

Chemical Analysis Report

NE-DIST-2016-10-27-01

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

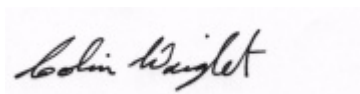
Event Description: **Ichetucknee**
Request ID: **RQ-2016-10-24-16**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Jacksonville, FL 32256-7577
Attn: Jeremy Parrish

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Certified by: Colin Wright, Environmental Administrator

Date Certified: 21-NOV-2016 15:46

A handwritten signature in black ink, appearing to read "Colin Wright", is written on a light-colored rectangular background.

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: Ichetucknee at US27

Collection Date/Time: 10/26/2016 10:00

Field ID: 21030050 10262016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1845309	EPA 180.1 Rev. 2.0	Turbidity	0.70		NTU	P314068	
	EPA 300.0 Rev. 2.1	Chloride	6.3		mg Cl/L	P315067	
		Sulfate	11		mg SO4/L	P315068	
	SM 2120 B	Color (true)	2.5	U	PCU	P314100	
	SM 2540 C-97	TDS	179		mg/L	P314713	
	SM 2540 D-97	TSS	2	U	mg/L	P314674	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P314347	
1845312	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P314907	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.12	I	mg N/L	P315254	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.50		mg N/L	P314342	
	EPA 365.1 Rev. 2.0	Total-P	0.059		mg P/L	P314883	
	SM 5310 B-00	Organic Carbon	0.56	I	mg C/L	P314167	
1845315	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.042		mg P/L	P314070	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

SM 2120 B: 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: Ichetucknee at Coffee Spring

Collection Date/Time: 10/26/2016 10:45

Field ID: 21030104 10262016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1845310	EPA 180.1 Rev. 2.0	Turbidity	0.60		NTU	P314068	
	EPA 300.0 Rev. 2.1	Chloride	3.9		mg Cl/L	P315067	
		Sulfate	10		mg SO4/L	P315068	
	SM 2120 B	Color (true)	2.5	U	PCU	P314100	
	SM 2540 C-97	TDS	153		mg/L	P314713	
	SM 2540 D-97	TSS	2	U	mg/L	P314674	
	SM 4500 F-C-97	Fluoride	0.067	I	mg F/L	P314348	
1845313	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P314908	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.11	I	mg N/L	P315254	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.50		mg N/L	P314358	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P314883	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P314167	
1845316	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.025		mg P/L	P314070	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

SM 2120 B: 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: Ichetucknee at Devils Eye Spring

Collection Date/Time: 10/26/2016 11:10

Field ID: 21030081 10262016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1845311	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P314068	

Field ID: 21030081 10262016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1845311	EPA 300.0 Rev. 2.1	Chloride	7.1		mg Cl/L	P315067	
		Sulfate	12		mg SO4/L	P315068	
	SM 2120 B	Color (true)	2.5	U	PCU	P314100	
	SM 2540 C-97	TDS	197		mg/L	P314713	
	SM 2540 D-97	TSS	2	U	mg/L	P314674	
	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P314349	
1845314	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P314908	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	I	mg N/L	P315254	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.58		mg N/L	P314358	
	EPA 365.1 Rev. 2.0	Total-P	0.053		mg P/L	P314883	
	SM 5310 B-00	Organic Carbon	0.55	I	mg C/L	P314168	
1845317	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.053		mg P/L	P314070	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

SM 2120 B: 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: FIELD BLANK

Collection Date/Time: 10/26/2016 10:15

Field ID: FIELD BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1845318	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P314068	
	EPA 300.0	Bromide**	0.016	U	mg Br/L	P314701	MS
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P314454	
		Sulfate	0.20	U	mg SO4/L	P314459	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P314254	
	SM 2540 C-97	TDS	15	U	mg/L	P314712	
	SM 2540 D-97	TSS	2	U	mg/L	P314673	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P314256	
1845319	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P314908	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P315254	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P314358	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P314883	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P314168	
1845320	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P314070	

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: P314068

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0
Batch ID: P314701

Component	Result	Code	Units
Bromide	0.016	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314454

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314459

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315067

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315068

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314907

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314908

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315254

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314342

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314358

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314883

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314070

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

Reference Method: SM 2120 B
Batch ID: P314100

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P314254

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

Reference Method: SM 2540 C-97
Batch ID: P314712

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P314713

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P314673

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P314674

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P314256

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P314347

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P314348

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P314349

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P314167

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

Reference Method: SM 5310 B-00
Batch ID: P314168

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0
Batch ID: P314701

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314454

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314459

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314459

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315067

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315068

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	93.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314907

