

Chemical Analysis Report

SW-DIST-2020-03-03-01

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

Event Description: **Run 13**
Request ID: **RQ-2020-03-02-54**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Ben Paswater

For additional information please contact
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 24-MAR-2020 13:52



NON-CONFORMANCE REPORT INCLUDED

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 Ida @ Center

Collection Date/Time: 03/02/2020 12:15

Field ID: G3SW0043

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2161279	EPA 180.1 Rev. 2.0	Turbidity	6.2		NTU	P380035	
	EPA 300.0 Rev. 2.1	Chloride	36	A	mg Cl/L	P380248	
	SM 2120 B-2011	Color (true)	33		PCU	P380001	
	SM 2320 B-2011	Total Alkalinity	78		mg CaCO3/L	P380590	
	SM 2540 C-2011	TDS	160		mg/L	P380541	
	SM 2540 D-2011	TSS	6	I	mg/L	P380422	
	SM 4500 F-C-2011	Fluoride	0.14		mg F/L	P380273	
2161282	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P380070	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.85		mg N/L	P380011	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P380234	
	EPA 365.1 Rev. 2.0	Total-P	0.052		mg P/L	P380139	
	SM 5310 B-2011	Organic Carbon	8.4		mg C/L	P380277	
2161285	EPA 300.0 Rev. 2.1 dissolved	Sulfate	18		mg SO4/L	P380249	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P379982	
2161299	EPA 200.7 Rev. 4.4	Barium	19.3		ug/L	P379953	
		Calcium	29.2		mg/L	P379953	
		Iron	30	U	ug/L	P379953	
		Magnesium	3.76		mg/L	P379953	
		Potassium	6.7		mg/L	P379953	
		Sodium	28.4		mg/L	P379953	
		Zinc	5.0	U	ug/L	P379953	
	EPA 200.8 Rev. 5.4	Aluminum	5.7	I	ug/L	P379953	
		Antimony	0.12	I	ug/L	P379953	
		Arsenic	0.93		ug/L	P379953	
		Boron**	56.1		ug/L	P379953	
		Cadmium	0.020	U	ug/L	P379953	
		Chromium	0.40	U	ug/L	P379953	
		Copper	0.95		ug/L	P379953	
		Lead	0.20	U	ug/L	P379953	
		Nickel	0.50	U	ug/L	P379953	
		Selenium	0.20	U	ug/L	P379953	
		Silver	0.010	U	ug/L	P379953	
		Thallium	0.10	U	ug/L	P379953	
	SM 2340B	Hardness	88.4		mg/L	P379953	

Ref. Method and Comment:

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

EPA 300.0 Rev. 2.1 dissolved: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Ida @ Center

Collection Date/Time: 03/02/2020 12:20

Field ID: G3SW0043_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2161280	EPA 180.1 Rev. 2.0	Turbidity	5.7		NTU	P380035	
	EPA 300.0 Rev. 2.1	Chloride	36		mg Cl/L	P380248	
	SM 2120 B-2011	Color (true)	34		PCU	P380001	
	SM 2320 B-2011	Total Alkalinity	78		mg CaCO3/L	P380590	
	SM 2540 C-2011	TDS	163		mg/L	P380541	
	SM 2540 D-2011	TSS	6	I	mg/L	P380422	
	SM 4500 F-C-2011	Fluoride	0.13		mg F/L	P380273	
2161283	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I Y	mg N/L	P380070	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen		O	mg N/L	P380011	
	EPA 353.2 Rev. 2.0	NO2NO3-N		O	mg N/L	P380234	
	EPA 365.1 Rev. 2.0	Total-P	0.052	Y	mg P/L	P380139	
	SM 5310 B-2011	Organic Carbon	8.3	Y	mg C/L	P380277	
2161286	EPA 300.0 Rev. 2.1 dissolved	Sulfate	18		mg SO4/L	P380249	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P379982	
2161300	EPA 200.7 Rev. 4.4	Barium	19.5		ug/L	P379953	
		Calcium	29.1		mg/L	P379953	
		Iron	30	U	ug/L	P379953	
		Magnesium	3.80		mg/L	P379953	
		Potassium	7.0		mg/L	P379953	
		Sodium	30.3		mg/L	P379953	
		Zinc	5.0	U	ug/L	P379953	
		Aluminum	5.7	I	ug/L	P379953	
		Antimony	0.12	I	ug/L	P379953	
		Arsenic	0.98		ug/L	P379953	
	EPA 200.8 Rev. 5.4	Boron**	55.3		ug/L	P379953	
		Cadmium	0.020	U	ug/L	P379953	
		Chromium	0.40	U	ug/L	P379953	
		Copper	0.91		ug/L	P379953	
		Lead	0.20	U	ug/L	P379953	
		Nickel	0.50	U	ug/L	P379953	
		Selenium	0.20	U	ug/L	P379953	
		Silver	0.010	U	ug/L	P379953	
		Thallium	0.10	U	ug/L	P379953	
		Hardness	88.4		mg/L	P379953	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Sample appears to have been preserved with nitric acid.

