

Chemical Analysis Report

SW-DIST-2018-05-22-01

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-2018-05-21-03**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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Temple Terrace, FL 33637-0926
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 08-JUN-2018 09:58

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first few letters of the last name.

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 Wastena

Collection Date/Time: 05/21/2018 11:30

Field ID: G1SW0020

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994505	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P345749	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P345929	
		Sulfate	6.8		mg SO4/L	P345932	
	SM 2120 B	Color (true)	30		PCU	P345758	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P345949	RPD
	SM 2540 C-97	TDS	118		mg/L	P346316	
	SM 2540 D-97	TSS	3	I	mg/L	P346362	
	SM 4500 F-C-97	Fluoride	0.068	I	mg F/L	P345952	
1994512	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P346252	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.92		mg N/L	P345982	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P345897	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P345864	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P346151	
1994519	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P345742	

Ref. Method and Comment:

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_DUP

Collection Date/Time: 05/21/2018 11:35

Field ID: G1SW0020_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994506	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P345749	
	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P345929	
		Sulfate	6.7		mg SO4/L	P345932	
	SM 2120 B	Color (true)	30		PCU	P345758	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P345949	RPD
	SM 2540 C-97	TDS	113		mg/L	P346316	
	SM 2540 D-97	TSS	2	I	mg/L	P346362	
	SM 4500 F-C-97	Fluoride	0.068	I	mg F/L	P345952	
1994513	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P346252	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.92		mg N/L	P345982	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P345897	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P345864	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P346151	
1994520	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P345742	

Ref. Method and Comment:

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: BLANK

Collection Date/Time: 05/21/2018 11:40

Field ID: Field Blank

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994507	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P345749	

Field ID: Field Blank

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994507	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P345929	RPD
		Sulfate	0.20	U	mg SO4/L	P345932	
	SM 2120 B	Color (true)	2.5	U	PCU	P345758	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P345949	
	SM 2540 C-97	TDS	15	U	mg/L	P346315	
	SM 2540 D-97	TSS	2	U	mg/L	P346361	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P345952	
1994514	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P346252	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P345982	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P345897	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P345864	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P346151	
1994521	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P345743	

Ref. Method and Comment:

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 Center

Collection Date/Time: 05/21/2018 12:15

Field ID: G1SW0030

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994508	EPA 180.1 Rev. 2.0	Turbidity	0.95		NTU	P345749	RPD
	EPA 300.0 Rev. 2.1	Chloride	35		mg Cl/L	P345929	
		Sulfate	7.4		mg SO4/L	P345932	
	SM 2120 B	Color (true)	86		PCU	P345758	
	SM 2320 B-97	Total Alkalinity	29		mg CaCO3/L	P345949	
	SM 2540 C-97	TDS	131		mg/L	P346316	
	SM 2540 D-97	TSS	2	I	mg/L	P346362	
1994515	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P345952	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P346252	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P345986	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P345897	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P345864	
1994522	SM 5310 B-00	Organic Carbon	14		mg C/L	P346151	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P345743	

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: Little Lake Wilson Ctr

Collection Date/Time: 05/21/2018 10:30

Field ID: G1SW0006

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994509	EPA 180.1 Rev. 2.0	Turbidity	3.8	A	NTU	P345750	
	EPA 300.0 Rev. 2.1	Chloride	57		mg Cl/L	P345929	
		Sulfate	2.3		mg SO4/L	P345932	
	SM 2120 B	Color (true)	42		PCU	P345758	

Field ID: G1SW0006

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994509	SM 2320 B-97	Total Alkalinity	59		mg CaCO3/L	P345949	RPD
	SM 2540 C-97	TDS	188		mg/L	P346316	
	SM 2540 D-97	TSS	5	I	mg/L	P346362	
	SM 4500 F-C-97	Fluoride	0.073	I	mg F/L	P345952	
1994516	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P346252	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P345986	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P345897	
	EPA 365.1 Rev. 2.0	Total-P	0.050		mg P/L	P345864	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P346151	
1994523	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P345743	

