

Chemical Analysis Report

SO-DIST-2020-08-07-01

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

Event Description: **Highlands lakes**
Request ID: **RQ-2020-07-27-43**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Nicole Reistad

For additional information please contact
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Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 27-AUG-2020 13:44



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 group are included in this report: 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 Placid @ Center

Collection Date/Time: 08/06/2020 12:50

Field ID: G4SD0191

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2189212	EPA 180.1 Rev. 2.0	Turbidity	4.9		NTU	P385793	
	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P385892	
		Sulfate	17		mg SO4/L	P385897	
	SM 2120 B-2011	Color (true)	8.1		PCU	P385796	
	SM 2320 B-2011	Total Alkalinity	22		mg CaCO3/L	P385856	RPD
	SM 2540 C-2011	TDS	75		mg/L	P386179	
	SM 2540 D-2011	TSS	2	I	mg/L	P386220	
	SM 4500 F-C-2011	Fluoride	0.050	I	mg F/L	P385858	
2189216	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	Y	mg N/L	P386081	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.62	Y	mg N/L	P386136	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P385823	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P385871	
	SM 5310 B-2011	Organic Carbon	5.4		mg C/L	P385979	
2189220	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P385789	

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 was left out at room temperature overnight, should be stored below 6 degC.

EPA 351.2 Rev. 2.0: Sample was left out at room temperature overnight, should be stored below 6 degC.

Sample Location: Lake Francis

Collection Date/Time: 08/06/2020 11:25

Field ID: G4SD0187

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2189213	EPA 180.1 Rev. 2.0	Turbidity	3.9		NTU	P385793	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P385892	
		Sulfate	22		mg SO4/L	P385897	
	SM 2120 B-2011	Color (true)	9.6		PCU	P385796	
	SM 2320 B-2011	Total Alkalinity	26		mg CaCO3/L	P385857	
	SM 2540 C-2011	TDS	107		mg/L	P386180	
	SM 2540 D-2011	TSS	3	I	mg/L	P386221	
	SM 4500 F-C-2011	Fluoride	0.055	I	mg F/L	P385859	
2189217	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	IY	mg N/L	P386081	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.65	Y	mg N/L	P386139	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P385823	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P385871	
	SM 5310 B-2011	Organic Carbon	6.9		mg C/L	P385979	
2189221	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P385789	

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 was left out at room temperature overnight, should be stored below 6 degC.

EPA 351.2 Rev. 2.0: Sample was left out at room temperature overnight, should be stored below 6 degC.

Sample Location: Lake Bonnet Lake @ Middle

Collection Date/Time: 08/06/2020 10:20

Field ID: G4SD0169

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2189214	EPA 180.1 Rev. 2.0	Turbidity	11		NTU	P385793	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P385892	
		Sulfate	34		mg SO4/L	P385897	
	SM 2120 B-2011	Color (true)	13	A	PCU	P385797	
	SM 2320 B-2011	Total Alkalinity	34		mg CaCO3/L	P385857	
	SM 2540 C-2011	TDS	155		mg/L	P386180	
	SM 2540 D-2011	TSS	9	I	mg/L	P386221	
	SM 4500 F-C-2011	Fluoride	0.074	I	mg F/L	P385859	
2189218	EPA 350.1 Rev. 2.0	Ammonia-N	0.006	Y	mg N/L	P386082	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2	Y	mg N/L	P386139	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P385823	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P385871	
	SM 5310 B-2011	Organic Carbon	10		mg C/L	P385979	
2189222	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P385789	

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 was left out at room temperature overnight, should be stored below 6 degC.

EPA 351.2 Rev. 2.0: Sample was left out at room temperature overnight, should be stored below 6 degC.

