

Chemical Analysis Report

SW-DIST-2020-03-18-02

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

Event Description: **SMP Lakes Run 9**

Request ID: **RQ-2020-03-16-04**

Customer: **SW-DIST**

Project ID: **SMP**

Send Reports to:

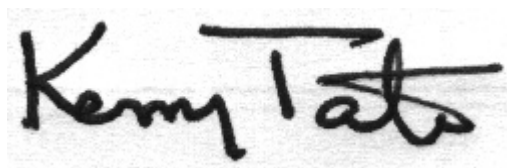
FL Dept. of Environmental Protection
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 13-APR-2020 11:49

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 "T" and a long horizontal stroke at the end.

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 Innisbrook

Collection Date/Time: 03/17/2020 11:20

Field ID: G5SW0040

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2166470	EPA 180.1 Rev. 2.0	Turbidity	5.3		NTU	P380992	
	EPA 300.0 Rev. 2.1	Chloride	90		mg Cl/L	P381342	
	SM 2120 B-2011	Color (true)	120		PCU	P380933	
	SM 2320 B-2011	Total Alkalinity	107		mg CaCO3/L	P381412	
	SM 2540 C-2011	TDS	309		mg/L	P381518	
	SM 2540 D-2011	TSS	7	I	mg/L	P381252	
	SM 4500 F-C-2011	Fluoride	0.24		mg F/L	P381455	
2166476	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P381236	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P381284	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P381544	
	EPA 365.1 Rev. 2.0	Total-P	0.58		mg P/L	P381336	
	SM 5310 B-2011	Organic Carbon	24		mg C/L	P381088	
2166482	EPA 300.0 Rev. 2.1 dissolved	Sulfate	11		mg SO4/L	P381344	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.43		mg P/L	P380890	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Dan @ Center

Collection Date/Time: 03/17/2020 09:50

Field ID: G5SW0161

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2166471	EPA 180.1 Rev. 2.0	Turbidity	3.1		NTU	P380992	
	EPA 300.0 Rev. 2.1	Chloride	6.5		mg Cl/L	P381342	
	SM 2120 B-2011	Color (true)	92		PCU	P380933	
	SM 2320 B-2011	Total Alkalinity	37		mg CaCO3/L	P381412	
	SM 2540 C-2011	TDS	74		mg/L	P381518	
	SM 2540 D-2011	TSS	2	I	mg/L	P381252	
	SM 4500 F-C-2011	Fluoride	0.042	I	mg F/L	P381455	
2166477	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P381236	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.89		mg N/L	P381284	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P381544	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P381336	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P381088	
2166483	EPA 300.0 Rev. 2.1 dissolved	Sulfate	1.1		mg SO4/L	P381345	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P380890	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Williams Lake

Collection Date/Time: 03/17/2020 13:20

Field ID: G1SW0071

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2166472	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P380992	
	EPA 300.0 Rev. 2.1	Chloride	38		mg Cl/L	P381342	
	SM 2120 B-2011	Color (true)	24		PCU	P380933	
	SM 2320 B-2011	Total Alkalinity	16	A	mg CaCO3/L	P381412	
	SM 2540 C-2011	TDS	114	A	mg/L	P381518	
	SM 2540 D-2011	TSS	2	IA	mg/L	P381252	
	SM 4500 F-C-2011	Fluoride	0.063	I	mg F/L	P381456	
2166478	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P381236	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.84		mg N/L	P381284	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P381544	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P381336	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P381088	
2166484	EPA 300.0 Rev. 2.1 dissolved	Sulfate	8.6		mg SO4/L	P381345	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P380892	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Wastena Center

