Chemical Analysis Report

NE-DIST-2016-08-25-01

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

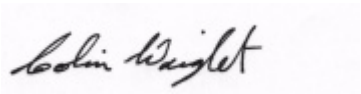
Event Description: **Ichetucknee**
Request ID: **RQ-2016-08-22-13**
Customer: **NE-DIST**
Project ID: **SMP**

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

For additional information please contact
Timothy W. Fitzpatrick
Liang-Tsair Lin, Ph.D.
Colin Wright, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Colin Wright, Environmental Administrator

Date Certified: 19-SEP-2016 11:53



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 Coffee Springs **Collection Date/Time: 08/24/2016 11:05**

Field ID: G1NE0583 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826851	EPA 180.1 Rev. 2.0	Turbidity	0.10		NTU	P310377	
	EPA 300.0 Rev. 2.1	Chloride	3.9		mg Cl/L	P310540	
		Sulfate	10		mg SO4/L	P311125	
	SM 2120 B	Color (true)	2.5	U	PCU	P310370	
	SM 2320 B-97	Total Alkalinity	138	A	mg CaCO3/L	P310444	
	SM 2540 C-97	TDS	161		mg/L	P311090	
	SM 2540 D-97	TSS	2	U	mg/L	P310776	
	SM 4500 F-C-97	Fluoride	0.075	I	mg F/L	P310448	
1826855	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P310449	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P310515	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.45		mg N/L	P310739	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P310728	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P310695	
1826859	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.029		mg P/L	P310352	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Devils Eye Spring Vent **Collection Date/Time: 08/24/2016 10:30**

Field ID: G1NE0561 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826852	EPA 180.1 Rev. 2.0	Turbidity	0.40		NTU	P310377	
	EPA 300.0 Rev. 2.1	Chloride	6.9		mg Cl/L	P310388	
		Sulfate	11		mg SO4/L	P310387	
	SM 2120 B	Color (true)	2.5	U	PCU	P310370	
	SM 2320 B-97	Total Alkalinity	153		mg CaCO3/L	P310444	
	SM 2540 C-97	TDS	182	A	mg/L	P311090	
	SM 2540 D-97	TSS	2	U	mg/L	P310776	
	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P310448	
1826856	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P310449	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.12	I	mg N/L	P310515	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.60		mg N/L	P310739	
	EPA 365.1 Rev. 2.0	Total-P	0.054		mg P/L	P310728	
	SM 5310 B-00	Organic Carbon	0.54	I	mg C/L	P310695	
1826860	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.078		mg P/L	P310352	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: The result was confirmed on 09/16/2016.
EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The result was confirmed on 09/15/2016.

Sample Location: FIELD BLANK **Collection Date/Time: 08/24/2016 10:35**

Field ID: FIELD BLANK Matrix: W-FIELD-BK

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

Field ID: FIELD BLANK Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826853	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P310378	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P310388	
		Sulfate	0.20	U	mg SO4/L	P310387	
	SM 2120 B	Color (true)	2.5	U	PCU	P310370	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P310444	
	SM 2540 C-97	TDS	15	U	mg/L	P311090	
	SM 2540 D-97	TSS	2	U	mg/L	P310776	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P310448	
1826857	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P310449	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P310515	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P310739	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P310728	
	SM 5310 B-00	Organic Carbon	0.52	I	mg C/L	P310695	
1826861	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P310352	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
SM 5310 B-00: The result was confirmed on 09/08/2016.
EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The result was confirmed on 08/25/2016.

Sample Location: Ichetucknee at US27 **Collection Date/Time: 08/24/2016 10:30**

Field ID: G1NE0531 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826854	EPA 180.1 Rev. 2.0	Turbidity	0.60		NTU	P310378	
	EPA 300.0 Rev. 2.1	Chloride	6.2		mg Cl/L	P310388	
		Sulfate	11		mg SO4/L	P310387	
	SM 2120 B	Color (true)	2.5	U	PCU	P310371	
	SM 2320 B-97	Total Alkalinity	153		mg CaCO3/L	P310444	
	SM 2540 C-97	TDS	174		mg/L	P311090	
	SM 2540 D-97	TSS	3	I	mg/L	P310776	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P310448	
1826858	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P310449	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P310515	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.57		mg N/L	P310739	
	EPA 365.1 Rev. 2.0	Total-P	0.072		mg P/L	P310728	
	SM 5310 B-00	Organic Carbon	0.60	I	mg C/L	P310695	
1826862	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.059		mg P/L	P310352	

