Chemical Analysis Report

SW-DIST-2018-04-18-01

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

Event Description: **Kit A North Lakes**
Request ID: **RQ-2018-04-16-03**
Customer: **SW-DIST**
Project ID: **SMP**

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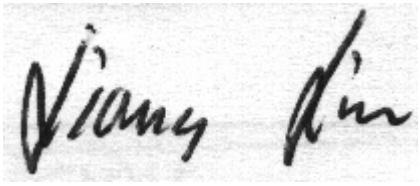
Date Certified: 04-MAY-2018 13:58



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: LAKE MAGDALENE **Collection Date/Time: 04/17/2018 09:40**

Field ID: G1SW0059 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1985331	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P343680	
	EPA 300.0 Rev. 2.1	Chloride	40		mg Cl/L	P343781	
		Sulfate	16		mg SO4/L	P343784	
	SM 2120 B	Color (true)	33	A	PCU	P343670	
	SM 2320 B-97	Total Alkalinity	41		mg CaCO3/L	P344173	
	SM 2540 C-97	TDS	145		mg/L	P344113	
	SM 2540 D-97	TSS	3	I	mg/L	P344057	
	SM 4500 F-C-97	Fluoride	0.093	I	mg F/L	P344177	
1985336	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P344162	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.83		mg N/L	P343726	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P343750	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P343831	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P343984	
1985341	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P343674	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride:Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: LITTLE LAKE WILSON CENTER **Collection Date/Time: 04/17/2018 12:30**

Field ID: G1SW0006 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1985332	EPA 180.1 Rev. 2.0	Turbidity	4.9	A	NTU	P343680	
	EPA 300.0 Rev. 2.1	Chloride	56		mg Cl/L	P343781	
		Sulfate	2.4		mg SO4/L	P343784	
	SM 2120 B	Color (true)	47		PCU	P343670	
	SM 2320 B-97	Total Alkalinity	60		mg CaCO3/L	P344173	
	SM 2540 C-97	TDS	144		mg/L	P344113	
	SM 2540 D-97	TSS	6	I	mg/L	P344057	
	SM 4500 F-C-97	Fluoride	0.071	I	mg F/L	P344177	
1985337	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P344162	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P343726	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P343750	
	EPA 365.1 Rev. 2.0	Total-P	0.056		mg P/L	P343831	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P343984	
1985342	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P343674	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride:Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: LITTLE LAKE WILSON SOUTH **Collection Date/Time: 04/17/2018 12:45**

Field ID: G1SW0009 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes

Field ID: G1SW0009 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1985333	EPA 180.1 Rev. 2.0	Turbidity	5.0		NTU	P343680	
	EPA 300.0 Rev. 2.1	Chloride	56		mg Cl/L	P343781	
		Sulfate	2.4		mg SO4/L	P343784	
	SM 2120 B	Color (true)	49		PCU	P343670	
	SM 2320 B-97	Total Alkalinity	59		mg CaCO3/L	P344296	
	SM 2540 C-97	TDS	178		mg/L	P344113	
	SM 2540 D-97	TSS	6	I	mg/L	P344057	
	SM 4500 F-C-97	Fluoride	0.071	I	mg F/L	P344300	
1985338	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P344163	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P343726	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P343750	
	EPA 365.1 Rev. 2.0	Total-P	0.055		mg P/L	P343831	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P343985	
1985343	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P343674	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride:Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: LAKE WASTENA **Collection Date/Time: 04/17/2018 11:40**

Field ID: G1SW0020 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1985334	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P343680	
	EPA 300.0 Rev. 2.1	Chloride	22		mg Cl/L	P343781	
		Sulfate	6.6		mg SO4/L	P343784	
	SM 2120 B	Color (true)	32		PCU	P343670	
	SM 2320 B-97	Total Alkalinity	23	A	mg CaCO3/L	P344296	
	SM 2540 C-97	TDS	92		mg/L	P344113	
	SM 2540 D-97	TSS	2	I	mg/L	P344057	
	SM 4500 F-C-97	Fluoride	0.065	I	mg F/L	P344300	
1985339	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P344163	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.84		mg N/L	P343726	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P343750	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P343832	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P343985	
1985344	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P343675	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride:Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: LAKE ARMISTEAD **Collection Date/Time: 04/17/2018 10:40**