Collection Date/Time: 03/17/2020 12:45

Field ID: G1SW0020

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2166473	EPA 180.1 Rev. 2.0	Turbidity	4.8		NTU	P380992	
	EPA 300.0 Rev. 2.1	Chloride	26	A	mg Cl/L	P381343	
	SM 2120 B-2011	Color (true)	39	A	PCU	P380933	
	SM 2320 B-2011	Total Alkalinity	24		mg CaCO3/L	P381412	
	SM 2540 C-2011	TDS	108		mg/L	P381518	
	SM 2540 D-2011	TSS	3	I	mg/L	P381252	
	SM 4500 F-C-2011	Fluoride	0.053	I	mg F/L	P381456	
2166479	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P381236	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P381284	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P381544	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P381336	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P381088	
2166485	EPA 300.0 Rev. 2.1 dissolved	Sulfate	5.7		mg SO4/L	P381345	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P380892	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Wastena Center

Collection Date/Time: 03/17/2020 12:50

Field ID: G1SW0020_Dup

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2166474	EPA 180.1 Rev. 2.0	Turbidity	4.6		NTU	P380992	
	EPA 300.0 Rev. 2.1	Chloride	27		mg Cl/L	P381343	
	SM 2120 B-2011	Color (true)	39		PCU	P380933	
	SM 2320 B-2011	Total Alkalinity	24		mg CaCO3/L	P381412	
	SM 2540 C-2011	TDS	106		mg/L	P381518	
	SM 2540 D-2011	TSS	3	I	mg/L	P381252	
	SM 4500 F-C-2011	Fluoride	0.051	I	mg F/L	P381456	
2166480	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P381236	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.97		mg N/L	P381284	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P381544	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P381336	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P381088	
2166486	EPA 300.0 Rev. 2.1 dissolved	Sulfate	5.7		mg SO4/L	P381345	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P380892	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Field_Blank

Collection Date/Time: 03/17/2020 07:50

Field ID: FB 03172020

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2166475	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P380992	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P381343	
	SM 2120 B-2011	Color (true)	2.5	U	PCU	P380933	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P381412	
	SM 2540 C-2011	TDS	15	U	mg/L	P381518	
	SM 2540 D-2011	TSS	2	U	mg/L	P381252	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P381456	
2166481	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P381237	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P381284	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P381544	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P381336	
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P381088	
2166487	EPA 300.0 Rev. 2.1 dissolved	Sulfate	0.20	U	mg SO4/L	P381910	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P380892	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P380992

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381342

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381343

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P381344

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P381345

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P381910

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P381236

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P381237

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P381284

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P381544

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P381336

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P380890

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P380892

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

Reference Method: SM 2120 B-2011
Batch ID: P380933

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P381412

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

Reference Method: SM 2540 C-2011
Batch ID: P381518

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P381252

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P381455

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500 F-C-2011
Batch ID: P381456

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P381088

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: P381342

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381343

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

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P381344

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

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P381345

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

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P381910

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P381236

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P381237

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P381284

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.4		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P381544

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P381336

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P380890

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P380892

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.9		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P380933

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

Reference Method: SM 2320 B-2011
Batch ID: P381412

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P381455

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.8		P	92 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P381456

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.9		P	92 - 104

Reference Method: SM 5310 B-2011
Batch ID: P381088

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	100		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381342

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166375	Chloride	103		P	90 - 110
2166393	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381343

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166473	Chloride	104		P	90 - 110
2166737	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P381344

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166375	Sulfate	103		P	90 - 110
2166393	Sulfate	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P381345

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166473	Sulfate	104		P	90 - 110
2166737	Sulfate	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P381910

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2167748	Sulfate	98.8		P	90 - 110
2168022	Sulfate	95.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P381236

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166390	Ammonia-N	98.4	98.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P381237

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166724	Ammonia-N	101	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P381284

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166478	Kjeldahl Nitrogen	94.6	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P381544

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166477	NO2NO3-N	98.0	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P380890

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166262	O-Phosphate-P	93.3	95.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P380892

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166484	O-Phosphate-P	92.2	94.2	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P381455

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2165984	Fluoride	103	103	P/P	91 - 105

Reference Method: SM 4500 F-C-2011
Batch ID: P381456

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166472	Fluoride	98.9	99.5	P/P	91 - 105

Reference Method: SM 5310 B-2011
Batch ID: P381088

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166386	Organic Carbon	101	104	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P380992

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166393	Turbidity	4.70	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166375	Chloride	2.32	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381343

