

Chemical Analysis Report

CEN-DIST-2020-02-25-01

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

Event Description: **Spring Garden Creek + D&B**
Request ID: **RQ-2020-02-17-47**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 17-MAR-2020 09:28

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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: Spring Garden Creek @ Just DS of Deep Creek Collection Date/Time: 02/24/2020 13:20

Field ID: G2CE0126

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2160554	EPA 180.1 Rev. 2.0	Turbidity	4.4		NTU	P379641	
	EPA 300.0 Rev. 2.1	Chloride	230		mg Cl/L	P380163	
		Sulfate	52		mg SO4/L	P380166	
	SM 2120 B-2011	Color (true)	140		PCU	P379674	
	SM 2320 B-2011	Total Alkalinity	68		mg CaCO3/L	P380267	
	SM 2540 C-2011	TDS	550		mg/L	P379979	
	SM 2540 D-2011	TSS	7	I	mg/L	P379974	
	SM 4500 F-C-2011	Fluoride	0.10		mg F/L	P380272	
2160555	EPA 350.1 Rev. 2.0	Ammonia-N	0.11		mg N/L	P379913	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P379760	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15		mg N/L	P380100	
	EPA 365.1 Rev. 2.0	Total-P	0.070		mg P/L	P380041	
	SM 5310 B-2011	Organic Carbon	20		mg C/L	P379712	
2160556	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.031		mg P/L	P379689	

Ref. Method and Comment:

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

Sample Location: Spring Garden Creek @ Just DS of Deep Creek Collection Date/Time: 02/24/2020 13:25

Field ID: G2CE0126_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2160557	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P379641	
	EPA 300.0 Rev. 2.1	Chloride	230		mg Cl/L	P380163	
		Sulfate	53		mg SO4/L	P380166	
	SM 2120 B-2011	Color (true)	140		PCU	P379674	
	SM 2320 B-2011	Total Alkalinity	67	J	mg CaCO3/L	P380268	LCS, RPD
	SM 2540 C-2011	TDS	557		mg/L	P379979	
	SM 2540 D-2011	TSS	7	I	mg/L	P379974	
	SM 4500 F-C-2011	Fluoride	0.10		mg F/L	P380273	
2160558	EPA 350.1 Rev. 2.0	Ammonia-N	0.11		mg N/L	P379913	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P379760	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15		mg N/L	P380100	
	EPA 365.1 Rev. 2.0	Total-P	0.068		mg P/L	P380042	
	SM 5310 B-2011	Organic Carbon	20		mg C/L	P379712	
2160559	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.032		mg P/L	P379689	

Ref. Method and Comment:

SM 2320 B-2011: Refer to the Lab Analysis Report for an explanation of QC Codes.

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

Sample Location: FB_02242020

Collection Date/Time: 02/24/2020 13:45

Field ID: FB_02242020

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2160560	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P379641	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P380163	
		Sulfate	0.20	U	mg SO4/L	P380166	
	SM 2120 B-2011	Color (true)	2.5	U	PCU	P379674	
	SM 2320 B-2011	Total Alkalinity	0.65	UJ	mg CaCO3/L	P380268	LCS, RPD
	SM 2540 C-2011	TDS	15	U	mg/L	P379978	
	SM 2540 D-2011	TSS	2	U	mg/L	P379973	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P380273	
2160561	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P379914	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P379760	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P380101	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P380042	
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P379712	
2160562	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P379689	

Ref. Method and Comment:

SM 2320 B-2011: Refer to the Lab Analysis Report for an explanation of QC Codes.

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P379641

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380163

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380166

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379913

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379914

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379760

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380100

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380101

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380041

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380042

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P379689

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

Reference Method: SM 2120 B-2011
Batch ID: P379674

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P380267

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

Reference Method: SM 2320 B-2011
Batch ID: P380268

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

Reference Method: SM 2540 C-2011
Batch ID: P379978

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2011
Batch ID: P379979

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P379973

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P379974

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-2011
Batch ID: P380272

Component	Result	Code	Units
Fluoride	0.035	U	mg F/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 5310 B-2011
Batch ID: P379712

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: P380163

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380166

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379913

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379914

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379760

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380100

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	99.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380101

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380041

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380042

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P379689

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

Reference Method: SM 2120 B-2011
Batch ID: P379674

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.9		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P380267

