Chemical Analysis Report

SO-DIST-2018-05-30-01

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

Event Description: **Highlands Lakes**
Request ID: **RQ-2018-05-21-25**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Maryann Dugan

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 22-JUN-2018 12:32

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: Blue Lake @ Center **Collection Date/Time: 05/29/2018 10:40**

Field ID: G4SD0157 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1996049	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P346157	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P346296	
		Sulfate	24		mg SO4/L	P346298	
	SM 2120 B	Color (true)	11		PCU	P346154	
	SM 2320 B-97	Total Alkalinity	17		mg CaCO3/L	P346239	RPD
	SM 2540 C-97	TDS	95		mg/L	P346665	
	SM 2540 D-97	TSS	2	I	mg/L	P346333	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P346242	
1996052	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P346421	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P346459	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P346265	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P346384	
	SM 5310 B-00	Organic Carbon	7.3		mg C/L	P346583	
1996055	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P346146	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples 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.

Sample Location: Lake Lachard @ Center **Collection Date/Time: 05/29/2018 11:45**

Field ID: G4SD0164 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1996050	EPA 180.1 Rev. 2.0	Turbidity	5.7		NTU	P346157	
	EPA 300.0 Rev. 2.1	Chloride	6.4		mg Cl/L	P346296	
		Sulfate	16		mg SO4/L	P346298	
	SM 2120 B	Color (true)	8.2		PCU	P346154	
	SM 2320 B-97	Total Alkalinity	12		mg CaCO3/L	P346239	RPD
	SM 2540 C-97	TDS	60		mg/L	P346665	
	SM 2540 D-97	TSS	6	I	mg/L	P346333	
	SM 4500 F-C-97	Fluoride	0.056	I	mg F/L	P346242	
1996053	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P346421	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.87		mg N/L	P346459	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P346265	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P346384	
	SM 5310 B-00	Organic Carbon	5.3		mg C/L	P346583	
1996056	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P346146	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples 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.

Sample Location: Buck Lake @ Middle **Collection Date/Time: 05/29/2018 12:20**

Field ID: G4SD0158 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1996051	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P346157	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P346296	
		Sulfate	58		mg SO4/L	P346298	
	SM 2120 B	Color (true)	4.5	I	PCU	P346154	
	SM 2320 B-97	Total Alkalinity	14	AJ	mg CaCO3/L	P346239	RPD
	SM 2540 C-97	TDS	223		mg/L	P346665	
	SM 2540 D-97	TSS	2	I	mg/L	P346333	
	SM 4500 F-C-97	Fluoride	0.077	I	mg F/L	P346242	
1996054	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P346421	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70		mg N/L	P347044	
	EPA 353.2 Rev. 2.0	NO2NO3-N	13		mg N/L	P346265	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P346381	
	SM 5310 B-00	Organic Carbon	3.8		mg C/L	P346584	
1996057	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P346146	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2320 B-97: Refer to the narrative for an explanation of QC Codes.
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: P346157

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346296

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346298

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346421

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346459

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347044

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346265

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346381

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346384

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 dissolved
Batch ID: P346146

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

Reference Method: SM 2120 B
Batch ID: P346154

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P346239

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

Reference Method: SM 2540 C-97
Batch ID: P346665

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P346333

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P346242

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P346583

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

Reference Method: SM 5310 B-00
Batch ID: P346584

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: P346296

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346298

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346421

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346459

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347044

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: P346265

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: P346381

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346384

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346146

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P346239

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

Reference Method: SM 4500 F-C-97
Batch ID: P346242

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.8		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P346583

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.6		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P346584

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.1		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346296

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996039	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346298

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1995691	Sulfate	95.1		P	90 - 110
1996039	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346421

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996012	Ammonia-N	98.2	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346459

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996072	Kjeldahl Nitrogen	100	99.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346265

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996032	NO2NO3-N	92.8	94.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346381

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996054	Total-P	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346384

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996052	Total-P	98.1	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346146

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1995839	O-Phosphate-P	95.2	96.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P346242

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996051	Fluoride	94.7	95.2	P/P	91 - 105

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P346583

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1995908	Organic Carbon	104		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P346584

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996054	Organic Carbon	97.9	97.7	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P346157

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995837	Turbidity	0.649	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346296

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995691	Chloride	1.18	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346298

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995691	Sulfate	0.413	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346421

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996012	Ammonia-N	0.0207	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346459

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996072	Kjeldahl Nitrogen	0.200	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347044

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998113	Kjeldahl Nitrogen	1.91	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346265

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996032	NO2NO3-N	1.97	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346381

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996054	Total-P	1.45	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346384

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996052	Total-P	1.22	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346146

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995839	O-Phosphate-P	0.785	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P346154

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996009	Color (true)	2.04	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P346239

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996051	Total Alkalinity	3.21	Sample	F	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P346665

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995837	TDS	1.74	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P346242

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996051	Fluoride	0.477	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P346583

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995908	Organic Carbon	0.950	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P346584

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996054	Organic Carbon	0.171	Spike	P	0 - 20

Quality Assurance Report
Precision

* 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: A84230
Included Lab Sample IDs: 1996049, 1996050, 1996051

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	104	105	P/P	90 - 110
Sulfate	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A84242
Included Lab Sample IDs: 1996055, 1996056, 1996057

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	98.6	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A84244
Included Lab Sample IDs: 1996049, 1996050, 1996051

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.8	98.7	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A84246
Included Lab Sample IDs: 1996049, 1996050, 1996051

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

Reference Method: SM 2320 B-97
Run ID: A84290
Included Lab Sample IDs: 1996049, 1996050, 1996051