Sample Location: Lake June in Winter

Collection Date/Time: 08/06/2020 12:00

Field ID: G4SD0186

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2189215	EPA 180.1 Rev. 2.0	Turbidity	2.8	A	NTU	P385794	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P385892	
		Sulfate	26		mg SO4/L	P385897	
	SM 2120 B-2011	Color (true)	7.4		PCU	P385797	
	SM 2320 B-2011	Total Alkalinity	23	A	mg CaCO3/L	P385857	
	SM 2540 C-2011	TDS	112	A	mg/L	P386180	
	SM 2540 D-2011	TSS	3	IA	mg/L	P386221	
	SM 4500 F-C-2011	Fluoride	0.065	I	mg F/L	P385859	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	Y	mg N/L	P386082	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56	Y	mg N/L	P386139	
2189219	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P385823	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P385871	
	SM 5310 B-2011	Organic Carbon	6.0		mg C/L	P385979	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P385789	
	dissolved						

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 was left out at room temperature overnight, should be stored below 6 degC.

EPA 351.2 Rev. 2.0: Sample was left out at room temperature overnight, should be stored below 6 degC.

Non-Conformance Report

NCR ID: 8371

<u>Event(s)</u>	<u>Job(s)</u>	<u>Sample(s)</u>	<u>Test(s)</u>
SO-DIST-2020-08-07-01	TLH-2020-08-07-53	2189216	
SO-DIST-2020-08-07-01	TLH-2020-08-07-53	2189217	
SO-DIST-2020-08-07-01	TLH-2020-08-07-53	2189218	
SO-DIST-2020-08-07-01	TLH-2020-08-07-53	2189219	

NCR Type: CUSTODY

NCR Category: General

Observation: Samples were not stored in refrigerator overnight on 08/12/2020.

Resolution: Samples were returned to refrigerator at 10:15 am on 08/13/2020. Data will be qualified as appropriate.

Authorized by/Date: Irina Carbone 8/26/2020

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: P385793

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P385794

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385892

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385897

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386081

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386082

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386136

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386139

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385823

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385871

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385789

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

Reference Method: SM 2120 B-2011
Batch ID: P385796

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B-2011
Batch ID: P385797

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P385856

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

Reference Method: SM 2320 B-2011
Batch ID: P385857

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

Reference Method: SM 2540 C-2011
Batch ID: P386179

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2011
Batch ID: P386180

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P386220

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P386221

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P385858

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P385859

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P385979

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385892

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385897

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386081

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386082

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386136

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386139

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385823

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	97.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385871

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385789

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2120 B-2011
Batch ID: P385796

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Reference Method: SM 2120 B-2011
Batch ID: P385797

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	103		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P385856

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

Reference Method: SM 2320 B-2011
Batch ID: P385857

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P385858

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	90 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P385859

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.5		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P385979

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385892

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2189197	Chloride	104		P	90 - 110
2189215	Chloride	106		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385897

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2189197	Sulfate	106		P	90 - 110
2189215	Sulfate	105		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386081

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2189217	Ammonia-N	98.2	99.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386082

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2189219	Ammonia-N	97.4	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386136

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2189206	Kjeldahl Nitrogen	109	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386139

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2189263	Kjeldahl Nitrogen	110	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385823

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2189216	NO2NO3-N	99.0	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385871

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2189216	Total-P	108	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385789

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2189174	O-Phosphate-P	94.3	95.2	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P385858

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2189203	Fluoride	98.8	98.8	P/P	94 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P385859

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2189215	Fluoride	98.5	99.6	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P385979

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2189372	Organic Carbon	98.0	98.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P385793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189172	Turbidity	2.54	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P385794

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189215	Turbidity	2.47	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385892

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189197	Chloride	0.647	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385897

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189197	Sulfate	1.91	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386081

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189217	Ammonia-N	0.927	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P386082

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189219	Ammonia-N	1.84	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386136

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189206	Kjeldahl Nitrogen	1.94	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P386139

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189263	Kjeldahl Nitrogen	3.29	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P385823

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189216	NO2NO3-N	1.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P385871

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189216	Total-P	3.22	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P385789

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189174	O-Phosphate-P	0.828	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
 Batch ID: P385796

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189172	Color (true)	0.537	Sample	P	0 - 20

Reference Method: SM 2120 B-2011
 Batch ID: P385797

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189214	Color (true)	2.88	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
 Batch ID: P385856

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189203	Total Alkalinity	9.81	Sample	F	0 - 8.1