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166473	Chloride	0.937	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P381344

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166375	Sulfate	1.77	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P381345

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166473	Sulfate	0.807	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P381910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2167748	Sulfate	0.385	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P381236

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166390	Ammonia-N	0.121	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P381237

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166724	Ammonia-N	1.11	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P381284

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166478	Kjeldahl Nitrogen	4.72	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P381544

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166477	NO2NO3-N	1.52	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P381336

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166476	Total-P	5.39	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P380890

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166262	O-Phosphate-P	2.14	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P380892

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166484	O-Phosphate-P	2.15	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P380933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166473	Color (true)	0.534	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P381412

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166472	Total Alkalinity	0.575	Sample	P	0 - 3.3

Reference Method: SM 2540 C-2011
Batch ID: P381518

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166472	TDS	0.873	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P381455

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2165984	Fluoride	0.477	Spike	P	0 - 2.0

Reference Method: SM 4500 F-C-2011
Batch ID: P381456

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166472	Fluoride	0.533	Spike	P	0 - 2.0

Reference Method: SM 5310 B-2011
Batch ID: P381088

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166386	Organic Carbon	2.50	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: A98278

Included Lab Sample IDs: 2166482, 2166483, 2166484, 2166485, 2166486, 2166487

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.2	95.8	P/P	90 - 110
O-Phosphate-P	97.0	96.2	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A98294

Included Lab Sample IDs: 2166470, 2166471, 2166472, 2166473, 2166474, 2166475

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A98314

Included Lab Sample IDs: 2166470, 2166471, 2166472, 2166473, 2166474, 2166475

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

Reference Method: SM 5310 B-2011

Run ID: A98371

Included Lab Sample IDs: 2166476, 2166477, 2166478, 2166479, 2166480, 2166481

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A98413

Included Lab Sample IDs: 2166476, 2166477, 2166478, 2166479, 2166480, 2166481

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A98451

Included Lab Sample IDs: 2166476, 2166477, 2166478, 2166479, 2166480, 2166481

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.9	97.5	P/P	90 - 110
Kjeldahl Nitrogen	95.9	94.9	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A98458

Included Lab Sample IDs: 2166470, 2166471, 2166472, 2166473, 2166474, 2166475

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1 dissolved

Run ID: A98458

Included Lab Sample IDs: 2166482, 2166483, 2166484, 2166485, 2166486

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A98480

Included Lab Sample IDs: 2166477, 2166478, 2166479, 2166480, 2166481

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	96.5	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A98490

Included Lab Sample IDs: 2166470, 2166471, 2166472, 2166473, 2166474, 2166475

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110
Total Alkalinity	105	101	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A98495

Included Lab Sample IDs: 2166470, 2166471, 2166472, 2166473, 2166474, 2166475

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.5	P/P	90 - 110
Fluoride	99.5	99.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A98517

Included Lab Sample IDs: 2166476, 2166477, 2166478, 2166479, 2166480, 2166481

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A98525

Included Lab Sample IDs: 2166476

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

Reference Method: EPA 300.0 Rev. 2.1 dissolved

Run ID: A98686

Included Lab Sample IDs: 2166487

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	101	101	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				4.70	
EPA 300.0 Rev. 2.1	Chloride	102	103	101	2.32	
	Chloride	103	104	103	0.937	
EPA 300.0 Rev. 2.1 dissolved	Sulfate	101	103	101	1.77	
	Sulfate	103	104	104	0.807	
	Sulfate	99.7	98.8	95.0	0.385	
EPA 350.1 Rev. 2.0	Ammonia-N	99.7	98.4	98.7		0.121
	Ammonia-N	99.3	101	99.7		1.11
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.4	94.6	103		4.72
EPA 353.2 Rev. 2.0	NO2NO3-N	97.5	98.0	99.5		1.52
EPA 365.1 Rev. 2.0	Total-P	105				5.39
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.0	93.3	95.4		2.14
	O-Phosphate-P	96.9	92.2	94.2		2.15
SM 2120 B-2011	Color (true)	103			0.534	
SM 2320 B-2011	Total Alkalinity	103			0.575	
SM 2540 C-2011	TDS				0.873	
SM 4500 F-C-2011	Fluoride	98.8	103	103		0.477
	Fluoride	95.9	98.9	99.5		0.533
SM 5310 B-2011	Organic Carbon	100	101	104		2.50