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.2	P/P	90 - 110
Total Alkalinity	99.2	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A84290
Included Lab Sample IDs: 1996049, 1996050, 1996051

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.2	97.6	P/P	90 - 110
Fluoride	97.6	97.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A84302
Included Lab Sample IDs: 1996052, 1996053, 1996054

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A84361
Included Lab Sample IDs: 1996052, 1996053, 1996054

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.8	96.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84427
Included Lab Sample IDs: 1996052, 1996053, 1996054

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	99.0	P/P	90 - 110
Total-P	99.8	99.5	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A84443
Included Lab Sample IDs: 1996052, 1996053, 1996054

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.1	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A84446
Included Lab Sample IDs: 1996052, 1996053

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A84748
Included Lab Sample IDs: 1996054

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	109	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					0.649	
EPA 300.0 Rev. 2.1	Chloride	101	102			1.18	
	Sulfate	99.1	95.1	101		0.413	
EPA 350.1 Rev. 2.0	Ammonia-N	99.6	98.2	98.2			0.0207
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	100	99.7			0.200
	Kjeldahl Nitrogen	105					1.91
EPA 353.2 Rev. 2.0	NO2NO3-N	102	92.8	94.8			1.97
EPA 365.1 Rev. 2.0	Total-P	98.0	101	102			1.45
	Total-P	97.3	98.1	99.4			1.22
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	95.2	96.4			0.785
SM 2120 B	Color (true)					2.04	
SM 2320 B-97	Total Alkalinity	102				3.21	
SM 2540 C-97	TDS					1.74	
SM 4500 F-C-97	Fluoride	94.8	94.7	95.2			0.477
SM 5310 B-00	Organic Carbon	97.6	104				0.950
	Organic Carbon	97.1	97.9	97.7			0.171

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1996049, 1996050, 1996051
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1996049, 1996050, 1996051
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1996049, 1996050, 1996051
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1996052, 1996053, 1996054
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1996052, 1996053, 1996054
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1996052, 1996053, 1996054
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1996052, 1996053, 1996054
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1996055, 1996056, 1996057
SM 2120 B / E31780	True Color measured at 450 nm	1996049, 1996050, 1996051
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1996049, 1996050, 1996051
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1996049, 1996050, 1996051
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1996049, 1996050, 1996051
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1996049, 1996050, 1996051
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1996052, 1996053, 1996054

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	05/30/2018			05/30/2018 17:08	William L. Brown IV	1996049, 1996050, 1996051
EPA 300.0 Rev. 2.1	05/30/2018			06/01/2018 22:54	Lipi Saha	1996049
	05/30/2018			06/01/2018 23:06	Lipi Saha	1996050
	05/30/2018			06/01/2018 23:18	Lipi Saha	1996051
EPA 350.1 Rev. 2.0	05/30/2018			06/05/2018 15:39	Julia Storbeck	1996052
	05/30/2018			06/05/2018 15:41	Julia Storbeck	1996053
	05/30/2018			06/05/2018 15:42	Julia Storbeck	1996054
EPA 351.2 Rev. 2.0	05/30/2018	06/06/2018 10:40	Adrian Shelby	06/07/2018 14:36	Joseph Suarez	1996052
	05/30/2018	06/06/2018 10:40	Adrian Shelby	06/07/2018 14:38	Joseph Suarez	1996053
	05/30/2018	06/18/2018 15:30	Adrian Shelby	06/21/2018 11:26	Joseph Suarez	1996054
EPA 353.2 Rev. 2.0	05/30/2018			06/01/2018 12:36	Lauren Bottorf	1996052
	05/30/2018			06/01/2018 12:37	Lauren Bottorf	1996053
	05/30/2018			06/01/2018 13:51	Lauren Bottorf	1996054
EPA 365.1 Rev. 2.0	05/30/2018	06/05/2018 11:00	Sima Feizi	06/07/2018 11:14	Beverly Y. Sanders	1996054
	05/30/2018	06/05/2018 11:00	Sima Feizi	06/07/2018 11:29	Beverly Y. Sanders	1996052, 1996053
EPA 365.1 Rev. 2.0 dissolved	05/30/2018			05/30/2018 15:46	Megan Treadwell	1996055
	05/30/2018			05/30/2018 15:47	Megan Treadwell	1996056
	05/30/2018			05/30/2018 15:48	Megan Treadwell	1996057
SM 2120 B	05/30/2018			05/30/2018 16:08	Tanya Welborn	1996049
	05/30/2018			05/30/2018 16:09	Tanya Welborn	1996050
	05/30/2018			05/30/2018 16:10	Tanya Welborn	1996051
SM 2320 B-97	05/30/2018			05/31/2018 18:59	Dale L. Simmons	1996051
	05/30/2018			05/31/2018 21:28	Dale L. Simmons	1996049
	05/30/2018			05/31/2018 21:38	Dale L. Simmons	1996050
SM 2540 C-97	05/30/2018			06/01/2018 14:35	Yijie Li	1996049, 1996050, 1996051
SM 2540 D-97	05/30/2018			06/01/2018 14:35	Yijie Li	1996049, 1996050, 1996051
SM 4500 F-C-97	05/30/2018			05/31/2018 18:52	Dale L. Simmons	1996051
	05/30/2018			05/31/2018 21:28	Dale L. Simmons	1996049
	05/30/2018			05/31/2018 21:38	Dale L. Simmons	1996050
SM 5310 B-00	05/30/2018			06/06/2018 20:38	Megan Treadwell	1996052
	05/30/2018			06/06/2018 20:53	Megan Treadwell	1996053
	05/30/2018			06/06/2018 21:36	Megan Treadwell	1996054