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: Little Lake Wilson South

Collection Date/Time: 05/21/2018 10:40

Field ID: G1SW0009

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994510	EPA 180.1 Rev. 2.0	Turbidity	4.1		NTU	P345750	
	EPA 300.0 Rev. 2.1	Chloride	58		mg Cl/L	P345929	
		Sulfate	2.4		mg SO4/L	P345932	
	SM 2120 B	Color (true)	43		PCU	P345758	
1994517	SM 2320 B-97	Total Alkalinity	59		mg CaCO3/L	P345949	RPD
	SM 2540 C-97	TDS	203		mg/L	P346316	
	SM 2540 D-97	TSS	4	I	mg/L	P346362	
	SM 4500 F-C-97	Fluoride	0.071	I	mg F/L	P345952	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P346252	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P345986	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P345897	
1994524	EPA 365.1 Rev. 2.0	Total-P	0.051		mg P/L	P345864	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P346151	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P345743	

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 Magdalene Ctr

Collection Date/Time: 05/21/2018 09:30

Field ID: G1SW0059

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994511	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P345750	
	EPA 300.0 Rev. 2.1	Chloride	41		mg Cl/L	P345929	
		Sulfate	16		mg SO4/L	P345932	
	SM 2120 B	Color (true)	34		PCU	P345758	
1994512	SM 2320 B-97	Total Alkalinity	42		mg CaCO3/L	P345949	RPD
	SM 2540 C-97	TDS	153		mg/L	P346316	
	SM 2540 D-97	TSS	2	I	mg/L	P346362	
	SM 4500 F-C-97	Fluoride	0.095	I	mg F/L	P345952	

Field ID: G1SW0059

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994518	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P346252	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.80		mg N/L	P345986	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P345897	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P345864	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P346151	
1994525	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P345743	

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: P345749

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P345750

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P345929

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P345932

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P346252

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P345982

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P345986

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345897

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345864

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345742

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345743

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

Reference Method: SM 2120 B
Batch ID: P345758

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P345949

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

Reference Method: SM 2540 C-97
Batch ID: P346315

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P346316

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P346361

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P346362

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P345952

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P346151

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: P345929

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345932

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346252

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345982

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	109		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345986

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: P345897

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345897

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: P345864

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345742

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345743

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

Reference Method: SM 2320 B-97
Batch ID: P345949

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

Reference Method: SM 4500 F-C-97
Batch ID: P345952

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

Reference Method: SM 5310 B-00
Batch ID: P346151

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.3		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345929

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994190	Chloride	94.6		P	90 - 110
1994354	Chloride	99.6		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345932

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994190	Sulfate	93.1		P	90 - 110
1994354	Sulfate	99.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346252

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994357	Ammonia-N	98.3	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994605	Kjeldahl Nitrogen	95.9	95.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345897

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994515	NO2NO3-N	101	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345864

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994518	Total-P	99.0	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345742

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994359	O-Phosphate-P	96.7	97.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345743

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994522	O-Phosphate-P	98.9	98.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P345952

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993994	Fluoride	96.3	94.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P346151

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994358	Organic Carbon	96.1	97.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P345749

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994471	Turbidity	5.62	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P345750

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994509	Turbidity	2.34	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345929

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994190	Chloride	4.11	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345932

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994190	Sulfate	1.93	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346252

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994357	Ammonia-N	0.709	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345982

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994424	Kjeldahl Nitrogen	2.47	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994605	Kjeldahl Nitrogen	0.366	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345897

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994515	NO2NO3-N	1.90	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345864

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994518	Total-P	0.771	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345742

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994359	O-Phosphate-P	0.619	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345743

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994522	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P345758

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994354	Color (true)	0.920	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P345949

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993994	Total Alkalinity	4.47	Sample	F	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P346315