Field ID: G1SW0030 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1985335	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P343680	

Field ID: G1SW0030 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1985335	EPA 300.0 Rev. 2.1	Chloride	34		mg Cl/L	P343781	
		Sulfate	6.9		mg SO4/L	P343784	
	SM 2120 B	Color (true)	100		PCU	P343670	
	SM 2320 B-97	Total Alkalinity	30		mg CaCO3/L	P344296	
	SM 2540 C-97	TDS	126		mg/L	P344113	
	SM 2540 D-97	TSS	2	I	mg/L	P344057	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P344300	
1985340	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P344163	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.79		mg N/L	P343726	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P343750	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P343832	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P343985	
1985345	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P343675	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride:Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: 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: P343680

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P343781

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P343784

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344162

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344163

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343726

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343750

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343831

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343832

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343674

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343675

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

Reference Method: SM 2120 B
Batch ID: P343670

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P344173

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

Reference Method: SM 2320 B-97
Batch ID: P344296

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P344113

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P344057

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P344177

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P344300

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P343984

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

Reference Method: SM 5310 B-00
Batch ID: P343985

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: P343781

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P343784

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344162

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344162

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344163

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: P343726

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343750

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343831

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: P343832

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343674

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343675

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

Reference Method: SM 2320 B-97
Batch ID: P344173

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	98 - 107

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P344296

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

Reference Method: SM 4500 F-C-97
Batch ID: P344177

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.3		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P344300

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.4		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P343984

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.5		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P343985

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P343784

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1985270	Sulfate	90.2		P	90 - 110
1985331	Sulfate	95.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344162

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1985337	Ammonia-N	105	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344163

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1985338	Ammonia-N	96.5	103	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343750

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1985293	NO2NO3-N	103	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343831

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1985293	Total-P	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343832

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1985339	Total-P	104	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343674

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1985241	O-Phosphate-P	97.6	97.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343675

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1985344	O-Phosphate-P	99.5	98.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P344177

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1985322	Fluoride	94.9	96.8	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P344300

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1985334	Fluoride	94.5	96.7	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P343984

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1985171	Organic Carbon	103		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P343985

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1985338	Organic Carbon	99.3	107	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P343680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985332	Turbidity	3.44	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P343781

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985270	Chloride	0.0650	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P343784

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985270	Sulfate	0.0940	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344162

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985337	Ammonia-N	0.565	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344163

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985338	Ammonia-N	5.69	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985338	Kjeldahl Nitrogen	0.892	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343750

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985293	NO2NO3-N	0.484	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343831

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985293	Total-P	0.669	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343832

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985339	Total-P	1.29	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343674

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985241	O-Phosphate-P	0.188	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343675

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985344	O-Phosphate-P	0.909	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P343670

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985331	Color (true)	4.34	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P344173

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985322	Total Alkalinity	0.137	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P344296

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985334	Total Alkalinity	0.474	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P344113

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985322	TDS	6.61	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P344177

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985322	Fluoride	1.47	Spike	P	0 - 3.5

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P344300

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985334	Fluoride	1.94	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P343984

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985171	Organic Carbon	0.0	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P343985

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1985338	Organic Carbon	4.38	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: A83267
Included Lab Sample IDs: 1985331, 1985332, 1985333, 1985334, 1985335

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.3	98.6	P/P	90 - 110
Chloride	99.7	98.3	P/P	90 - 110
Sulfate	98.3	98.5	P/P	90 - 110
Sulfate	99.9	98.3	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A83322
Included Lab Sample IDs: 1985331, 1985332, 1985333, 1985334, 1985335

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.7	100	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A83323
Included Lab Sample IDs: 1985341, 1985342, 1985343, 1985344, 1985345

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	102	P/P	90 - 110
O-Phosphate-P	99.4	99.4	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A83324
Included Lab Sample IDs: 1985331, 1985332, 1985333, 1985334, 1985335

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	98.5	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A83348
Included Lab Sample IDs: 1985336, 1985337, 1985338, 1985339, 1985340

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A83386
Included Lab Sample IDs: 1985336, 1985337, 1985338, 1985339, 1985340