Ref. Method and Comment:
SM 2120 B: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 326 umhos/cm.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P310377

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P310378

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310387

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310388

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310540

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311125

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310449

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310515

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310739

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310728

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310352

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

Reference Method: SM 2120 B
Batch ID: P310370

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P310371

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P310444

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

Reference Method: SM 2540 C-97
Batch ID: P311090

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P310776

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P310448

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P310695

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: P310387

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310388

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310540

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	96.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311125

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: P310449

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310515

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310739

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310728

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310352

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P310444

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P310448

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P310695

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310387

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826931	Sulfate	98.3		P	90 - 110
1826934	Sulfate	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310388

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826931	Chloride	98.8		P	90 - 110
1826934	Chloride	98.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310540

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825507	Chloride	96.3		P	90 - 110
1825508	Chloride	98.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311125

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825827	Sulfate	99.7		P	90 - 110
1829516	Sulfate	96.4	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310515

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826855	Kjeldahl Nitrogen	104	99.4	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310739

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826821	NO2NO3-N	101		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310728

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826821	Total-P	98.2	97.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310352

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826792	O-Phosphate-P	95.4	98.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P310448

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826851	Fluoride	97.9	97.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P310695

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826801	Organic Carbon	105	106	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P310377

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826795	Turbidity	0.913	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P310378

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826879	Turbidity	2.99	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826934	Sulfate	0.173	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310388

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826934	Chloride	0.117	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310540

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825507	Chloride	0.145	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311125

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829516	Sulfate	1.84	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310449

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826826	Ammonia-N	0.0897	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310515

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826855	Kjeldahl Nitrogen	4.69	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310739

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826821	NO2NO3-N	0.867	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310728

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826821	Total-P	0.365	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310352

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826792	O-Phosphate-P	2.18	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P310370

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826842	Color (true)	0.789	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P310444

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826851	Total Alkalinity	0.354	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P311090

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826852	TDS	1.64	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P310448

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826851	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P310695

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826801	Organic Carbon	0.907	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 365.1 Rev. 2.0 dissolved
Run ID: A71326
Included Lab Sample IDs: 1826859, 1826860, 1826861, 1826862

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	99.5	P/P	90 - 110
O-Phosphate-P	99.5	98.4	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A71333
Included Lab Sample IDs: 1826851, 1826852, 1826853, 1826854

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	94.2	95.8	P/P	85 - 115

Quality Assurance Report
Calibration Verification

Reference Method: SM 2120 B
Run ID: A71333
Included Lab Sample IDs: 1826851, 1826852, 1826853, 1826854

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	94.7	94.2	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A71334
Included Lab Sample IDs: 1826851, 1826852, 1826853, 1826854

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	100	P/P	95 - 105
Turbidity	100	99.5	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A71337
Included Lab Sample IDs: 1826851, 1826852, 1826853, 1826854

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Chloride	101	101	P/P	90 - 110
Sulfate	100	99.4	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A71361
Included Lab Sample IDs: 1826851, 1826852, 1826853, 1826854

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	105	P/P	90 - 110
Total Alkalinity	104	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A71361
Included Lab Sample IDs: 1826851, 1826852, 1826853, 1826854

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A71364
Included Lab Sample IDs: 1826855, 1826856, 1826857, 1826858

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A71419
Included Lab Sample IDs: 1826855, 1826856, 1826857, 1826858

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	105	P/P	90 - 110
Kjeldahl Nitrogen	108	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A71453
Included Lab Sample IDs: 1826855, 1826856, 1826857, 1826858

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A71461
Included Lab Sample IDs: 1826855, 1826856, 1826857, 1826858

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	104	P/P	90 - 110
NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A71488
Included Lab Sample IDs: 1826856, 1826858

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A71489
Included Lab Sample IDs: 1826855, 1826857

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.0	98.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A71576
Included Lab Sample IDs: 1826851

