Chemical Analysis Report

WAS-SECT-2018-05-09-01

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

Event Description: **NE Tallahassee Lakes**
Request ID: **RQ-2018-05-07-33**
Customer: **WAS-SECT**
Project ID: **SMP**

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Certified by: Colin Wright, Program Administrator

Date Certified: 29-MAY-2018 10:48

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 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: Pine Hill Lake Middle **Collection Date/Time: 05/09/2018 09:15**

Field ID: G1WA0054 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1991561	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P344974	
	EPA 300.0 Rev. 2.1	Chloride	6.5		mg Cl/L	P345211	
		Sulfate	1.2		mg SO4/L	P345214	
	SM 2120 B	Color (true)	7.8		PCU	P344969	
	SM 2320 B-97	Total Alkalinity	8.6		mg CaCO3/L	P345324	
	SM 2540 C-97	TDS	34		mg/L	P345667	
	SM 2540 D-97	TSS	2	I	mg/L	P345653	
	SM 4500 F-C-97	Fluoride	0.046	I	mg F/L	P345327	
1991566	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P345377	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.50		mg N/L	P345124	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P345241	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P345142	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P345343	
1991571	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P344976	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Petty Gulf Lake Middle **Collection Date/Time: 05/09/2018 09:35**

Field ID: G1WA0022 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1991562	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P344974	
	EPA 300.0 Rev. 2.1	Chloride	5.2		mg Cl/L	P345211	
		Sulfate	0.75		mg SO4/L	P345214	
	SM 2120 B	Color (true)	10		PCU	P344969	
	SM 2320 B-97	Total Alkalinity	17		mg CaCO3/L	P345324	
	SM 2540 C-97	TDS	40		mg/L	P345667	
	SM 2540 D-97	TSS	3	I	mg/L	P345653	
	SM 4500 F-C-97	Fluoride	0.053	I	mg F/L	P345327	
1991567	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P345377	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P345124	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P345241	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P345142	
	SM 5310 B-00	Organic Carbon	4.9		mg C/L	P345343	
1991572	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P344976	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Lower Dianne Lake Middle **Collection Date/Time: 05/09/2018 10:20**

Field ID: G1WA0040 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1991563	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P344974	
	EPA 300.0 Rev. 2.1	Chloride	8.2		mg Cl/L	P345211	
		Sulfate	1.4		mg SO4/L	P345214	

Field ID: G1WA0040 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1991563	SM 2120 B	Color (true)	6.3		PCU	P344969	
	SM 2320 B-97	Total Alkalinity	29		mg CaCO3/L	P345324	
	SM 2540 C-97	TDS	45		mg/L	P345667	
	SM 2540 D-97	TSS	2	I	mg/L	P345653	
	SM 4500 F-C-97	Fluoride	0.067	I	mg F/L	P345327	
1991568	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P345377	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P345124	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P345241	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P345143	
	SM 5310 B-00	Organic Carbon	5.2		mg C/L	P345343	
1991573	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P344976	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Upper Dianne Lake Middle **Collection Date/Time: 05/09/2018 11:05**

Field ID: G1WA0041 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1991564	EPA 180.1 Rev. 2.0	Turbidity	3.2	A	NTU	P344974	
	EPA 300.0 Rev. 2.1	Chloride	6.4		mg Cl/L	P345211	
		Sulfate	1.4		mg SO4/L	P345214	
	SM 2120 B	Color (true)	13		PCU	P344969	
	SM 2320 B-97	Total Alkalinity	34		mg CaCO3/L	P345324	
	SM 2540 C-97	TDS	58		mg/L	P345667	
	SM 2540 D-97	TSS	3	I	mg/L	P345653	
	SM 4500 F-C-97	Fluoride	0.072	I	mg F/L	P345327	
1991569	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P345377	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.63		mg N/L	P345124	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P345241	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P345143	
	SM 5310 B-00	Organic Carbon	6.1		mg C/L	P345343	
1991574	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P344976	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Lake Monkey Business Middle **Collection Date/Time: 05/09/2018 12:25**