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994353	TDS	3.10	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P346316

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994354	TDS	0.830	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P345952

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993994	Fluoride	1.95	Spike	P	0 - 3.5

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P346151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994358	Organic Carbon	1.01	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: A84061
Included Lab Sample IDs: 1994505, 1994506, 1994507, 1994508, 1994509, 1994510, 1994511

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	98.3	P/P	90 - 110
Chloride	100	103	P/P	90 - 110
Sulfate	100	104	P/P	90 - 110
Sulfate	104	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A84081
Included Lab Sample IDs: 1994519, 1994520, 1994521, 1994522, 1994523, 1994524, 1994525

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A84083
Included Lab Sample IDs: 1994505, 1994506, 1994507, 1994508, 1994509, 1994510, 1994511

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

Reference Method: SM 2120 B
Run ID: A84087
Included Lab Sample IDs: 1994505, 1994506, 1994507, 1994508, 1994509, 1994510, 1994511

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.9	99.7	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A84142
Included Lab Sample IDs: 1994512, 1994513, 1994514, 1994515, 1994516, 1994517, 1994518

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A84156

Included Lab Sample IDs: 1994505, 1994506, 1994507, 1994508, 1994509, 1994510, 1994511

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.9	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A84156

Included Lab Sample IDs: 1994505, 1994506, 1994507, 1994508, 1994509, 1994510, 1994511

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A84159

Included Lab Sample IDs: 1994516

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: A84201

Included Lab Sample IDs: 1994512, 1994513, 1994514, 1994515, 1994517, 1994518

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

Reference Method: SM 5310 B-00

Run ID: A84243

Included Lab Sample IDs: 1994512, 1994513, 1994514, 1994515, 1994516, 1994517, 1994518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A84250

Included Lab Sample IDs: 1994512, 1994513, 1994514

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.5	96.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A84261

Included Lab Sample IDs: 1994515, 1994516, 1994517, 1994518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.5	102	P/P	90 - 110
Kjeldahl Nitrogen	98.1	97.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A84298

Included Lab Sample IDs: 1994512, 1994513, 1994514, 1994515, 1994516, 1994517, 1994518

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A84298

Included Lab Sample IDs: 1994512, 1994513, 1994514, 1994515, 1994516, 1994517, 1994518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	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	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				5.62	
	Turbidity				2.34	
EPA 300.0 Rev. 2.1	Chloride	99.8	99.6 94.6		4.11	
	Sulfate	99.6	93.1 99.3		1.93	
EPA 350.1 Rev. 2.0	Ammonia-N	105	98.3 99.0			0.709
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	109				2.47
	Kjeldahl Nitrogen	105	95.9 95.4			0.366
EPA 353.2 Rev. 2.0	NO2NO3-N	100	101 103			1.90
EPA 365.1 Rev. 2.0	Total-P	99.9	99.0 99.8			0.771
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.2	96.7 97.3			0.619
	O-Phosphate-P	99.4	98.9 98.9			0.0
SM 2120 B	Color (true)				0.920	
SM 2320 B-97	Total Alkalinity	102			4.47	
SM 2540 C-97	TDS				3.10	
	TDS				0.830	
SM 4500 F-C-97	Fluoride	96.7	96.3 94.2			1.95
SM 5310 B-00	Organic Carbon	96.3	96.1 97.6			1.01

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1994505, 1994506, 1994507, 1994508, 1994509, 1994510, 1994511
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1994505, 1994506, 1994507, 1994508, 1994509, 1994510, 1994511
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1994505, 1994506, 1994507, 1994508, 1994509, 1994510, 1994511
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1994512, 1994513, 1994514, 1994515, 1994516, 1994517, 1994518
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1994512, 1994513, 1994514, 1994515, 1994516, 1994517, 1994518
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1994512, 1994513, 1994514, 1994515, 1994516, 1994517, 1994518
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1994512, 1994513, 1994514, 1994515, 1994516, 1994517, 1994518
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1994519, 1994520, 1994521, 1994522, 1994523, 1994524, 1994525
SM 2120 B / E31780	True Color measured at 450 nm	1994505, 1994506, 1994507, 1994508, 1994509, 1994510, 1994511