EPA 351.2 Rev. 2.0: Sample appears to have been preserved with nitric acid.

EPA 353.2 Rev. 2.0: Sample appears to have been preserved with nitric acid.

EPA 365.1 Rev. 2.0: Total-P: Sample appears to have been preserved with nitric acid.

SM 5310 B-2011: Sample appears to have been preserved with nitric acid.

EPA 300.0 Rev. 2.1 dissolved: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

Sample Location: Field_Blank

Collection Date/Time: 03/02/2020 08:10

Field ID: FB 03022020

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2161281	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P380035	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P380248	
	SM 2120 B-2011	Color (true)	2.5	U	PCU	P380001	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P380590	
	SM 2540 C-2011	TDS	15	U	mg/L	P380540	
	SM 2540 D-2011	TSS	2	U	mg/L	P380421	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P380273	
2161284	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P380070	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P380088	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P380284	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P380895	
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P380171	
2161287	EPA 300.0 Rev. 2.1 dissolved	Sulfate	0.20	U	mg SO4/L	P380249	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P379982	
2161301	EPA 200.7 Rev. 4.4	Barium	1.0	U	ug/L	P379953	
		Calcium	0.075	U	mg/L	P379953	
		Iron	30	U	ug/L	P379953	
		Magnesium	0.040	U	mg/L	P379953	
		Potassium	0.30	U	mg/L	P379953	
		Sodium	0.50	U	mg/L	P379953	
		Zinc	5.0	U	ug/L	P379953	
	EPA 200.8 Rev. 5.4	Aluminum	5.0	U	ug/L	P379953	
		Antimony	0.050	U	ug/L	P379953	
		Arsenic	0.050	U	ug/L	P379953	
		Boron**	2.0	U	ug/L	P379953	
		Cadmium	0.020	U	ug/L	P379953	
		Chromium	0.40	U	ug/L	P379953	
		Copper	0.40	U	ug/L	P379953	
		Lead	0.20	U	ug/L	P379953	
		Nickel	0.50	U	ug/L	P379953	
		Selenium	0.20	U	ug/L	P379953	
		Silver	0.010	U	ug/L	P379953	
		Thallium	0.10	U	ug/L	P379953	
		Hardness	0.35	U	mg/L	P379953	

Ref. Method and Comment:

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

EPA 300.0 Rev. 2.1 dissolved: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Beulah SW

Collection Date/Time: 03/02/2020 11:15

Field ID: G2SW0053

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2161288	EPA 180.1 Rev. 2.0	Turbidity	5.8	A	NTU	P380035	
	EPA 300.0 Rev. 2.1	Chloride	4.2		mg Cl/L	P380248	
	SM 2120 B-2011	Color (true)	12		PCU	P380001	
	SM 2320 B-2011	Total Alkalinity	59		mg CaCO3/L	P380270	
	SM 2540 C-2011	TDS	76		mg/L	P380541	
	SM 2540 D-2011	TSS	8	I	mg/L	P380422	
	SM 4500 F-C-2011	Fluoride	0.25		mg F/L	P380274	
2161290	EPA 350.1 Rev. 2.0	Ammonia-N	0.36		mg N/L	P380070	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P380011	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.027		mg N/L	P380235	
	EPA 365.1 Rev. 2.0	Total-P	0.057		mg P/L	P380226	
	SM 5310 B-2011	Organic Carbon	7.2		mg C/L	P380277	
2161292	EPA 300.0 Rev. 2.1 dissolved	Sulfate	2.3		mg SO4/L	P380249	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P379982	