Field ID: G1WA0036 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1991565	EPA 180.1 Rev. 2.0	Turbidity	4.3		NTU	P344974	
	EPA 300.0 Rev. 2.1	Chloride	6.5		mg Cl/L	P345211	
		Sulfate	0.97		mg SO4/L	P345214	
	SM 2120 B	Color (true)	10		PCU	P344969	
	SM 2320 B-97	Total Alkalinity	28		mg CaCO3/L	P345324	
	SM 2540 C-97	TDS	59		mg/L	P345667	
	SM 2540 D-97	TSS	4	I	mg/L	P345653	

Field ID: G1WA0036 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1991565	SM 4500 F-C-97	Fluoride	0.073	I	mg F/L	P345327	
1991570	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P345377	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.64		mg N/L	P345124	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P345241	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P345143	
	SM 5310 B-00	Organic Carbon	5.8		mg C/L	P345343	
1991575	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P344981	

Ref. Method and Comment:
SM 2540 D-97: 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: P344974

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345211

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345214

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345377

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345124

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345241

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345142

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: P345143

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344976

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344981

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

Reference Method: SM 2120 B
Batch ID: P344969

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P345324

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

Reference Method: SM 2540 C-97
Batch ID: P345667

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P345653

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P345327

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P345343

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: P345211

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345214

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345377

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345124

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345241

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345142

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: P345143

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344976

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344981

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P345324

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P345327

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.1		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P345343

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.3		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345211

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991083	Chloride	99.1		P	90 - 110
1991564	Chloride	98.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345214

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991083	Sulfate	98.7		P	90 - 110
1991564	Sulfate	99.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345377

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991296	Ammonia-N	99.7	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991451	Kjeldahl Nitrogen	110	103	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345241

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991296	NO2NO3-N	96.0	97.5	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345142

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991451	Total-P	103	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345143

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991569	Total-P	99.0	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344976

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991297	O-Phosphate-P	98.7	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344981

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991575	O-Phosphate-P	94.9	95.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P345327

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991083	Fluoride	97.6	97.0	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P345343

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991051	Organic Carbon	100	98.1	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P344974

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991564	Turbidity	2.18	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345211

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991083	Chloride	1.04	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345214

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991083	Sulfate	1.20	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345377

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991296	Ammonia-N	1.89	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345124

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991451	Kjeldahl Nitrogen	5.79	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345241

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991296	NO2NO3-N	1.55	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991451	Total-P	1.31	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345143

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991569	Total-P	0.0235	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344976

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991297	O-Phosphate-P	0.505	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344981

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991575	O-Phosphate-P	0.735	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P344969

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991272	Color (true)	4.54	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P345324

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991083	Total Alkalinity	0.348	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P345667

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991083	TDS	5.37	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P345327

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991083	Fluoride	0.476	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P345343

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991051	Organic Carbon	0.992	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A83732
Included Lab Sample IDs: 1991561, 1991562, 1991563, 1991564, 1991565

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	98.2	P/P	90 - 110
Chloride	99.5	101	P/P	90 - 110
Sulfate	100	97.2	P/P	90 - 110
Sulfate	99.0	100	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 2120 B
Run ID: A83776
Included Lab Sample IDs: 1991561, 1991562, 1991563, 1991564, 1991565

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A83777
Included Lab Sample IDs: 1991561, 1991562, 1991563, 1991564, 1991565

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A83778
Included Lab Sample IDs: 1991571, 1991572, 1991573, 1991574, 1991575

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.3	97.8	P/P	90 - 110
O-Phosphate-P	99.3	97.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A83865
Included Lab Sample IDs: 1991566, 1991567, 1991568, 1991569, 1991570

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

Reference Method: SM 2320 B-97
Run ID: A83894
Included Lab Sample IDs: 1991561, 1991562, 1991563, 1991564, 1991565