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2166470, 2166471, 2166472, 2166473, 2166474, 2166475
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2166470, 2166471, 2166472, 2166473, 2166474, 2166475
EPA 300.0 Rev. 2.1 dissolved	Sulfate, dissolved, in filtered, aqueous matrices	2166482, 2166483, 2166484, 2166485, 2166486, 2166487
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2166476, 2166477, 2166478, 2166479, 2166480, 2166481
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2166476, 2166477, 2166478, 2166479, 2166480, 2166481
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2166476, 2166477, 2166478, 2166479, 2166480, 2166481
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2166476, 2166477, 2166478, 2166479, 2166480, 2166481
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2166482, 2166483, 2166484, 2166485, 2166486, 2166487
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2166470, 2166471, 2166472, 2166473, 2166474, 2166475
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2166470, 2166471, 2166472, 2166473, 2166474, 2166475
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2166470, 2166471, 2166472, 2166473, 2166474, 2166475
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2166470, 2166471, 2166472, 2166473, 2166474, 2166475
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2166470, 2166471, 2166472, 2166473, 2166474, 2166475
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2166476, 2166477, 2166478, 2166479, 2166480, 2166481

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	03/18/2020			03/18/2020 16:33	Yen Ta	2166470, 2166471, 2166472, 2166473, 2166474, 2166475
EPA 300.0 Rev. 2.1	03/18/2020			03/24/2020 22:07	Elliott Rodriguez	2166470
	03/18/2020			03/24/2020 22:31	Elliott Rodriguez	2166471
	03/18/2020			03/24/2020 22:43	Elliott Rodriguez	2166472
	03/18/2020			03/25/2020 01:09	Elliott Rodriguez	2166473
	03/18/2020			03/25/2020 01:57	Elliott Rodriguez	2166474
	03/18/2020			03/25/2020 02:09	Elliott Rodriguez	2166475
EPA 300.0 Rev. 2.1 dissolved	03/18/2020			03/24/2020 23:56	Elliott Rodriguez	2166482
	03/18/2020			03/25/2020 04:22	Elliott Rodriguez	2166483
	03/18/2020			03/25/2020 04:34	Elliott Rodriguez	2166484
	03/18/2020			03/25/2020 04:46	Elliott Rodriguez	2166485
	03/18/2020			03/25/2020 04:58	Elliott Rodriguez	2166486
	03/18/2020			04/07/2020 00:38	Julia Storbeck	2166487
EPA 350.1 Rev. 2.0	03/18/2020			03/24/2020 17:24	Ping Hua	2166476
	03/18/2020			03/24/2020 17:26	Ping Hua	2166477
	03/18/2020			03/24/2020 17:27	Ping Hua	2166478
	03/18/2020			03/24/2020 17:29	Ping Hua	2166479
	03/18/2020			03/24/2020 17:30	Ping Hua	2166480
	03/18/2020			03/24/2020 18:00	Ping Hua	2166481
EPA 351.2 Rev. 2.0	03/18/2020	03/25/2020 10:40	Sima Feizi	03/26/2020 08:25	Jhamieka S. Greenwood	2166478
	03/18/2020	03/25/2020 10:40	Sima Feizi	03/26/2020 08:33	Jhamieka S. Greenwood	2166476
	03/18/2020	03/25/2020 10:40	Sima Feizi	03/26/2020 08:35	Jhamieka S. Greenwood	2166477
	03/18/2020	03/25/2020 10:40	Sima Feizi	03/26/2020 08:37	Jhamieka S. Greenwood	2166479
	03/18/2020	03/25/2020 10:40	Sima Feizi	03/26/2020 08:38	Jhamieka S. Greenwood	2166480
	03/18/2020	03/25/2020 10:40	Sima Feizi	03/26/2020 08:40	Jhamieka S. Greenwood	2166481
EPA 353.2 Rev. 2.0	03/18/2020			03/30/2020 16:23	Lauren Lees	2166477
	03/18/2020			03/30/2020 16:29	Lauren Lees	2166476
	03/18/2020			03/30/2020 16:31	Lauren Lees	2166478
	03/18/2020			03/30/2020 16:32	Lauren Lees	2166479
	03/18/2020			03/30/2020 16:33	Lauren Lees	2166480
	03/18/2020			03/30/2020 16:34	Lauren Lees	2166481
EPA 365.1 Rev. 2.0	03/18/2020	03/26/2020 12:10	Lipi Saha	03/27/2020 08:52	Lipi Saha	2166476
	03/18/2020	03/26/2020 12:10	Lipi Saha	03/27/2020 10:37	Lipi Saha	2166477
	03/18/2020	03/26/2020 12:10	Lipi Saha	03/27/2020 10:38	Lipi Saha	2166478, 2166479
	03/18/2020	03/26/2020 12:10	Lipi Saha	03/27/2020 10:39	Lipi Saha	2166480
	03/18/2020	03/26/2020 12:10	Lipi Saha	03/27/2020 10:40	Lipi Saha	2166481
EPA 365.1 Rev. 2.0 dissolved	03/18/2020			03/18/2020 15:15	Carlos Miranda	2166482
	03/18/2020			03/18/2020 15:16	Carlos Miranda	2166483
	03/18/2020			03/18/2020 15:19	Carlos Miranda	2166484