Ref. Method and Comment:

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

EPA 300.0 Rev. 2.1 dissolved: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Van @ Center

Collection Date/Time: 03/02/2020 10:20

Field ID: G4SW0106

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2161289	EPA 180.1 Rev. 2.0	Turbidity	7.0		NTU	P380035	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P380248	
	SM 2120 B-2011	Color (true)	110		PCU	P380001	
	SM 2320 B-2011	Total Alkalinity	13		mg CaCO3/L	P380270	
	SM 2540 C-2011	TDS	92		mg/L	P380541	
	SM 2540 D-2011	TSS	6	I	mg/L	P380422	
	SM 4500 F-C-2011	Fluoride	0.28		mg F/L	P380274	
2161291	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P380070	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.84		mg N/L	P380011	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P380235	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P380226	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P380277	
2161293	EPA 300.0 Rev. 2.1 dissolved	Sulfate	21		mg SO4/L	P380249	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.054		mg P/L	P379982	

Ref. Method and Comment:

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

EPA 300.0 Rev. 2.1 dissolved: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

Non-Conformance Report

NCR ID: 8227

Event(s)

SW-DIST-2020-03-03-01

Job(s)

TLH-2020-03-03-07

Sample(s)

2161283

Test(s)

NCR Type: SAMPLING

NCR Category: General

Observation: Sample appears to be preserved with nitric acid. It has a nitrite/nitrate concentration of 470 mg N/L and there is approximately 0.05 mg N/L in the unpreserved aliquot (Sample ID 2161280).

Resolution: Results for the NO₂NO₃-N and Kjeldahl Nitrogen components were reported as the non numeric qualifier O. Results for the other affected components were qualified with a Y qualifier for incorrect preservation.

Authorized by/Date: Irina Carbone 3/20/2020

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P380035

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P379953

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: P379953

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	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: P380248

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P380249

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P380070

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: P380011

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P380088

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380234

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380235

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380284

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380139

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380226

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380895

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P379982

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2120 B-2011
Batch ID: P380001

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P380270

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

Reference Method: SM 2320 B-2011
Batch ID: P380590

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

Reference Method: SM 2540 C-2011
Batch ID: P380540

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2011
Batch ID: P380541

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P380421

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P380422

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P380273

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P380274

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: P380171

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Reference Method: SM 5310 B-2011
Batch ID: P380277

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: P379953

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	99.2		P	85 - 115
Calcium	101		P	85 - 115
Iron	99.0		P	85 - 115
Magnesium	105		P	85 - 115
Potassium	100		P	85 - 115
Sodium	104		P	85 - 115
Zinc	100		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P379953

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	101		P	85 - 115
Antimony	96.7		P	85 - 115
Arsenic	98.8		P	85 - 115
Boron	99.7		P	85 - 115
Cadmium	99.5		P	85 - 115
Chromium	103		P	85 - 115
Copper	102		P	85 - 115
Lead	98.5		P	85 - 115
Nickel	100		P	85 - 115
Selenium	98.6		P	85 - 115
Silver	102		P	85 - 115
Thallium	101		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380248

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P380249

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P380070

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P380011

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P380088

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380234

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380235

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	96.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380284

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: P380139

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380226

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380895

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P379982

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

Reference Method: SM 2120 B-2011
Batch ID: P380001

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.0		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-2011
Batch ID: P380270