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	99.1	P/P	90 - 110
Total Alkalinity	98.5	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A83894
Included Lab Sample IDs: 1991561, 1991562, 1991563, 1991564, 1991565

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

Reference Method: SM 5310 B-00
Run ID: A83898
Included Lab Sample IDs: 1991566, 1991567, 1991568, 1991569, 1991570

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.4	99.8	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A83920
Included Lab Sample IDs: 1991566, 1991567, 1991568, 1991569, 1991570

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A83924
Included Lab Sample IDs: 1991566, 1991567, 1991568, 1991569, 1991570

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84007
Included Lab Sample IDs: 1991566, 1991567, 1991568, 1991569, 1991570

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	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	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					2.18	
EPA 300.0 Rev. 2.1	Chloride	97.6	99.1	98.9		1.04	
	Sulfate	97.3	98.7	99.2		1.20	
EPA 350.1 Rev. 2.0	Ammonia-N	102	99.7	102			1.89
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.5	110	103			5.79
EPA 353.2 Rev. 2.0	NO2NO3-N	100	96.0	97.5			1.55
EPA 365.1 Rev. 2.0	Total-P	103	103	104			1.31
	Total-P	102	99.0	99.0			0.0235
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	98.7	99.2			0.505
	O-Phosphate-P	99.2	94.9	95.6			0.735
SM 2120 B	Color (true)					4.54	
SM 2320 B-97	Total Alkalinity	101				0.348	
SM 2540 C-97	TDS					5.37	
SM 4500 F-C-97	Fluoride	97.1	97.6	97.0			0.476
SM 5310 B-00	Organic Carbon	99.3	100	98.1			0.992

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1991561, 1991562, 1991563, 1991564, 1991565
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1991561, 1991562, 1991563, 1991564, 1991565
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1991561, 1991562, 1991563, 1991564, 1991565

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1991566, 1991567, 1991568, 1991569, 1991570
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1991566, 1991567, 1991568, 1991569, 1991570
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1991566, 1991567, 1991568, 1991569, 1991570
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1991566, 1991567, 1991568, 1991569, 1991570
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1991571, 1991572, 1991573, 1991574, 1991575
SM 2120 B / E31780	True Color measured at 450 nm	1991561, 1991562, 1991563, 1991564, 1991565
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1991561, 1991562, 1991563, 1991564, 1991565
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1991561, 1991562, 1991563, 1991564, 1991565
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1991561, 1991562, 1991563, 1991564, 1991565
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1991561, 1991562, 1991563, 1991564, 1991565
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1991566, 1991567, 1991568, 1991569, 1991570