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A83396
Included Lab Sample IDs: 1985337, 1985338

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A83416
Included Lab Sample IDs: 1985336, 1985339, 1985340

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	99.5	P/P	90 - 110
Total-P	99.5	99.5	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A83431
Included Lab Sample IDs: 1985336, 1985337, 1985338, 1985339, 1985340

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	104	P/P	90 - 110
Organic Carbon	102	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A83491
Included Lab Sample IDs: 1985336, 1985337, 1985338, 1985339, 1985340

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	104	P/P	90 - 110
Ammonia-N	104	106	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A83492
Included Lab Sample IDs: 1985331, 1985332

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.2	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A83492
Included Lab Sample IDs: 1985331, 1985332

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.1	97.1	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A83541
Included Lab Sample IDs: 1985333, 1985334, 1985335

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	98.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A83541
Included Lab Sample IDs: 1985333, 1985334, 1985335

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.1	100	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					3.44	
EPA 300.0 Rev. 2.1	Chloride	98.1				0.0650	
	Sulfate	97.0	90.2	95.5		0.0940	
EPA 350.1 Rev. 2.0	Ammonia-N	95.4	105	104			0.565
	Ammonia-N	102	96.5	103			5.69
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105					0.892
EPA 353.2 Rev. 2.0	NO2NO3-N	102	103	104			0.484
EPA 365.1 Rev. 2.0	Total-P	103	101	101			0.669
	Total-P	103	104	102			1.29
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.9	97.6	97.4			0.188
	O-Phosphate-P	100	99.5	98.6			0.909
SM 2120 B	Color (true)					4.34	
SM 2320 B-97	Total Alkalinity	100				0.137	
	Total Alkalinity	101				0.474	
SM 2540 C-97	TDS					6.61	
SM 4500 F-C-97	Fluoride	94.3	94.9	96.8			1.47
	Fluoride	95.4	94.5	96.7			1.94
SM 5310 B-00	Organic Carbon	98.5	103				0.0

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
SM 5310 B-00	Organic Carbon	99.2	99.3	107			4.38

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1985331, 1985332, 1985333, 1985334, 1985335
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1985331, 1985332, 1985333, 1985334, 1985335
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1985331, 1985332, 1985333, 1985334, 1985335
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1985336, 1985337, 1985338, 1985339, 1985340
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1985336, 1985337, 1985338, 1985339, 1985340
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1985336, 1985337, 1985338, 1985339, 1985340
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1985336, 1985337, 1985338, 1985339, 1985340
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1985341, 1985342, 1985343, 1985344, 1985345
SM 2120 B / E31780	True Color measured at 450 nm	1985331, 1985332, 1985333, 1985334, 1985335
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1985331, 1985332, 1985333, 1985334, 1985335
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1985331, 1985332, 1985333, 1985334, 1985335
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1985331, 1985332, 1985333, 1985334, 1985335
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1985331, 1985332, 1985333, 1985334, 1985335
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1985336, 1985337, 1985338, 1985339, 1985340