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1994505, 1994506, 1994507, 1994508, 1994509, 1994510, 1994511
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1994505, 1994506, 1994507, 1994508, 1994509, 1994510, 1994511
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1994505, 1994506, 1994507, 1994508, 1994509, 1994510, 1994511
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1994505, 1994506, 1994507, 1994508, 1994509, 1994510, 1994511
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1994512, 1994513, 1994514, 1994515, 1994516, 1994517, 1994518

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	05/22/2018			05/22/2018 17:24	William L. Brown IV	1994505, 1994506, 1994507, 1994508, 1994509, 1994510, 1994511
EPA 300.0 Rev. 2.1	05/22/2018			05/23/2018 17:54	Lipi Saha	1994505
	05/22/2018			05/23/2018 18:06	Lipi Saha	1994506
	05/22/2018			05/23/2018 18:18	Lipi Saha	1994507
	05/22/2018			05/23/2018 18:30	Lipi Saha	1994508
	05/22/2018			05/23/2018 19:06	Lipi Saha	1994509
	05/22/2018			05/23/2018 19:18	Lipi Saha	1994510
	05/22/2018			05/23/2018 19:30	Lipi Saha	1994511
EPA 350.1 Rev. 2.0	05/22/2018			05/31/2018 13:52	Ping Hua	1994512
	05/22/2018			05/31/2018 13:53	Ping Hua	1994513
	05/22/2018			05/31/2018 13:55	Ping Hua	1994515
	05/22/2018			05/31/2018 13:56	Ping Hua	1994516
	05/22/2018			05/31/2018 14:04	Ping Hua	1994517
	05/22/2018			05/31/2018 14:06	Ping Hua	1994518
	05/22/2018			05/31/2018 14:09	Ping Hua	1994514
EPA 351.2 Rev. 2.0	05/22/2018	05/25/2018 11:00	Adrian Shelby	05/29/2018 17:42	Joseph Suarez	1994512
	05/22/2018	05/25/2018 11:00	Adrian Shelby	05/29/2018 17:43	Joseph Suarez	1994513
	05/22/2018	05/25/2018 11:00	Adrian Shelby	05/29/2018 17:45	Joseph Suarez	1994514
	05/22/2018	05/25/2018 16:00	Adrian Shelby	05/31/2018 09:40	Joseph Suarez	1994515
	05/22/2018	05/25/2018 16:00	Adrian Shelby	05/31/2018 09:42	Joseph Suarez	1994516
	05/22/2018	05/25/2018 16:00	Adrian Shelby	05/31/2018 09:46	Joseph Suarez	1994517
	05/22/2018	05/25/2018 16:00	Adrian Shelby	05/31/2018 09:48	Joseph Suarez	1994518
EPA 353.2 Rev. 2.0	05/22/2018			05/24/2018 11:34	Lauren Bottorf	1994515
	05/22/2018			05/24/2018 11:40	Lauren Bottorf	1994514
	05/22/2018			05/24/2018 11:43	Lauren Bottorf	1994512
	05/22/2018			05/24/2018 11:45	Lauren Bottorf	1994513
	05/22/2018			05/24/2018 11:46	Lauren Bottorf	1994516
	05/22/2018			05/24/2018 11:47	Lauren Bottorf	1994517
	05/22/2018			05/24/2018 11:48	Lauren Bottorf	1994518
EPA 365.1 Rev. 2.0	05/22/2018	05/24/2018 13:10	Sima Feizi	05/25/2018 11:22	Beverly Y. Sanders	1994516
	05/22/2018	05/24/2018 13:10	Sima Feizi	05/29/2018 11:31	Lipi Saha	1994512
	05/22/2018	05/24/2018 13:10	Sima Feizi	05/29/2018 11:32	Lipi Saha	1994513
	05/22/2018	05/24/2018 13:10	Sima Feizi	05/29/2018 11:33	Lipi Saha	1994514
	05/22/2018	05/24/2018 13:10	Sima Feizi	05/29/2018 11:34	Lipi Saha	1994515
	05/22/2018	05/24/2018 13:10	Sima Feizi	05/29/2018 11:35	Lipi Saha	1994517
	05/22/2018	05/24/2018 13:10	Sima Feizi	05/29/2018 11:36	Lipi Saha	1994518
EPA 365.1 Rev. 2.0 dissolved	05/22/2018			05/22/2018 14:57	Megan Treadwell	1994522
	05/22/2018			05/22/2018 15:08	Megan Treadwell	1994519
	05/22/2018			05/22/2018 15:09	Megan Treadwell	1994520, 1994521