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	05/09/2018			05/09/2018 15:35	DeAsia Armster	1991561, 1991562, 1991563, 1991564, 1991565
EPA 300.0 Rev. 2.1	05/09/2018			05/11/2018 03:44	Lipi Saha	1991564
	05/09/2018			05/11/2018 05:43	Lipi Saha	1991561
	05/09/2018			05/11/2018 05:55	Lipi Saha	1991562
	05/09/2018			05/11/2018 06:07	Lipi Saha	1991563
	05/09/2018			05/11/2018 06:19	Lipi Saha	1991565
EPA 350.1 Rev. 2.0	05/09/2018			05/14/2018 11:46	Ping Hua	1991566
	05/09/2018			05/14/2018 11:47	Ping Hua	1991567
	05/09/2018			05/14/2018 11:49	Ping Hua	1991568
	05/09/2018			05/14/2018 11:50	Ping Hua	1991569
	05/09/2018			05/14/2018 11:52	Ping Hua	1991570
EPA 351.2 Rev. 2.0	05/09/2018	05/11/2018 15:30	Adrian Shelby	05/16/2018 08:39	Joseph Suarez	1991566
	05/09/2018	05/11/2018 15:30	Adrian Shelby	05/16/2018 08:41	Joseph Suarez	1991567
	05/09/2018	05/11/2018 15:30	Adrian Shelby	05/16/2018 08:42	Joseph Suarez	1991568
	05/09/2018	05/11/2018 15:30	Adrian Shelby	05/16/2018 08:44	Joseph Suarez	1991569
	05/09/2018	05/11/2018 15:30	Adrian Shelby	05/16/2018 08:45	Joseph Suarez	1991570
EPA 353.2 Rev. 2.0	05/09/2018			05/14/2018 12:55	Lauren Bottorf	1991566
	05/09/2018			05/14/2018 12:56	Lauren Bottorf	1991567
	05/09/2018			05/14/2018 12:57	Lauren Bottorf	1991568
	05/09/2018			05/14/2018 12:58	Lauren Bottorf	1991569
	05/09/2018			05/14/2018 12:59	Lauren Bottorf	1991570
EPA 365.1 Rev. 2.0	05/09/2018	05/11/2018 13:15	Sima Feizi	05/18/2018 11:39	Beverly Y. Sanders	1991566
	05/09/2018	05/11/2018 13:15	Sima Feizi	05/18/2018 11:40	Beverly Y. Sanders	1991567
	05/09/2018	05/11/2018 13:15	Sima Feizi	05/18/2018 11:42	Beverly Y. Sanders	1991568
	05/09/2018	05/11/2018 13:15	Sima Feizi	05/18/2018 11:43	Beverly Y. Sanders	1991569
	05/09/2018	05/11/2018 13:15	Sima Feizi	05/18/2018 11:44	Beverly Y. Sanders	1991570
EPA 365.1 Rev. 2.0 dissolved	05/09/2018			05/09/2018 16:00	Megan Treadwell	1991575
	05/09/2018			05/09/2018 16:24	Megan Treadwell	1991571
	05/09/2018			05/09/2018 16:25	Megan Treadwell	1991572
	05/09/2018			05/09/2018 16:26	Megan Treadwell	1991573
	05/09/2018			05/09/2018 16:27	Megan Treadwell	1991574
SM 2120 B	05/09/2018			05/09/2018 15:26	Tanya Welborn	1991561
	05/09/2018			05/09/2018 15:27	Tanya Welborn	1991562
	05/09/2018			05/09/2018 15:28	Tanya Welborn	1991563, 1991564
	05/09/2018			05/09/2018 15:29	Tanya Welborn	1991565
SM 2320 B-97	05/09/2018			05/15/2018 02:22	Dale L. Simmons	1991561
	05/09/2018			05/15/2018 02:32	Dale L. Simmons	1991562
	05/09/2018			05/15/2018 02:41	Dale L. Simmons	1991563
	05/09/2018			05/15/2018 02:52	Dale L. Simmons	1991564

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	05/09/2018			05/15/2018 03:24	Dale L. Simmons	1991565
SM 2540 C-97	05/09/2018			05/11/2018 16:15	Yijie Li	1991561, 1991562, 1991563, 1991564, 1991565
SM 2540 D-97	05/09/2018			05/11/2018 16:15	Yijie Li	1991561, 1991562, 1991563, 1991564, 1991565
SM 4500 F-C-97	05/09/2018			05/15/2018 02:22	Dale L. Simmons	1991561
	05/09/2018			05/15/2018 02:32	Dale L. Simmons	1991562
	05/09/2018			05/15/2018 02:41	Dale L. Simmons	1991563
	05/09/2018			05/15/2018 02:52	Dale L. Simmons	1991564
	05/09/2018			05/15/2018 03:24	Dale L. Simmons	1991565
SM 5310 B-00	05/09/2018			05/15/2018 02:00	Megan Treadwell	1991566
	05/09/2018			05/15/2018 02:14	Megan Treadwell	1991567
	05/09/2018			05/15/2018 02:27	Megan Treadwell	1991568
	05/09/2018			05/15/2018 02:39	Megan Treadwell	1991569
	05/09/2018			05/15/2018 02:51	Megan Treadwell	1991570