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	04/18/2018			04/18/2018 16:38	William L. Brown IV	1985331, 1985332, 1985333, 1985334, 1985335
EPA 300.0 Rev. 2.1	04/18/2018			04/19/2018 13:59	Lipi Saha	1985331
	04/18/2018			04/19/2018 16:47	Lipi Saha	1985332
	04/18/2018			04/19/2018 16:59	Lipi Saha	1985333
	04/18/2018			04/19/2018 17:11	Lipi Saha	1985334
	04/18/2018			04/19/2018 17:23	Lipi Saha	1985335
EPA 350.1 Rev. 2.0	04/18/2018			04/24/2018 10:38	Ping Hua	1985336
	04/18/2018			04/24/2018 10:39	Ping Hua	1985337
	04/18/2018			04/24/2018 10:51	Ping Hua	1985338
	04/18/2018			04/24/2018 10:56	Ping Hua	1985339
	04/18/2018			04/24/2018 10:57	Ping Hua	1985340
EPA 351.2 Rev. 2.0	04/18/2018	04/19/2018 11:30	Adrian Shelby	04/20/2018 13:58	Joseph Suarez	1985336
	04/18/2018	04/19/2018 11:30	Adrian Shelby	04/20/2018 14:00	Joseph Suarez	1985337
	04/18/2018	04/19/2018 11:30	Adrian Shelby	04/20/2018 14:01	Joseph Suarez	1985338
	04/18/2018	04/19/2018 11:30	Adrian Shelby	04/20/2018 14:06	Joseph Suarez	1985339
	04/18/2018	04/19/2018 11:30	Adrian Shelby	04/20/2018 14:07	Joseph Suarez	1985340
EPA 353.2 Rev. 2.0	04/18/2018			04/19/2018 13:22	Lauren Bottorf	1985336
	04/18/2018			04/19/2018 13:24	Lauren Bottorf	1985337
	04/18/2018			04/19/2018 13:25	Lauren Bottorf	1985338
	04/18/2018			04/19/2018 13:26	Lauren Bottorf	1985339
	04/18/2018			04/19/2018 13:27	Lauren Bottorf	1985340
EPA 365.1 Rev. 2.0	04/18/2018	04/20/2018 12:57	Sima Feizi	04/23/2018 11:19	Beverly Y. Sanders	1985337
	04/18/2018	04/20/2018 12:57	Sima Feizi	04/23/2018 11:20	Beverly Y. Sanders	1985338
	04/18/2018	04/20/2018 12:57	Sima Feizi	04/24/2018 11:54	Beverly Y. Sanders	1985336
	04/18/2018	04/20/2018 12:57	Sima Feizi	04/24/2018 12:05	Beverly Y. Sanders	1985339
	04/18/2018	04/20/2018 12:57	Sima Feizi	04/24/2018 12:06	Beverly Y. Sanders	1985340
EPA 365.1 Rev. 2.0 dissolved	04/18/2018			04/18/2018 15:19	Megan Treadwell	1985344
	04/18/2018			04/18/2018 15:43	Megan Treadwell	1985341
	04/18/2018			04/18/2018 15:44	Megan Treadwell	1985342
	04/18/2018			04/18/2018 15:45	Megan Treadwell	1985343
	04/18/2018			04/18/2018 15:46	Megan Treadwell	1985345
SM 2120 B	04/18/2018			04/18/2018 15:36	Julia Storbeck	1985331
	04/18/2018			04/18/2018 15:37	Julia Storbeck	1985332
	04/18/2018			04/18/2018 15:38	Julia Storbeck	1985333
	04/18/2018			04/18/2018 15:39	Julia Storbeck	1985334
	04/18/2018			04/18/2018 15:40	Julia Storbeck	1985335
SM 2320 B-97	04/18/2018			04/26/2018 18:47	Dale L. Simmons	1985331
	04/18/2018			04/26/2018 18:57	Dale L. Simmons	1985332
	04/18/2018			04/27/2018 20:44	Dale L. Simmons	1985334

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	04/18/2018			04/27/2018 21:36	Dale L. Simmons	1985333
	04/18/2018			04/27/2018 21:46	Dale L. Simmons	1985335
SM 2540 C-97	04/18/2018			04/21/2018 23:36	Yijie Li	1985331, 1985332, 1985333, 1985334, 1985335
SM 2540 D-97	04/18/2018			04/21/2018 23:06	Yijie Li	1985331, 1985332, 1985333, 1985334, 1985335
SM 4500 F-C-97	04/18/2018			04/26/2018 18:47	Dale L. Simmons	1985331
	04/18/2018			04/26/2018 18:57	Dale L. Simmons	1985332
	04/18/2018			04/27/2018 20:37	Dale L. Simmons	1985334
	04/18/2018			04/27/2018 21:36	Dale L. Simmons	1985333
	04/18/2018			04/27/2018 21:46	Dale L. Simmons	1985335
SM 5310 B-00	04/18/2018			04/24/2018 02:59	Megan Treadwell	1985336
	04/18/2018			04/24/2018 03:37	Megan Treadwell	1985337
	04/18/2018			04/24/2018 04:16	Megan Treadwell	1985338
	04/18/2018			04/24/2018 05:10	Megan Treadwell	1985339
	04/18/2018			04/24/2018 05:24	Megan Treadwell	1985340