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314908

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315254

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314342

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314358

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	108		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314883

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314070

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

Reference Method: SM 2320 B-97
Batch ID: P314254

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P314256

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P314347

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.4		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P314348

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P314349

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P314167

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.1		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P314168

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
Batch ID: P314701

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

Reference Method: EPA 300.0
Batch ID: P314701

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1840469	Bromide	108	111	P/F	90 - 110
1841400	Bromide	105		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314454

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1840469	Chloride	99.2	102	P/P	90 - 110
1841400	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314459

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1840469	Sulfate	96.6	96.3	P/P	90 - 110
1841400	Sulfate	96.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315067

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1848471	Chloride	97.8		P	90 - 110
1848474	Chloride	96.4	103	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315068

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1848474	Sulfate	90.7	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314907

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845079	Ammonia-N	99.8	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314908

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845313	Ammonia-N	98.1	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315254

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845350	Kjeldahl Nitrogen	99.8	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314342

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314342

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845256	NO2NO3-N	98.5	97.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314358

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845349	NO2NO3-N	106	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314883

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845312	Total-P	94.3	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314070

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845315	O-Phosphate-P	100	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P314256

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845087	Fluoride	103	103	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P314347

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846013	Fluoride	97.6	98.8	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P314348

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845310	Fluoride	97.4	99.7	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P314349

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845311	Fluoride	97.7	99.0	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P314167

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845247	Organic Carbon	94.6	94.4	P/P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P314168

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845314	Organic Carbon	97.1	92.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P314068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845290	Turbidity	2.26	Sample	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P314701

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1840469	Bromide	3.10	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314454

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1840469	Chloride	2.55	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314459

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1840469	Sulfate	0.338	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315067

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1848474	Chloride	5.50	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1848474	Sulfate	5.96	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314907

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845079	Ammonia-N	0.114	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314908

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845313	Ammonia-N	1.40	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845350	Kjeldahl Nitrogen	0.200	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845256	NO2NO3-N	0.905	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314358

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845349	NO2NO3-N	1.20	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314883

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845312	Total-P	4.53	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314070

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845315	O-Phosphate-P	0.630	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P314254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845087	Total Alkalinity	0.846	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P314712

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845002	TDS	3.72	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P314713

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845077	TDS	3.16	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P314256

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845087	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P314347

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846013	Fluoride	0.947	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P314348

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845310	Fluoride	2.00	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P314349

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845311	Fluoride	0.947	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P314167

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845247	Organic Carbon	0.123	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P314168

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845314	Organic Carbon	4.61	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 180.1 Rev. 2.0

Run ID: A72478

Included Lab Sample IDs: 1845309, 1845310, 1845311, 1845318

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A72479

Included Lab Sample IDs: 1845315, 1845316, 1845317, 1845320

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	98.8	P/P	90 - 110
O-Phosphate-P	98.7	100	P/P	90 - 110
O-Phosphate-P	98.8	98.0	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A72485

Included Lab Sample IDs: 1845309, 1845310, 1845311

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	101	P/P	85 - 115

Reference Method: SM 5310 B-00

Run ID: A72513

Included Lab Sample IDs: 1845312, 1845313, 1845314, 1845319

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.2	98.6	P/P	90 - 110
Organic Carbon	98.6	98.8	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A72536

Included Lab Sample IDs: 1845318

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: A72536

Included Lab Sample IDs: 1845318

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A72560

Included Lab Sample IDs: 1845312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	95.0	92.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A72561

Included Lab Sample IDs: 1845309, 1845310, 1845311

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	100	P/P	90 - 110
Fluoride	99.0	98.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A72564

Included Lab Sample IDs: 1845313, 1845314, 1845319

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

Reference Method: EPA 300.0

Run ID: A72589

Included Lab Sample IDs: 1845318

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	101	97.5	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A72589

Included Lab Sample IDs: 1845318

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	101	P/P	90 - 110
Sulfate	100	99.2	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A72715

Included Lab Sample IDs: 1845309, 1845310, 1845311

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Sulfate	98.6	97.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A72736

Included Lab Sample IDs: 1845312, 1845313, 1845314, 1845319

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.2	97.6	P/P	90 - 110
Ammonia-N	98.3	97.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A72756
Included Lab Sample IDs: 1845312, 1845314

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A72784
Included Lab Sample IDs: 1845313, 1845319

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A72866
Included Lab Sample IDs: 1845312, 1845313

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A72874
Included Lab Sample IDs: 1845314, 1845319