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	03/18/2020			03/18/2020 15:22	Carlos Miranda	2166485, 2166486
	03/18/2020			03/18/2020 15:27	Carlos Miranda	2166487
SM 2120 B-2011	03/18/2020			03/18/2020 18:15	Madeline Gruver	2166470, 2166471
	03/18/2020			03/18/2020 18:16	Madeline Gruver	2166472
	03/18/2020			03/18/2020 18:18	Madeline Gruver	2166473, 2166474
	03/18/2020			03/18/2020 18:19	Madeline Gruver	2166475
SM 2320 B-2011	03/18/2020			03/27/2020 07:43	Dale L. Simmons	2166472
	03/18/2020			03/27/2020 09:52	Dale L. Simmons	2166470
	03/18/2020			03/27/2020 10:01	Dale L. Simmons	2166471
	03/18/2020			03/27/2020 10:11	Dale L. Simmons	2166473
	03/18/2020			03/27/2020 10:21	Dale L. Simmons	2166474
SM 2540 C-2011	03/18/2020			03/27/2020 10:27	Dale L. Simmons	2166475
	03/18/2020			03/23/2020 15:22	Yijie Li	2166470, 2166471, 2166472, 2166473, 2166474, 2166475
SM 2540 D-2011	03/18/2020			03/23/2020 15:22	Yijie Li	2166470, 2166471, 2166472, 2166473, 2166474, 2166475
SM 4500 F-C-2011	03/18/2020			03/28/2020 00:18	Dale L. Simmons	2166470
	03/18/2020			03/28/2020 00:23	Dale L. Simmons	2166471
	03/18/2020			03/28/2020 01:12	Dale L. Simmons	2166472
	03/18/2020			03/28/2020 01:28	Dale L. Simmons	2166473
	03/18/2020			03/28/2020 01:33	Dale L. Simmons	2166474
SM 5310 B-2011	03/18/2020			03/28/2020 01:38	Dale L. Simmons	2166475
	03/18/2020			03/20/2020 19:55	Lauren Lees	2166476
	03/18/2020			03/20/2020 20:10	Lauren Lees	2166477
	03/18/2020			03/20/2020 20:23	Lauren Lees	2166478
	03/18/2020			03/20/2020 20:35	Lauren Lees	2166479
	03/18/2020			03/20/2020 21:11	Lauren Lees	2166480
	03/18/2020			03/20/2020 21:24	Lauren Lees	2166481