Reference Method: SM 2320 B-2011
 Batch ID: P385857

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189215	Total Alkalinity	1.18	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
 Batch ID: P386179

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189172	TDS	2.67	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-2011
Batch ID: P386180

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189215	TDS	7.14	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P385858

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189203	Fluoride	0.0	Spike	P	0 - 2.8

Reference Method: SM 4500 F-C-2011
Batch ID: P385859

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189215	Fluoride	0.933	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P385979

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2189372	Organic Carbon	0.243	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: A100348

Included Lab Sample IDs: 2189220, 2189221, 2189222, 2189223

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.0	97.9	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A100349

Included Lab Sample IDs: 2189212, 2189213, 2189214, 2189215

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	101	P/P	95 - 105
Turbidity	102	101	P/P	95 - 105

Reference Method: SM 2120 B-2011

Run ID: A100351

Included Lab Sample IDs: 2189212, 2189213, 2189214, 2189215

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	104	P/P	90 - 115
Color (true)	104	105	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A100367

Included Lab Sample IDs: 2189216, 2189217, 2189218, 2189219

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.5	102	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A100379

Included Lab Sample IDs: 2189212, 2189213, 2189214, 2189215

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.5	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A100379

Included Lab Sample IDs: 2189212, 2189213, 2189214, 2189215

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A100386

Included Lab Sample IDs: 2189212, 2189213, 2189214, 2189215

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A100427

Included Lab Sample IDs: 2189216, 2189217, 2189218, 2189219

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

Reference Method: SM 5310 B-2011

Run ID: A100436

Included Lab Sample IDs: 2189216, 2189217, 2189218, 2189219

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	101	98.3	P/P	90 - 110
Organic Carbon	98.3	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A100478

Included Lab Sample IDs: 2189216, 2189217, 2189218, 2189219

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.2	98.5	P/P	90 - 110
Ammonia-N	98.8	98.2	P/P	90 - 110
Ammonia-N	99.0	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A100512

Included Lab Sample IDs: 2189216, 2189217, 2189218, 2189219

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	94.8	P/P	90 - 110
Kjeldahl Nitrogen	104	104	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	MS
EPA 180.1 Rev. 2.0	Turbidity				2.54	
	Turbidity				2.47	
EPA 300.0 Rev. 2.1	Chloride	103	104	106	0.647	
	Sulfate	104	106	105	1.91	
EPA 350.1 Rev. 2.0	Ammonia-N	98.4	98.2	99.2		0.927
	Ammonia-N	99.6	97.4	99.4		1.84
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	109	106		1.94
	Kjeldahl Nitrogen	105	110	106		3.29
EPA 353.2 Rev. 2.0	NO2NO3-N	97.5	99.0	98.0		1.02
EPA 365.1 Rev. 2.0	Total-P	104	108	105		3.22
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	94.3	95.2		0.828
SM 2120 B-2011	Color (true)	102			0.537	
	Color (true)	103			2.88	
SM 2320 B-2011	Total Alkalinity	102			9.81	
	Total Alkalinity	103			1.18	
SM 2540 C-2011	TDS				2.67	
	TDS				7.14	
SM 4500 F-C-2011	Fluoride	100	98.8	98.8		0.0
	Fluoride	99.5	98.5	99.6		0.933
SM 5310 B-2011	Organic Carbon	99.4	98.0	98.3		0.243

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2189212, 2189213, 2189214, 2189215
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2189212, 2189213, 2189214, 2189215
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2189212, 2189213, 2189214, 2189215
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2189216, 2189217, 2189218, 2189219
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2189216, 2189217, 2189218, 2189219
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2189216, 2189217, 2189218, 2189219
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2189216, 2189217, 2189218, 2189219
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2189220, 2189221, 2189222, 2189223
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2189212, 2189213, 2189214, 2189215
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2189212, 2189213, 2189214, 2189215
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2189212, 2189213, 2189214, 2189215
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2189212, 2189213, 2189214, 2189215
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2189212, 2189213, 2189214, 2189215
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2189216, 2189217, 2189218, 2189219