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

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

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision	
			LCS			SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					2.26	
EPA 300.0	Bromide	105	108	111	105		3.10
EPA 300.0 Rev. 2.1	Chloride	98.4	99.2	102	100		2.55
	Chloride	98.4	96.4	103	97.8		5.50
	Sulfate	97.4	96.6	96.3	96.4		0.338
	Sulfate	93.7	90.7	102			5.96
EPA 350.1 Rev. 2.0	Ammonia-N	102	99.8	100			0.114
	Ammonia-N	99.5	98.1	99.5			1.40
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	99.8	100			0.200
EPA 353.2 Rev. 2.0	NO2NO3-N	98.0	98.5	97.0			0.905
	NO2NO3-N	108	106	108			1.20
EPA 365.1 Rev. 2.0	Total-P	97.3	94.3	99.3			4.53
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	100	101			0.630
SM 2320 B-97	Total Alkalinity	100				0.846	
SM 2540 C-97	TDS					3.72	
	TDS					3.16	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
SM 4500 F-C-97	Fluoride	98.4	103	103		0.0
	Fluoride	97.4	97.6	98.8		0.947
	Fluoride	97.9	97.4	99.7		2.00
	Fluoride	97.9	97.7	99.0		0.947
	Organic Carbon	95.1	94.6	94.4		0.123
SM 5310 B-00	Organic Carbon	96.4	97.1	92.6		4.61

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1845309, 1845310, 1845311, 1845318
EPA 300.0 / E31780	Bromide in aqueous matrices	1845318
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1845309, 1845310, 1845311, 1845318
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1845309, 1845310, 1845311, 1845318
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1845312, 1845313, 1845314, 1845319
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1845312, 1845313, 1845314, 1845319
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1845312, 1845313, 1845314, 1845319
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1845312, 1845313, 1845314, 1845319
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1845315, 1845316, 1845317, 1845320
SM 2120 B / E31780	True Color measured at 450 nm	1845309, 1845310, 1845311
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1845318
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1845309, 1845310, 1845311, 1845318
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1845309, 1845310, 1845311, 1845318
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1845309, 1845310, 1845311, 1845318
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1845312, 1845313, 1845314, 1845319

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	10/27/2016			10/27/2016 15:34	Sima Feizi	1845309, 1845310, 1845311, 1845318
EPA 300.0	10/27/2016			11/03/2016	Ping Hua	1845318
EPA 300.0 Rev. 2.1	10/27/2016			11/03/2016	Ping Hua	1845318
	10/27/2016			11/10/2016	Ping Hua	1845309, 1845310, 1845311
EPA 350.1 Rev. 2.0	10/27/2016			11/09/2016	Sofia Elnemr	1845312, 1845313, 1845314, 1845319
EPA 351.2 Rev. 2.0	10/27/2016	11/16/2016	Adrian Shelby	11/17/2016	Joseph Suarez	1845312, 1845313, 1845314, 1845319
EPA 353.2 Rev. 2.0	10/27/2016			11/01/2016	Beverly Y. Sanders	1845312, 1845313, 1845314, 1845319
EPA 365.1 Rev. 2.0	10/27/2016	11/09/2016	Adrian Shelby	11/10/2016	Lipi Saha	1845312, 1845314
	10/27/2016	11/09/2016	Adrian Shelby	11/14/2016	Lipi Saha	1845313, 1845319
EPA 365.1 Rev. 2.0 dissolved	10/27/2016			10/27/2016 15:41	Julia Storbeck	1845315
	10/27/2016			10/27/2016 15:48	Julia Storbeck	1845320
	10/27/2016			10/27/2016 16:03	Julia Storbeck	1845316, 1845317
SM 2120 B	10/27/2016			10/27/2016 15:42	Julie Michelle Frank	1845309
	10/27/2016			10/27/2016 15:43	Julie Michelle Frank	1845310
	10/27/2016			10/27/2016 15:44	Julie Michelle Frank	1845311
SM 2320 B-97	10/27/2016			10/31/2016	Dale L. Simmons	1845318
SM 2540 C-97	10/27/2016			11/01/2016	Yijie Li	1845309, 1845310, 1845311, 1845318
SM 2540 D-97	10/27/2016			11/01/2016	Yijie Li	1845309, 1845310, 1845311, 1845318
SM 4500 F-C-97	10/27/2016			10/31/2016	Dale L. Simmons	1845318
	10/27/2016			11/01/2016	Dale L. Simmons	1845309, 1845310, 1845311
SM 5310 B-00	10/27/2016			10/29/2016	Julie Michelle Frank	1845312, 1845313, 1845314, 1845319