Chemical Analysis Report

WAS-SECT-2018-06-27-02

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

Event Description: **killearn lakes**
Request ID: **RQ-2018-06-25-20**
Customer: **WAS-SECT**
Project ID: **SMP**

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 13-JUL-2018 14:11

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 Monkey Business Middle **Collection Date/Time: 06/27/2018 08:20**

Field ID: G1WA0036 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2003584	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P347626	
	EPA 300.0 Rev. 2.1	Chloride	6.2		mg Cl/L	P347949	
		Sulfate	0.95		mg SO4/L	P347955	
	SM 2120 B	Color (true)	9.9		PCU	P347606	
	SM 2320 B-97	Total Alkalinity	30		mg CaCO3/L	P348056	
	SM 2540 C-97	TDS	70		mg/L	P347911	
	SM 2540 D-97	TSS	5	I	mg/L	P347906	
	SM 4500 F-C-97	Fluoride	0.069	I	mg F/L	P348057	
2003589	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P347942	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P348073	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P347685	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P347839	
	SM 5310 B-00	Organic Carbon	4.6		mg C/L	P348189	
2003594	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P347618	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low 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.

Sample Location: Upper Dianne Lake Middle **Collection Date/Time: 06/27/2018 08:51**

Field ID: G1WA0041 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2003585	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P347626	
	EPA 300.0 Rev. 2.1	Chloride	7.2		mg Cl/L	P347949	
		Sulfate	1.4		mg SO4/L	P347955	
	SM 2120 B	Color (true)	10		PCU	P347606	
	SM 2320 B-97	Total Alkalinity	37		mg CaCO3/L	P348097	
	SM 2540 C-97	TDS	66		mg/L	P347911	
	SM 2540 D-97	TSS	2	I	mg/L	P347906	
	SM 4500 F-C-97	Fluoride	0.067	I	mg F/L	P348101	
2003590	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P347942	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.48		mg N/L	P348073	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P347685	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P347839	
	SM 5310 B-00	Organic Carbon	4.5		mg C/L	P348189	
2003595	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P347618	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low 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.

Sample Location: Lower Dianne Lake Middle **Collection Date/Time: 06/27/2018 09:38**

Field ID: G1WA0040 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2003586	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P347626	
	EPA 300.0 Rev. 2.1	Chloride	8.3		mg Cl/L	P347949	
		Sulfate	0.77		mg SO4/L	P347955	
	SM 2120 B	Color (true)	9.3		PCU	P347606	
	SM 2320 B-97	Total Alkalinity	30		mg CaCO3/L	P348097	
	SM 2540 C-97	TDS	88		mg/L	P347911	
	SM 2540 D-97	TSS	3	I	mg/L	P347906	
	SM 4500 F-C-97	Fluoride	0.067	I	mg F/L	P348101	
2003591	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P347942	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P348073	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P347685	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P347839	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P348189	
2003596	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P347618	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low 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.

Sample Location: Petty Gulf Lake Middle **Collection Date/Time: 06/27/2018 10:29**

Field ID: G1WA0022 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2003587	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P347626	
	EPA 300.0 Rev. 2.1	Chloride	5.0		mg Cl/L	P347949	
		Sulfate	0.64		mg SO4/L	P347955	
	SM 2120 B	Color (true)	9.3		PCU	P347606	
	SM 2320 B-97	Total Alkalinity	18		mg CaCO3/L	P348097	
	SM 2540 C-97	TDS	50		mg/L	P347911	
	SM 2540 D-97	TSS	4	I	mg/L	P347906	
	SM 4500 F-C-97	Fluoride	0.051	I	mg F/L	P348101	
2003592	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P347942	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.68		mg N/L	P348073	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P347685	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P347839	
	SM 5310 B-00	Organic Carbon	6.1		mg C/L	P348189	
2003597	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P347618	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low 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.

Sample Location: Pine Hill Lake Middle **Collection Date/Time: 06/27/2018 10:48**

Field ID: G1WA0054 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2003588	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P347626	
	EPA 300.0 Rev. 2.1	Chloride	6.2		mg Cl/L	P347949	
		Sulfate	0.81		mg SO4/L	P347955	
	SM 2120 B	Color (true)	10		PCU	P347606	
	SM 2320 B-97	Total Alkalinity	8.7		mg CaCO3/L	P348097	
	SM 2540 C-97	TDS	31		mg/L	P347911	
	SM 2540 D-97	TSS	5	I	mg/L	P347906	
	SM 4500 F-C-97	Fluoride	0.048	I	mg F/L	P348101	
2003593	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P347942	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P348073	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P347685	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P347839	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P348189	
2003598	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P347618	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low 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.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P347626

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347949

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347955

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347942

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348073

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347685

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347839

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347618

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

Reference Method: SM 2120 B
Batch ID: P347606

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P348056

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

Reference Method: SM 2320 B-97
Batch ID: P348097

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

Reference Method: SM 2540 C-97
Batch ID: P347911

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P347906

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P348057

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P348101

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P348189

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: P347949

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	96.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347955

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	93.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347942