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.1		P	98 - 106

Reference Method: SM 2320 B-2011
Batch ID: P380590

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P380273

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	92 - 103

Reference Method: SM 4500 F-C-2011
Batch ID: P380274

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.8		P	92 - 103

Reference Method: SM 5310 B-2011
Batch ID: P380171

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

Reference Method: SM 5310 B-2011
Batch ID: P380277

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P379953

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2160544	Barium	97.0		P	80 - 120
2160544	Calcium	97.6		P	80 - 120
2160544	Iron	100		P	80 - 120
2160544	Magnesium	101		P	80 - 120
2160544	Potassium	94.7		P	80 - 120
2160544	Sodium	103		P	80 - 120
2160544	Zinc	100		P	80 - 120
2160921	Barium	98.6	98.8	P/P	80 - 120
2160921	Calcium	101		P	80 - 120
2160921	Iron	102	102	P/P	80 - 120
2160921	Magnesium	105		P	80 - 120
2160921	Potassium	110	111	P/P	80 - 120
2160921	Sodium	107		P	80 - 120
2160921	Zinc	100	101	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P379953

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2160544	Aluminum	95.7		P	80 - 120
2160544	Antimony	98.8		P	80 - 120
2160544	Arsenic	102		P	80 - 120
2160544	Boron	98.8		P	80 - 120
2160544	Cadmium	104		P	80 - 120
2160544	Chromium	107		P	80 - 120
2160544	Copper	100		P	80 - 120
2160544	Lead	99.5		P	80 - 120
2160544	Nickel	99.5		P	80 - 120
2160544	Selenium	99.9		P	80 - 120
2160544	Silver	101		P	80 - 120
2160544	Thallium	104		P	80 - 120
2160921	Aluminum	95.9	100	P/P	80 - 120
2160921	Antimony	96.0	99.0	P/P	80 - 120
2160921	Arsenic	103	101	P/P	80 - 120
2160921	Boron	95.9	96.7	P/P	80 - 120
2160921	Cadmium	100	103	P/P	80 - 120
2160921	Chromium	103	104	P/P	80 - 120
2160921	Copper	98.3	101	P/P	80 - 120
2160921	Lead	95.3	99.0	P/P	80 - 120
2160921	Nickel	96.5	99.6	P/P	80 - 120
2160921	Selenium	101	98.7	P/P	80 - 120
2160921	Silver	102	102	P/P	80 - 120
2160921	Thallium	101	106	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380248

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2161279	Chloride	93.8		P	90 - 110
2161386	Chloride	98.6		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P380249

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2161279	Sulfate	94.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P380070

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2161240	Ammonia-N	100	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P380011

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2161245	Kjeldahl Nitrogen	101	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P380088

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2161387	Kjeldahl Nitrogen	102	97.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380234

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2161143	NO2NO3-N	96.0	96.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380235

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2161387	NO2NO3-N	95.5	95.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380284

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2161771	NO2NO3-N	96.9	96.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380139

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2161143	Total-P	106	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380226

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2161290	Total-P	103	105	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380895

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2164177	Total-P	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P379982

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2161292	O-Phosphate-P	98.9	100	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P380273

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2161279	Fluoride	103	105	P/P	89 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P380274

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2161886	Fluoride	103	105	P/P	89 - 106

Reference Method: SM 5310 B-2011
Batch ID: P380171

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2162014	Organic Carbon	97.8	98.1	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P380277

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2162221	Organic Carbon	94.5	95.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P380035

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161288	Turbidity	15.7	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P379953

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2160921	Barium	0.232	Spike	P	0 - 20
2160921	Calcium	0.000615	Spike	P	0 - 20
2160921	Iron	0.371	Spike	P	0 - 20
2160921	Magnesium	1.08	Spike	P	0 - 20
2160921	Potassium	1.00	Spike	P	0 - 20
2160921	Sodium	0.0555	Spike	P	0 - 20
2160921	Zinc	0.847	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P379953

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2160921	Aluminum	4.16	Spike	P	0 - 20
2160921	Antimony	3.05	Spike	P	0 - 20
2160921	Arsenic	1.29	Spike	P	0 - 20
2160921	Boron	0.683	Spike	P	0 - 20
2160921	Cadmium	2.85	Spike	P	0 - 20
2160921	Chromium	1.17	Spike	P	0 - 20
2160921	Copper	2.59	Spike	P	0 - 20
2160921	Lead	3.82	Spike	P	0 - 20
2160921	Nickel	3.22	Spike	P	0 - 20
2160921	Selenium	1.80	Spike	P	0 - 20
2160921	Silver	0.159	Spike	P	0 - 20
2160921	Thallium	5.28	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380248