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 106

Reference Method: SM 2320 B-2011
Batch ID: P380268

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	95.8		F	98 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P380272

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	92 - 103

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 5310 B-2011
Batch ID: P379712

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380163

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2160611	Chloride	99.5		P	90 - 110
2160712	Chloride	97.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380166

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2160611	Sulfate	100		P	90 - 110
2160712	Sulfate	99.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379913

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2160489	Ammonia-N	100	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379914

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2160652	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379760

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2160489	Kjeldahl Nitrogen	106	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380100

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2160431	NO2NO3-N	95.7	95.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380101

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2160613	NO2NO3-N	98.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380041

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2160430	Total-P	105	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380042

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2160558	Total-P	103	106	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P379689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2160490	O-Phosphate-P	92.6	94.3	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P380272

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2161920	Fluoride	104	102	P/P	89 - 106

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 5310 B-2011
Batch ID: P379712

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2160431	Organic Carbon	98.1		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P379641

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2160548	Turbidity	5.65	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380163

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2160712	Chloride	1.39	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380166

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2160712	Sulfate	1.09	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379913

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2160489	Ammonia-N	0.924	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379914

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2160652	Ammonia-N	0.881	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379760

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2160489	Kjeldahl Nitrogen	2.69	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380100

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2160431	NO2NO3-N	0.504	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380101

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2160613	NO2NO3-N	0.320	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380041

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2160430	Total-P	0.614	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380042

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2160558	Total-P	2.40	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P379689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2160490	O-Phosphate-P	1.23	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P379674

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2160465	Color (true)	0.405	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P380267

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161920	Total Alkalinity	1.15	Sample	P	0 - 2.8

Reference Method: SM 2320 B-2011
Batch ID: P380268

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161279	Total Alkalinity	5.78	Sample	F	0 - 2.8

Reference Method: SM 2540 C-2011
Batch ID: P379978

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2160306	TDS	1.95	Sample	P	0 - 10

Reference Method: SM 2540 C-2011
Batch ID: P379979

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2160429	TDS	3.59	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P380272

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2161920	Fluoride	0.921	Spike	P	0 - 2.5

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

Reference Method: SM 5310 B-2011
Batch ID: P379712

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2160431	Organic Carbon	0.557	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A97813

Included Lab Sample IDs: 2160554, 2160557, 2160560

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	100	P/P	95 - 105

Reference Method: SM 2120 B-2011

Run ID: A97827

Included Lab Sample IDs: 2160554, 2160557, 2160560

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	101	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A97828

Included Lab Sample IDs: 2160556, 2160559, 2160562

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	92.6	91.5	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A97841

Included Lab Sample IDs: 2160555, 2160558, 2160561

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.2	96.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A97877

Included Lab Sample IDs: 2160555, 2160558, 2160561

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	95.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A97928

Included Lab Sample IDs: 2160555, 2160558, 2160561

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	99.8	P/P	90 - 110
Ammonia-N	99.8	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A98001

Included Lab Sample IDs: 2160554, 2160557, 2160560

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.7	101	P/P	90 - 110
Chloride	98.2	97.7	P/P	90 - 110
Sulfate	98.0	102	P/P	90 - 110
Sulfate	98.5	98.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A98011

Included Lab Sample IDs: 2160555, 2160558

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A98012

Included Lab Sample IDs: 2160555, 2160558, 2160561

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

Reference Method: SM 2320 B-2011

Run ID: A98059

Included Lab Sample IDs: 2160554, 2160557, 2160560

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	93.8	98.6	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A98059

Included Lab Sample IDs: 2160554, 2160557, 2160560

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A98071

Included Lab Sample IDs: 2160561

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	103	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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					5.65	
EPA 300.0 Rev. 2.1	Chloride	98.8	97.1	99.5		1.39	
	Sulfate	101	99.8	100		1.09	
EPA 350.1 Rev. 2.0	Ammonia-N	103	100	101			0.924
	Ammonia-N	100	101	102			0.881
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	106	101			2.69
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.0	95.7	95.2			0.504
	NO ₂ NO ₃ -N	100	98.5	99.0			0.320
EPA 365.1 Rev. 2.0	Total-P	103	105	106			0.614
	Total-P	104	103	106			2.40
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.8	92.6	94.3			1.23
SM 2120 B-2011	Color (true)	99.9				0.405	
SM 2320 B-2011	Total Alkalinity	101				1.15	
	Total Alkalinity	95.8				5.78	
SM 2540 C-2011	TDS					1.95	
	TDS					3.59	
SM 4500 F-C-2011	Fluoride	102	104	102			0.921
	Fluoride	101	103	105			0.960
SM 5310 B-2011	Organic Carbon	99.8	98.1				0.557