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348073

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347685

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: P347839

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347618

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

Reference Method: SM 2120 B
Batch ID: P347606

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P348056

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P348097

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P348057

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.7		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P348101

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.3		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P348189

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347949

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003538	Chloride	96.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347955

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003538	Sulfate	95.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347942

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003540	Ammonia-N	96.8	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348073

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003540	Kjeldahl Nitrogen	92.2	90.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347685

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003482	NO2NO3-N	99.5	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347839

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003668	Total-P	99.8	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347618

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003537	O-Phosphate-P	94.3	95.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P348057

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003535	Fluoride	96.9	96.9	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P348101

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003664	Fluoride	98.1	97.6	P/P	91 - 105

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P348189

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003452	Organic Carbon	99.5	101	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P347626

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003523	Turbidity	8.90	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347949

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003538	Chloride	5.75	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347942

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003540	Ammonia-N	1.39	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348073

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003540	Kjeldahl Nitrogen	1.57	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347685

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003482	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347839

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003668	Total-P	1.17	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347618

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003537	O-Phosphate-P	1.40	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P347606

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003617	Color (true)	0.926	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-97
Batch ID: P348056

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003535	Total Alkalinity	0.241	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P348097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003664	Total Alkalinity	0.103	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P347911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003449	TDS	6.85	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P348057

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003535	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P348101

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003664	Fluoride	0.472	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P348189

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003452	Organic Carbon	1.38	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: SM 2120 B
Run ID: A84873
Included Lab Sample IDs: 2003584, 2003585, 2003586, 2003587, 2003588

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A84876
Included Lab Sample IDs: 2003594, 2003595, 2003596, 2003597, 2003598

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.4	97.0	P/P	90 - 110
O-Phosphate-P	98.7	97.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A84882
Included Lab Sample IDs: 2003584, 2003585, 2003586, 2003587, 2003588

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	98.0	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A84911
Included Lab Sample IDs: 2003589, 2003590, 2003591, 2003592, 2003593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A85001
Included Lab Sample IDs: 2003584, 2003585, 2003586, 2003587, 2003588

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	103	P/P	90 - 110
Chloride	103	104	P/P	90 - 110
Sulfate	101	106	P/P	90 - 110
Sulfate	102	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A85013
Included Lab Sample IDs: 2003589, 2003590, 2003591, 2003592, 2003593

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A85037
Included Lab Sample IDs: 2003589, 2003590, 2003591, 2003592, 2003593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A85074
Included Lab Sample IDs: 2003584

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

Reference Method: SM 4500 F-C-97
Run ID: A85074
Included Lab Sample IDs: 2003584

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

Reference Method: SM 2320 B-97
Run ID: A85091
Included Lab Sample IDs: 2003585, 2003586, 2003587, 2003588

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110
Total Alkalinity	104	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A85091
Included Lab Sample IDs: 2003585, 2003586, 2003587, 2003588

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85121
Included Lab Sample IDs: 2003589, 2003590, 2003591, 2003592, 2003593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.8	98.8	P/P	90 - 110
Kjeldahl Nitrogen	98.1	94.8	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A85128
Included Lab Sample IDs: 2003589, 2003590, 2003591, 2003592, 2003593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.0	95.8	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					8.90	
EPA 300.0 Rev. 2.1	Chloride	96.2	96.1			5.75	
	Sulfate	93.1	95.5				
EPA 350.1 Rev. 2.0	Ammonia-N	98.0	96.8	98.2			1.39
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.9	92.2	90.3			1.57
EPA 353.2 Rev. 2.0	NO2NO3-N	100	99.5	99.5			0.0
EPA 365.1 Rev. 2.0	Total-P	98.1	99.8	98.4			1.17
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	94.3	95.7			1.40
SM 2120 B	Color (true)	100				0.926	
SM 2320 B-97	Total Alkalinity	102				0.241	
	Total Alkalinity	104				0.103	
SM 2540 C-97	TDS					6.85	
SM 4500 F-C-97	Fluoride	98.7	96.9	96.9			0.0
	Fluoride	99.3	98.1	97.6			0.472
SM 5310 B-00	Organic Carbon	96.4	99.5	101			1.38

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2003584, 2003585, 2003586, 2003587, 2003588
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2003584, 2003585, 2003586, 2003587, 2003588
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2003584, 2003585, 2003586, 2003587, 2003588
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2003589, 2003590, 2003591, 2003592, 2003593
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2003589, 2003590, 2003591, 2003592, 2003593
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2003589, 2003590, 2003591, 2003592, 2003593
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2003589, 2003590, 2003591, 2003592, 2003593
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2003594, 2003595, 2003596, 2003597, 2003598
SM 2120 B / E31780	True Color measured at 450 nm	2003584, 2003585, 2003586, 2003587, 2003588
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2003584, 2003585, 2003586, 2003587, 2003588
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2003584, 2003585, 2003586, 2003587, 2003588
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2003584, 2003585, 2003586, 2003587, 2003588
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2003584, 2003585, 2003586, 2003587, 2003588
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2003589, 2003590, 2003591, 2003592, 2003593