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161279	Chloride	1.18	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P380249

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161279	Sulfate	1.11	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P380070

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161240	Ammonia-N	0.0500	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P380011

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161245	Kjeldahl Nitrogen	2.34	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P380088

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161387	Kjeldahl Nitrogen	2.26	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380234

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161143	NO2NO3-N	0.273	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380235

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161387	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380284

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161771	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380139

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161143	Total-P	1.04	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380226

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161290	Total-P	1.59	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380895

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2164177	Total-P	0.373	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P379982

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161292	O-Phosphate-P	1.60	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P380001

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161386	Color (true)	0.766	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P380270

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161886	Total Alkalinity	0.852	Sample	P	0 - 2.8

Reference Method: SM 2320 B-2011
Batch ID: P380590

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2162559	Total Alkalinity	0.0108	Sample	P	0 - 2.8

Reference Method: SM 2540 C-2011
Batch ID: P380540

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161239	TDS	4.20	Sample	P	0 - 10

Reference Method: SM 2540 C-2011
Batch ID: P380541

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161244	TDS	1.05	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P380273

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161279	Fluoride	0.960	Spike	P	0 - 2.5

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P380274

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161886	Fluoride	1.42	Spike	P	0 - 2.5

Reference Method: SM 5310 B-2011
Batch ID: P380171

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2162014	Organic Carbon	0.312	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P380277

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2162221	Organic Carbon	0.484	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A97966

Included Lab Sample IDs: 2161285, 2161286, 2161287, 2161292, 2161293

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	98.3	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A97971

Included Lab Sample IDs: 2161279, 2161280, 2161281, 2161288, 2161289

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.7	99.3	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A97987

Included Lab Sample IDs: 2161279, 2161280, 2161281, 2161288, 2161289

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	100	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A97999

Included Lab Sample IDs: 2161282, 2161283, 2161284, 2161290, 2161291

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	101	P/P	90 - 110
Ammonia-N	101	100	P/P	90 - 110
Ammonia-N	102	99.7	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A98001

Included Lab Sample IDs: 2161279, 2161280, 2161281, 2161288, 2161289

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.5	98.8	P/P	90 - 110
Chloride	98.8	98.5	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1 dissolved

Run ID: A98001

Included Lab Sample IDs: 2161285, 2161286, 2161287, 2161292, 2161293

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	99.1	98.7	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A98009

Included Lab Sample IDs: 2161299, 2161300, 2161301

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	101	P/P	90 - 110
Barium	101	101	P/P	90 - 110
Barium	101	102	P/P	90 - 110
Calcium	96.8	96.8	P/P	90 - 110
Calcium	96.8	96.2	P/P	90 - 110
Calcium	96.9	96.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A98009

Included Lab Sample IDs: 2161299, 2161300, 2161301

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	100	99.0	P/P	90 - 110
Iron	98.1	99.2	P/P	90 - 110
Iron	98.8	98.1	P/P	90 - 110
Magnesium	101	99.4	P/P	90 - 110
Magnesium	98.5	99.8	P/P	90 - 110
Magnesium	99.0	98.5	P/P	90 - 110
Potassium	96.7	97.3	P/P	90 - 110
Potassium	98.0	98.2	P/P	90 - 110
Potassium	98.2	97.9	P/P	90 - 110
Sodium	101	102	P/P	90 - 110
Sodium	102	101	P/P	90 - 110
Sodium	99.6	100	P/P	90 - 110
Zinc	100	101	P/P	90 - 110
Zinc	99.5	99.8	P/P	90 - 110
Zinc	99.6	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A98029

