	P/P	90 - 110
Zinc	100	102	P/P	90 - 110
Zinc	105	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A71489
Included Lab Sample IDs: 1826918, 1826919

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.0	98.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A71501
Included Lab Sample IDs: 1826926, 1826927

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	103	98.7	P/P	90 - 110
Cadmium	98.3	98.9	P/P	90 - 110
Chromium	97.3	95.3	P/P	90 - 110
Copper	102	97.5	P/P	90 - 110
Lead	98.7	97.4	P/P	90 - 110
Nickel	103	98.6	P/P	90 - 110
Silver	101	100	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	LCS	Precision SMP	MS
EPA 200.7 Rev. 4.4	Calcium	103	103	109	106	2.08
	Iron	103	104	107	105	1.77
	Magnesium	103	104	109	107	1.67
	Potassium	102	106	102	102	0.112
	Sodium	103	102	105		1.05
	Zinc	104	101	107	104	3.14
EPA 200.8 Rev. 5.4	Arsenic	102	100	98.9	99.9	1.00
	Cadmium	99.2	100	101	102	1.40
	Chromium	95.4	96.5	95.6	98.2	2.65
	Copper	99.0	99.9	96.7	97.0	0.257
	Lead	98.7	101	102	103	0.945
	Nickel	101	101	96.3	98.5	2.21
	Silver	100	102	101	102	1.56
EPA 300.0	Bromide	103	108	105		3.37
EPA 300.0 Rev. 2.1	Chloride	99.8	101	100	99.6	1.10
	Sulfate	98.6	101	100	99.8	0.856
EPA 350.1 Rev. 2.0	Ammonia-N	102	103	102		0.858
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	102	104		1.59
EPA 353.2 Rev. 2.0	NO2NO3-N	104	106	108		1.88
EPA 365.1 Rev. 2.0	Total-P	102	97.8	93.8		4.12
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.1	98.8		0.711
SM 2120 B	Color (true)				0.748	
SM 2320 B-97	Total Alkalinity	103			0.354	
SM 4500 F-C-97	Fluoride	99.9	97.9	97.9		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	1826926, 1826927
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1826926, 1826927
EPA 300.0 / E31780	Bromide in aqueous matrices	1826916, 1826917
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1826916, 1826917
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1826916, 1826917
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1826918, 1826919
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1826918, 1826919
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1826918, 1826919
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1826918, 1826919
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1826920, 1826921
SM 2120 B / E31780	True Color measured at 450 nm	1826916, 1826917
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1826916, 1826917
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1826916, 1826917

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	08/25/2016	08/30/2016	Elliott D. Healy	09/07/2016	Joshua Ayres	1826926, 1826927
EPA 200.8 Rev. 5.4	08/25/2016	08/30/2016	Elliott D. Healy	09/08/2016	Charles J. Peterson	1826926, 1826927
EPA 300.0	08/25/2016			08/26/2016	Ping Hua	1826916, 1826917
EPA 300.0 Rev. 2.1	08/25/2016			08/26/2016	Ping Hua	1826916, 1826917
EPA 350.1 Rev. 2.0	08/25/2016			08/26/2016	Julie Michelle Frank	1826918, 1826919
EPA 351.2 Rev. 2.0	08/25/2016	08/30/2016	Adrian Shelby	08/31/2016	Christopher Armour	1826918, 1826919
EPA 353.2 Rev. 2.0	08/25/2016			09/07/2016	Beverly Y. Sanders	1826918, 1826919
EPA 365.1 Rev. 2.0	08/25/2016	09/07/2016	Vijayalakshmi Reddy	09/08/2016	Lipi Saha	1826918, 1826919
EPA 365.1 Rev. 2.0 dissolved	08/25/2016			08/25/2016 15:38	Julia Storbeck	1826921
SM 2120 B	08/25/2016			08/25/2016 16:15	Julia Storbeck	1826920
	08/25/2016			08/25/2016 15:26	Blanca Fach	1826916
	08/25/2016			08/25/2016 15:27	Blanca Fach	1826917
SM 2320 B-97	08/25/2016			08/27/2016	Dale L. Simmons	1826916, 1826917
SM 4500 F-C-97	08/25/2016			08/27/2016	Dale L. Simmons	1826916, 1826917