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	08/07/2020			08/07/2020 15:13	Blanca Fach	2189212, 2189213, 2189214, 2189215
EPA 300.0 Rev. 2.1	08/07/2020			08/09/2020 00:51	Julia Storbeck	2189215
	08/07/2020			08/09/2020 02:52	Julia Storbeck	2189212
	08/07/2020			08/09/2020 03:04	Julia Storbeck	2189213
	08/07/2020			08/09/2020 03:16	Julia Storbeck	2189214
EPA 350.1 Rev. 2.0	08/07/2020			08/15/2020 12:45	Ping Hua	2189217
	08/07/2020			08/15/2020 13:05	Ping Hua	2189216
	08/07/2020			08/15/2020 13:10	Ping Hua	2189219
	08/07/2020			08/15/2020 13:21	Ping Hua	2189218
EPA 351.2 Rev. 2.0	08/07/2020	08/17/2020 14:20	David Boose	08/18/2020 11:42	Jhamieka S. Greenwood	2189216
	08/07/2020	08/17/2020 14:20	David Boose	08/18/2020 12:21	Jhamieka S. Greenwood	2189217
	08/07/2020	08/17/2020 14:20	David Boose	08/18/2020 12:22	Jhamieka S. Greenwood	2189218
	08/07/2020	08/17/2020 14:20	David Boose	08/18/2020 12:24	Jhamieka S. Greenwood	2189219
EPA 353.2 Rev. 2.0	08/07/2020			08/10/2020 09:36	Beverly Y. Sanders	2189216
	08/07/2020			08/10/2020 09:41	Beverly Y. Sanders	2189217
	08/07/2020			08/10/2020 09:42	Beverly Y. Sanders	2189218
	08/07/2020			08/10/2020 09:43	Beverly Y. Sanders	2189219
EPA 365.1 Rev. 2.0	08/07/2020	08/11/2020 11:28	Yen Ta	08/13/2020 08:47	Lipi Saha	2189216
	08/07/2020	08/11/2020 11:28	Yen Ta	08/13/2020 08:48	Lipi Saha	2189217
	08/07/2020	08/11/2020 11:28	Yen Ta	08/13/2020 08:49	Lipi Saha	2189218
	08/07/2020	08/11/2020 11:28	Yen Ta	08/13/2020 08:50	Lipi Saha	2189219
EPA 365.1 Rev. 2.0 dissolved	08/07/2020			08/07/2020 15:45	Samantha Davila	2189220
	08/07/2020			08/07/2020 15:46	Samantha Davila	2189221, 2189222
	08/07/2020			08/07/2020 15:47	Samantha Davila	2189223
SM 2120 B-2011	08/07/2020			08/07/2020 18:52	Julia Storbeck	2189212
	08/07/2020			08/07/2020 18:53	Julia Storbeck	2189213
	08/07/2020			08/07/2020 18:58	Julia Storbeck	2189214, 2189215
SM 2320 B-2011	08/07/2020			08/10/2020 21:18	Dale L. Simmons	2189212
	08/07/2020			08/10/2020 22:29	Dale L. Simmons	2189215
	08/07/2020			08/10/2020 22:49	Dale L. Simmons	2189213
	08/07/2020			08/10/2020 23:01	Dale L. Simmons	2189214
SM 2540 C-2011	08/07/2020			08/12/2020 15:12	Yijie Li	2189212, 2189213, 2189214, 2189215
SM 2540 D-2011	08/07/2020			08/12/2020 15:12	Yijie Li	2189212, 2189213, 2189214, 2189215
SM 4500 F-C-2011	08/07/2020			08/10/2020 21:18	Dale L. Simmons	2189212
	08/07/2020			08/10/2020 22:18	Dale L. Simmons	2189215
	08/07/2020			08/10/2020 22:49	Dale L. Simmons	2189213
	08/07/2020			08/10/2020 23:01	Dale L. Simmons	2189214
SM 5310 B-2011	08/07/2020			08/12/2020 15:49	David Boose	2189219
	08/07/2020			08/12/2020 17:20	David Boose	2189216
	08/07/2020			08/12/2020 17:33	David Boose	2189217

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-2011	08/07/2020			08/12/2020 17:45	David Boose	2189218