Included Lab Sample IDs: 2161299, 2161300, 2161301

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	102	P/P	90 - 110
Aluminum	106	102	P/P	90 - 110
Antimony	96.0	97.1	P/P	90 - 110
Antimony	96.4	96.9	P/P	90 - 110
Arsenic	100	101	P/P	90 - 110
Arsenic	99.3	102	P/P	90 - 110
Boron	102	98.7	P/P	90 - 110
Boron	99.8	100	P/P	90 - 110
Cadmium	101	101	P/P	90 - 110
Cadmium	99.5	99.6	P/P	90 - 110
Chromium	101	103	P/P	90 - 110
Chromium	104	101	P/P	90 - 110
Copper	101	101	P/P	90 - 110
Copper	107	102	P/P	90 - 110
Lead	101	102	P/P	90 - 110
Lead	100	100	P/P	90 - 110
Nickel	101	101	P/P	90 - 110
Nickel	107	104	P/P	90 - 110
Selenium	100	101	P/P	90 - 110
Selenium	103	102	P/P	90 - 110
Silver	97.2	99.6	P/P	90 - 110
Silver	98.1	98.1	P/P	90 - 110
Thallium	95.0	97.5	P/P	90 - 110
Thallium	98.2	98.1	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A98030

Included Lab Sample IDs: 2161284

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

Reference Method: SM 5310 B-2011

Run ID: A98030

Included Lab Sample IDs: 2161284

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.4	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A98032

Included Lab Sample IDs: 2161282, 2161283, 2161290, 2161291

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.0	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A98035

Included Lab Sample IDs: 2161282, 2161283, 2161290, 2161291

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110
NO2NO3-N	100	100	P/P	90 - 110
NO2NO3-N	101	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A98055

Included Lab Sample IDs: 2161284

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.8	102	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A98057

Included Lab Sample IDs: 2161282, 2161283, 2161290, 2161291

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.8	97.8	P/P	90 - 110
Organic Carbon	95.9	96.8	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A98059

Included Lab Sample IDs: 2161288, 2161289

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.7	98.8	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A98059

Included Lab Sample IDs: 2161279, 2161280, 2161281, 2161288, 2161289

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	103	P/P	90 - 110
Fluoride	102	104	P/P	90 - 110
Fluoride	104	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A98061

Included Lab Sample IDs: 2161284

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A98070

Included Lab Sample IDs: 2161282

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A98071

Included Lab Sample IDs: 2161283

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A98124

Included Lab Sample IDs: 2161290, 2161291

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.3	98.8	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A98174

Included Lab Sample IDs: 2161279, 2161280, 2161281

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.7	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A98327

Included Lab Sample IDs: 2161284

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	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 180.1 Rev. 2.0	Turbidity						15.7	
EPA 200.7 Rev. 4.4	Barium	99.2	97.0	98.6	98.8			0.232
	Calcium	101	97.6	101				0.0006
	Iron	99.0	100	102	102			0.371
	Magnesium	105	101	105				1.08
	Potassium	100	94.7	110	111			1.00
	Sodium	104	103	107				0.0555
	Zinc	100	100	100	101			0.847
EPA 200.8 Rev. 5.4	Aluminum	101	95.7	95.9	100			4.16
	Antimony	96.7	98.8	96.0	99.0			3.05
	Arsenic	98.8	102	103	101			1.29
	Boron	99.7	98.8	95.9	96.7			0.683
	Cadmium	99.5	104	100	103			2.85
	Chromium	103	107	103	104			1.17
	Copper	102	100	98.3	101			2.59
	Lead	98.5	99.5	95.3	99.0			3.82
	Nickel	100	99.5	96.5	99.6			3.22
	Selenium	98.6	99.9	101	98.7			1.80
	Silver	102	101	102	102			0.159
	Thallium	101	104	101	106			5.28
EPA 300.0 Rev. 2.1	Chloride	99.2	93.8	98.6			1.18	
EPA 300.0 Rev. 2.1 dissolved	Sulfate	98.9	94.4				1.11	
EPA 350.1 Rev. 2.0	Ammonia-N	101	100	100				0.0500
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	101	105				2.34
	Kjeldahl Nitrogen	103	102	97.5				2.26
EPA 353.2 Rev. 2.0	NO2NO3-N	98.0	96.0	96.5				0.273
	NO2NO3-N	96.5	95.5	95.5				0.0
	NO2NO3-N	99.5	96.9	96.9				0.0
EPA 365.1 Rev. 2.0	Total-P	104	106	107				1.04
	Total-P	104	103	105				1.59
	Total-P	106	103	103				0.373
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.1	98.9	100				1.60
SM 2120 B-2011	Color (true)	99.0					0.766	
SM 2320 B-2011	Total Alkalinity	99.1					0.852	
	Total Alkalinity	102					0.0108	
SM 2540 C-2011	TDS						4.20	
	TDS						1.05	
SM 4500 F-C-2011	Fluoride	101	103	105				0.960
	Fluoride	98.8	103	105				1.42
SM 5310 B-2011	Organic Carbon	101	97.8	98.1				0.312
	Organic Carbon	99.0	94.5	95.0				0.484