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 365.1 Rev. 2.0 dissolved	05/22/2018			05/22/2018 15:10	Megan Treadwell	1994523
	05/22/2018			05/22/2018 15:11	Megan Treadwell	1994524
	05/22/2018			05/22/2018 15:12	Megan Treadwell	1994525
SM 2120 B	05/22/2018			05/22/2018 15:11	Tanya Welborn	1994505
	05/22/2018			05/22/2018 15:12	Tanya Welborn	1994506, 1994507
	05/22/2018			05/22/2018 15:13	Tanya Welborn	1994508
	05/22/2018			05/22/2018 15:14	Tanya Welborn	1994509
	05/22/2018			05/22/2018 15:15	Tanya Welborn	1994510, 1994511
SM 2320 B-97	05/22/2018			05/25/2018 08:45	Dale L. Simmons	1994505
	05/22/2018			05/25/2018 08:55	Dale L. Simmons	1994506
	05/22/2018			05/25/2018 09:07	Dale L. Simmons	1994507
	05/22/2018			05/25/2018 09:17	Dale L. Simmons	1994508
	05/22/2018			05/25/2018 09:28	Dale L. Simmons	1994509
SM 2540 C-97	05/22/2018			05/25/2018 09:38	Dale L. Simmons	1994510
	05/22/2018			05/25/2018 09:48	Dale L. Simmons	1994511
	05/22/2018			05/25/2018 16:24	Yijie Li	1994505, 1994506, 1994507, 1994508, 1994509, 1994510, 1994511
SM 2540 D-97	05/22/2018			05/25/2018 16:24	Yijie Li	1994505, 1994506, 1994507, 1994508, 1994509, 1994510, 1994511
SM 4500 F-C-97	05/22/2018			05/25/2018 08:45	Dale L. Simmons	1994505
	05/22/2018			05/25/2018 08:55	Dale L. Simmons	1994506
	05/22/2018			05/25/2018 09:07	Dale L. Simmons	1994507
	05/22/2018			05/25/2018 09:17	Dale L. Simmons	1994508
	05/22/2018			05/25/2018 09:28	Dale L. Simmons	1994509
SM 5310 B-00	05/22/2018			05/25/2018 09:38	Dale L. Simmons	1994510
	05/22/2018			05/25/2018 09:48	Dale L. Simmons	1994511
	05/22/2018			05/30/2018 01:11	Megan Treadwell	1994512
	05/22/2018			05/30/2018 01:26	Megan Treadwell	1994513
	05/22/2018			05/30/2018 01:41	Megan Treadwell	1994514
	05/22/2018			05/30/2018 01:55	Megan Treadwell	1994515
	05/22/2018			05/30/2018 02:10	Megan Treadwell	1994516
	05/22/2018			05/30/2018 02:25	Megan Treadwell	1994517
	05/22/2018			05/30/2018 02:40	Megan Treadwell	1994518