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	06/27/2018			06/27/2018 17:02	William L. Brown IV	2003584, 2003585, 2003586, 2003587, 2003588
EPA 300.0 Rev. 2.1	06/27/2018			07/03/2018 15:47	Lipi Saha	2003584
	06/27/2018			07/03/2018 15:59	Lipi Saha	2003585
	06/27/2018			07/03/2018 16:11	Lipi Saha	2003586
	06/27/2018			07/03/2018 16:35	Lipi Saha	2003587
	06/27/2018			07/03/2018 17:23	Lipi Saha	2003588
EPA 350.1 Rev. 2.0	06/27/2018			07/03/2018 15:20	Julia Storbeck	2003589
	06/27/2018			07/03/2018 15:22	Julia Storbeck	2003590
	06/27/2018			07/03/2018 15:23	Julia Storbeck	2003591
	06/27/2018			07/03/2018 15:25	Julia Storbeck	2003592
	06/27/2018			07/03/2018 15:26	Julia Storbeck	2003593
EPA 351.2 Rev. 2.0	06/27/2018	07/09/2018 18:30	Tanya Welborn	07/10/2018 15:17	Joseph Suarez	2003589
	06/27/2018	07/09/2018 18:30	Tanya Welborn	07/10/2018 15:19	Joseph Suarez	2003590
	06/27/2018	07/09/2018 18:30	Tanya Welborn	07/10/2018 15:23	Joseph Suarez	2003591
	06/27/2018	07/09/2018 18:30	Tanya Welborn	07/10/2018 15:25	Joseph Suarez	2003592
	06/27/2018	07/09/2018 18:30	Tanya Welborn	07/10/2018 15:27	Joseph Suarez	2003593
EPA 353.2 Rev. 2.0	06/27/2018			06/28/2018 13:21	Lauren Bottorf	2003589
	06/27/2018			06/28/2018 13:23	Lauren Bottorf	2003590
	06/27/2018			06/28/2018 13:24	Lauren Bottorf	2003591
	06/27/2018			06/28/2018 13:25	Lauren Bottorf	2003592
	06/27/2018			06/28/2018 13:26	Lauren Bottorf	2003593
EPA 365.1 Rev. 2.0	06/27/2018	07/02/2018 12:00	Sima Feizi	07/03/2018 12:39	Beverly Y. Sanders	2003589
	06/27/2018	07/02/2018 12:00	Sima Feizi	07/03/2018 12:40	Beverly Y. Sanders	2003590
	06/27/2018	07/02/2018 12:00	Sima Feizi	07/03/2018 12:41	Beverly Y. Sanders	2003591
	06/27/2018	07/02/2018 12:00	Sima Feizi	07/03/2018 12:42	Beverly Y. Sanders	2003592
	06/27/2018	07/02/2018 12:00	Sima Feizi	07/03/2018 12:43	Beverly Y. Sanders	2003593
EPA 365.1 Rev. 2.0 dissolved	06/27/2018			06/27/2018 15:11	Megan Treadwell	2003594
	06/27/2018			06/27/2018 15:12	Megan Treadwell	2003595
	06/27/2018			06/27/2018 15:18	Megan Treadwell	2003596
	06/27/2018			06/27/2018 15:19	Megan Treadwell	2003597, 2003598
SM 2120 B	06/27/2018			06/27/2018 15:02	Tanya Welborn	2003584
	06/27/2018			06/27/2018 15:03	Tanya Welborn	2003585
	06/27/2018			06/27/2018 15:04	Tanya Welborn	2003586
	06/27/2018			06/27/2018 15:05	Tanya Welborn	2003587, 2003588
SM 2320 B-97	06/27/2018			07/03/2018 13:17	Dale L. Simmons	2003584
	06/27/2018			07/07/2018 02:57	Dale L. Simmons	2003585
	06/27/2018			07/07/2018 03:07	Dale L. Simmons	2003586
	06/27/2018			07/07/2018 03:18	Dale L. Simmons	2003587
	06/27/2018			07/07/2018 03:57	Dale L. Simmons	2003588

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 C-97	06/27/2018			06/28/2018 15:21	Yijie Li	2003584, 2003585, 2003586, 2003587, 2003588
SM 2540 D-97	06/27/2018			06/28/2018 15:21	Yijie Li	2003584, 2003585, 2003586, 2003587, 2003588
SM 4500 F-C-97	06/27/2018			07/03/2018 13:17	Dale L. Simmons	2003584
	06/27/2018			07/07/2018 02:57	Dale L. Simmons	2003585
	06/27/2018			07/07/2018 03:07	Dale L. Simmons	2003586
	06/27/2018			07/07/2018 03:18	Dale L. Simmons	2003587
	06/27/2018			07/07/2018 03:57	Dale L. Simmons	2003588
SM 5310 B-00	06/27/2018			07/09/2018 23:11	Megan Treadwell	2003589
	06/27/2018			07/09/2018 23:25	Megan Treadwell	2003590
	06/27/2018			07/09/2018 23:39	Megan Treadwell	2003591
	06/27/2018			07/09/2018 23:53	Megan Treadwell	2003592
	06/27/2018			07/10/2018 00:09	Megan Treadwell	2003593