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2161279, 2161280, 2161281, 2161288, 2161289
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2161299, 2161300, 2161301
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2161299, 2161300, 2161301
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2161279, 2161280, 2161281, 2161288, 2161289

Reference Method Descriptions

Method	Description	Associated Samples
EPA 300.0 Rev. 2.1 dissolved	Sulfate, dissolved, in filtered, aqueous matrices	2161285, 2161286, 2161287, 2161292, 2161293
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2161282, 2161283, 2161284, 2161290, 2161291
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2161282, 2161283, 2161284, 2161290, 2161291
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2161282, 2161283, 2161284, 2161290, 2161291
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2161282, 2161283, 2161284, 2161290, 2161291
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2161285, 2161286, 2161287, 2161292, 2161293
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2161279, 2161280, 2161281, 2161288, 2161289
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2161279, 2161280, 2161281, 2161288, 2161289
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2161299, 2161300, 2161301
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2161279, 2161280, 2161281, 2161288, 2161289
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2161279, 2161280, 2161281, 2161288, 2161289
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2161279, 2161280, 2161281, 2161288, 2161289
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2161282, 2161283, 2161284, 2161290, 2161291

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	03/03/2020			03/03/2020 17:21	Yen Ta	2161279, 2161280, 2161281, 2161288, 2161289
EPA 200.7 Rev. 4.4	03/03/2020	03/03/2020 15:15	Elliott D. Healy	03/04/2020 15:02	Betina Topolski	2161301
	03/03/2020	03/03/2020 15:15	Elliott D. Healy	03/04/2020 18:29	Betina Topolski	2161299
	03/03/2020	03/03/2020 15:15	Elliott D. Healy	03/04/2020 19:00	Betina Topolski	2161300
EPA 200.8 Rev. 5.4	03/03/2020	03/03/2020 15:15	Elliott D. Healy	03/05/2020 14:41	Alexander Thompson	2161301
	03/03/2020	03/03/2020 15:15	Elliott D. Healy	03/05/2020 17:36	Alexander Thompson	2161299
	03/03/2020	03/03/2020 15:15	Elliott D. Healy	03/05/2020 17:43	Alexander Thompson	2161300
EPA 300.0 Rev. 2.1	03/03/2020			03/06/2020 14:44	Lipi Saha	2161279
	03/03/2020			03/06/2020 15:57	Lipi Saha	2161280
	03/03/2020			03/06/2020 16:09	Lipi Saha	2161281
	03/03/2020			03/06/2020 16:45	Lipi Saha	2161288
	03/03/2020			03/06/2020 16:57	Lipi Saha	2161289
EPA 300.0 Rev. 2.1 dissolved	03/03/2020			03/06/2020 17:33	Lipi Saha	2161285
	03/03/2020			03/06/2020 17:45	Lipi Saha	2161286
	03/03/2020			03/06/2020 17:57	Lipi Saha	2161287
	03/03/2020			03/06/2020 18:09	Lipi Saha	2161292
	03/03/2020			03/06/2020 18:22	Lipi Saha	2161293
EPA 350.1 Rev. 2.0	03/03/2020			03/04/2020 13:27	Ping Hua	2161282
	03/03/2020			03/04/2020 13:29	Ping Hua	2161283
	03/03/2020			03/04/2020 13:39	Ping Hua	2161284
	03/03/2020			03/04/2020 14:48	Ping Hua	2161290
	03/03/2020			03/04/2020 14:50	Ping Hua	2161291
EPA 351.2 Rev. 2.0	03/03/2020	03/04/2020 11:35	Sima Feizi	03/06/2020 08:41	Jhamieka S. Greenwood	2161282
	03/03/2020	03/04/2020 11:35	Sima Feizi	03/06/2020 08:42	Jhamieka S. Greenwood	2161283
	03/03/2020	03/04/2020 11:35	Sima Feizi	03/06/2020 08:44	Jhamieka S. Greenwood	2161290
	03/03/2020	03/04/2020 11:35	Sima Feizi	03/06/2020 08:46	Jhamieka S. Greenwood	2161291
	03/03/2020	03/05/2020 12:27	Sima Feizi	03/06/2020 20:05	Julia Storbeck	2161284
EPA 353.2 Rev. 2.0	03/03/2020			03/06/2020 10:18	Beverly Y. Sanders	2161290
	03/03/2020			03/06/2020 10:19	Beverly Y. Sanders	2161291
	03/03/2020			03/06/2020 12:15	Beverly Y. Sanders	2161282
	03/03/2020			03/06/2020 12:33	Beverly Y. Sanders	2161283
	03/03/2020			03/09/2020 09:46	Beverly Y. Sanders	2161284
EPA 365.1 Rev. 2.0	03/03/2020	03/05/2020 13:48	Yen Ta	03/06/2020 15:25	Benjamin T. Nordmann	2161282
	03/03/2020	03/05/2020 13:48	Yen Ta	03/09/2020 13:36	Benjamin T. Nordmann	2161283
	03/03/2020	03/06/2020 13:21	Yen Ta	03/10/2020 11:24	Benjamin T. Nordmann	2161290
	03/03/2020	03/06/2020 13:21	Yen Ta	03/10/2020 11:27	Benjamin T. Nordmann	2161291
	03/03/2020	03/18/2020 13:30	Yen Ta	03/20/2020 10:03	Benjamin T. Nordmann	2161284
EPA 365.1 Rev. 2.0 dissolved	03/03/2020			03/03/2020 16:03	Carlos Miranda	2161292
	03/03/2020			03/03/2020 16:06	Carlos Miranda	2161285