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2160554, 2160557, 2160560
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2160554, 2160557, 2160560
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2160554, 2160557, 2160560
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2160555, 2160558, 2160561
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2160555, 2160558, 2160561
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2160555, 2160558, 2160561
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2160555, 2160558, 2160561
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2160556, 2160559, 2160562
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2160554, 2160557, 2160560
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2160554, 2160557, 2160560
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2160554, 2160557, 2160560
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2160554, 2160557, 2160560
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2160554, 2160557, 2160560
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2160555, 2160558, 2160561

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	02/25/2020			02/25/2020 16:14	Blanca Fach	2160554, 2160557, 2160560
EPA 300.0 Rev. 2.1	02/25/2020			03/05/2020 21:32	Lipi Saha	2160554
	02/25/2020			03/05/2020 22:08	Lipi Saha	2160557
	02/25/2020			03/05/2020 22:20	Lipi Saha	2160560
EPA 350.1 Rev. 2.0	02/25/2020			03/02/2020 13:18	Ping Hua	2160555
	02/25/2020			03/02/2020 13:19	Ping Hua	2160558
	02/25/2020			03/02/2020 13:39	Ping Hua	2160561
EPA 351.2 Rev. 2.0	02/25/2020	02/27/2020 12:00	Sima Feizi	02/28/2020 10:22	Jhamieka S. Greenwood	2160555
	02/25/2020	02/27/2020 12:00	Sima Feizi	02/28/2020 10:23	Jhamieka S. Greenwood	2160558
	02/25/2020	02/27/2020 12:00	Sima Feizi	02/28/2020 10:25	Jhamieka S. Greenwood	2160561
EPA 353.2 Rev. 2.0	02/25/2020			03/05/2020 10:25	Beverly Y. Sanders	2160555
	02/25/2020			03/05/2020 10:26	Beverly Y. Sanders	2160558
	02/25/2020			03/05/2020 10:39	Beverly Y. Sanders	2160561
EPA 365.1 Rev. 2.0	02/25/2020	03/04/2020 13:06	Yen Ta	03/05/2020 12:30	Benjamin T. Nordmann	2160555
	02/25/2020	03/04/2020 13:06	Yen Ta	03/05/2020 12:35	Benjamin T. Nordmann	2160558
	02/25/2020	03/04/2020 13:06	Yen Ta	03/09/2020 12:38	Benjamin T. Nordmann	2160561
EPA 365.1 Rev. 2.0 dissolved	02/25/2020			02/25/2020 17:58	Carlos Miranda	2160556
	02/25/2020			02/25/2020 17:59	Carlos Miranda	2160559, 2160562
SM 2120 B-2011	02/25/2020			02/25/2020 16:26	Madeline Funaro	2160554
	02/25/2020			02/25/2020 16:27	Madeline Funaro	2160557, 2160560
SM 2320 B-2011	02/25/2020			03/07/2020 06:47	Samantha Davila	2160554
	02/25/2020			03/07/2020 08:15	Samantha Davila	2160557
	02/25/2020			03/07/2020 08:24	Samantha Davila	2160560
SM 2540 C-2011	02/25/2020			02/26/2020 14:06	Yijie Li	2160554, 2160557, 2160560
SM 2540 D-2011	02/25/2020			02/26/2020 14:06	Yijie Li	2160554, 2160557, 2160560
SM 4500 F-C-2011	02/25/2020			03/07/2020 06:47	Samantha Davila	2160554
	02/25/2020			03/07/2020 08:15	Samantha Davila	2160557
	02/25/2020			03/07/2020 08:24	Samantha Davila	2160560
SM 5310 B-2011	02/25/2020			02/27/2020 00:36	Lauren Lees	2160555
	02/25/2020			02/27/2020 00:49	Lauren Lees	2160558
	02/25/2020			02/27/2020 01:02	Lauren Lees	2160561