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	101	99.7	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						0.913	
	Turbidity						2.99	
EPA 300.0 Rev. 2.1	Chloride	99.4	98.1	98.8			0.117	
	Chloride	96.4	96.3	98.0			0.145	
	Sulfate	99.9	101	98.3			0.173	
	Sulfate	99.1	96.4	98.5	99.7			1.84
EPA 350.1 Rev. 2.0	Ammonia-N	102						0.0897
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	104	99.4				4.69
EPA 353.2 Rev. 2.0	NO2NO3-N	104	101					0.867

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 365.1 Rev. 2.0	Total-P	95.8	98.2	97.6			0.365
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.1	95.4	98.4			2.18
SM 2120 B	Color (true)					0.789	
SM 2320 B-97	Total Alkalinity	103				0.354	
SM 2540 C-97	TDS					1.64	
SM 4500 F-C-97	Fluoride	99.9	97.9	97.9			0.0
SM 5310 B-00	Organic Carbon	103	105	106			0.907

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1826851, 1826852, 1826853, 1826854
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1826851, 1826852, 1826853, 1826854
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1826851, 1826852, 1826853, 1826854
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1826855, 1826856, 1826857, 1826858
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1826855, 1826856, 1826857, 1826858
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1826855, 1826856, 1826857, 1826858
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1826855, 1826856, 1826857, 1826858
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1826859, 1826860, 1826861, 1826862
SM 2120 B / E31780	True Color measured at 450 nm	1826851, 1826852, 1826853, 1826854
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1826851, 1826852, 1826853, 1826854
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1826851, 1826852, 1826853, 1826854
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1826851, 1826852, 1826853, 1826854
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1826851, 1826852, 1826853, 1826854
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1826855, 1826856, 1826857, 1826858

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	08/25/2016			08/25/2016 15:05	Sima Feizi	1826851, 1826852, 1826853, 1826854
EPA 300.0 Rev. 2.1	08/25/2016			08/26/2016	Ping Hua	1826852, 1826853, 1826854
	08/25/2016			08/27/2016	Ping Hua	1826851
	08/25/2016			09/14/2016	Ping Hua	1826851
EPA 350.1 Rev. 2.0	08/25/2016			08/26/2016	Julie Michelle Frank	1826855, 1826856, 1826857, 1826858
EPA 351.2 Rev. 2.0	08/25/2016	08/30/2016	Adrian Shelby	08/31/2016	Christopher Armour	1826855, 1826856, 1826857, 1826858
EPA 353.2 Rev. 2.0	08/25/2016			09/07/2016	Beverly Y. Sanders	1826855, 1826856, 1826857, 1826858
EPA 365.1 Rev. 2.0	08/25/2016	09/07/2016	Vijayalakshmi Reddy	09/08/2016	Lipi Saha	1826855, 1826856, 1826857, 1826858
EPA 365.1 Rev. 2.0 dissolved	08/25/2016			08/25/2016 15:51	Julia Storbeck	1826859
	08/25/2016			08/25/2016 15:52	Julia Storbeck	1826860
	08/25/2016			08/25/2016 15:57	Julia Storbeck	1826861
	08/25/2016			08/25/2016 15:58	Julia Storbeck	1826862
SM 2120 B	08/25/2016			08/25/2016 15:09	Blanca Fach	1826851
	08/25/2016			08/25/2016 15:10	Blanca Fach	1826852
	08/25/2016			08/25/2016 15:11	Blanca Fach	1826853
	08/25/2016			08/25/2016 15:14	Blanca Fach	1826854
SM 2320 B-97	08/25/2016			08/27/2016	Dale L. Simmons	1826851, 1826852, 1826853, 1826854
SM 2540 C-97	08/25/2016			08/29/2016	Sima Feizi	1826851, 1826852, 1826853, 1826854
SM 2540 D-97	08/25/2016			08/29/2016	Sima Feizi	1826851, 1826852, 1826853, 1826854
SM 4500 F-C-97	08/25/2016			08/27/2016	Dale L. Simmons	1826851, 1826852, 1826853, 1826854
SM 5310 B-00	08/25/2016			09/01/2016	Sofia Elnemr	1826855, 1826856, 1826857, 1826858