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 365.1 Rev. 2.0 dissolved	03/03/2020			03/03/2020 16:07	Carlos Miranda	2161286
	03/03/2020			03/03/2020 16:08	Carlos Miranda	2161287, 2161293
SM 2120 B-2011	03/03/2020			03/03/2020 18:07		2161279
	03/03/2020			03/03/2020 18:08		2161280
	03/03/2020			03/03/2020 18:09		2161281, 2161288
	03/03/2020			03/03/2020 18:10		2161289
	03/03/2020			03/07/2020 14:02	Samantha Davila	2161288
SM 2320 B-2011	03/03/2020			03/07/2020 14:15	Samantha Davila	2161289
	03/03/2020			03/12/2020 05:39	Dale L. Simmons	2161279
	03/03/2020			03/12/2020 05:52	Dale L. Simmons	2161280
	03/03/2020			03/12/2020 06:07	Dale L. Simmons	2161281
	03/03/2020			03/04/2020 15:02	Betina Topolski	2161301
SM 2340B	03/03/2020			03/04/2020 18:29	Betina Topolski	2161299
	03/03/2020			03/04/2020 19:00	Betina Topolski	2161300
	03/03/2020			03/05/2020 15:08	Yijie Li	2161279, 2161280, 2161281, 2161288, 2161289
SM 2540 C-2011	03/03/2020			03/05/2020 15:08	Yijie Li	2161279, 2161280, 2161281, 2161288, 2161289
SM 4500 F-C-2011	03/03/2020			03/07/2020 07:43	Samantha Davila	2161279
	03/03/2020			03/07/2020 12:12	Samantha Davila	2161280
	03/03/2020			03/07/2020 12:21	Samantha Davila	2161281
	03/03/2020			03/07/2020 14:02	Samantha Davila	2161288
	03/03/2020			03/07/2020 14:15	Samantha Davila	2161289
SM 5310 B-2011	03/03/2020			03/06/2020 02:13	Lauren Lees	2161284
	03/03/2020			03/07/2020 00:18	Lauren Lees	2161282
	03/03/2020			03/07/2020 00:32	Lauren Lees	2161290
	03/03/2020			03/07/2020 00:44	Lauren Lees	2161291
	03/03/2020			03/07/2020 04:27	Lauren Lees	2161283