Chemical Analysis Report

NE-DIST-2017-01-25-01

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

Event Description: **Ichetucknee**
Request ID: **RQ-2017-01-23-11**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
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8800 Baymeadows Way West
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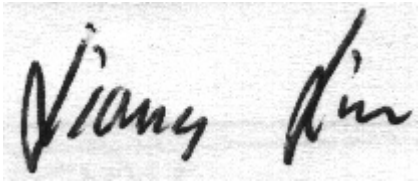
Certified by: Liang Lin, Environmental Administrator

Date Certified: 17-FEB-2017 11:43



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: Grassy Hole Spring **Collection Date/Time: 01/24/2017 10:05**

Field ID: G1NE0532 01242017 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1866246	EPA 180.1 Rev. 2.0	Turbidity	0.15		NTU	P318723	
	EPA 300.0 Rev. 2.1	Chloride	7.6		mg Cl/L	P318934	
		Sulfate	18		mg SO4/L	P318933	
	SM 2120 B	Color (true)	2.5	U	PCU	P318733	
	SM 2540 C-97	TDS	206		mg/L	P319149	
	SM 2540 D-97	TSS	2	U	mg/L	P319045	
	SM 4500 F-C-97	Fluoride	0.19		mg F/L	P318858	
1866251	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P318944	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.094	I	mg N/L	P318752	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.53		mg N/L	P318938	
	EPA 365.1 Rev. 2.0	Total-P	0.055		mg P/L	P318776	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P318782	
1866256	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.057		mg P/L	P318727	

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: Ichetucknee R @ US Hwy 27 **Collection Date/Time: 01/24/2017 10:30**

Field ID: G1NE0531 01242017 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1866247	EPA 180.1 Rev. 2.0	Turbidity	0.70		NTU	P318723	
	EPA 300.0 Rev. 2.1	Chloride	6.2		mg Cl/L	P319053	
		Sulfate	11		mg SO4/L	P319056	
	SM 2120 B	Color (true)	2.5	U	PCU	P318733	
	SM 2540 C-97	TDS	195		mg/L	P319187	
	SM 2540 D-97	TSS	2	U	mg/L	P319308	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P318858	
1866252	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P318944	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.15	I	mg N/L	P318752	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.54		mg N/L	P318938	
	EPA 365.1 Rev. 2.0	Total-P	0.058		mg P/L	P318776	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P318782	
1866257	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.046		mg P/L	P318729	

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: Ichetucknee R @ Coffee Springs **Collection Date/Time: 01/24/2017 11:05**

Field ID: G1NE0583 01242017 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1866248	EPA 180.1 Rev. 2.0	Turbidity	0.60		NTU	P318723	
	EPA 300.0 Rev. 2.1	Chloride	3.9		mg Cl/L	P319053	
		Sulfate	10		mg SO4/L	P319056	
	SM 2120 B	Color (true)	2.5	U	PCU	P318733	
	SM 2540 C-97	TDS	171		mg/L	P319187	

Field ID: G1NE0583 01242017 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1866248	SM 2540 D-97	TSS	2	U	mg/L	P319308	
	SM 4500 F-C-97	Fluoride	0.075	I	mg F/L	P318858	
1866253	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P318944	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.12	I	mg N/L	P318752	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.38		mg N/L	P318938	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P318776	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P318782	
1866258	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.028		mg P/L	P318729	

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: Devil's Eye Spring **Collection Date/Time: 01/24/2017 11:35**

Field ID: G1NE0561 01242017 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1866249	EPA 180.1 Rev. 2.0	Turbidity	0.20		NTU	P318723	
	EPA 300.0 Rev. 2.1	Chloride	7.0		mg Cl/L	P319053	
		Sulfate	12		mg SO4/L	P319056	
	SM 2120 B	Color (true)	2.5	U	PCU	P318733	
	SM 2540 C-97	TDS	196		mg/L	P319187	
	SM 2540 D-97	TSS	2	I	mg/L	P319308	
	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P318858	
1866254	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P318944	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.13	I	mg N/L	P318753	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.55		mg N/L	P318938	
	EPA 365.1 Rev. 2.0	Total-P	0.056		mg P/L	P318776	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P318782	
1866259	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.057		mg P/L	P318729	

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: Rose Creek @ Brookwood **Collection Date/Time: 01/24/2017 12:15**

Field ID: G1NE019 01242017 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1866250	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P318723	
	EPA 300.0 Rev. 2.1	Chloride	9.3		mg Cl/L	P319053	
		Sulfate	1.6		mg SO4/L	P319056	
	SM 2120 B	Color (true)	360		PCU	P318733	
	SM 2540 C-97	TDS	151		mg/L	P319187	
	SM 2540 D-97	TSS	2	I	mg/L	P319308	
	SM 4500 F-C-97	Fluoride	0.057	I	mg F/L	P318858	
1866255	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P318944	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P318753	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P318938	
	EPA 365.1 Rev. 2.0	Total-P	0.24		mg P/L	P318778	

Field ID: G1NE019 01242017 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1866255	SM 5310 B-00	Organic Carbon	44		mg C/L	P318782	
1866260	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.18		mg P/L	P318729	

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: P318723

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318933

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318934

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319053

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319056

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318944

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318752

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318753

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: P318938

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318776

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318778

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318727

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318729

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

Reference Method: SM 2120 B
Batch ID: P318733

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2540 C-97
Batch ID: P319149

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P319187

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P319045

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P319308

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P318858

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P318782

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: P318933

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318934

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319053

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319056

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318944

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318752

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318752

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318753

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: P318938

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318776

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318778

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318727

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318729

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

Reference Method: SM 4500 F-C-97
Batch ID: P318858

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.8		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P318782

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318933

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866166	Sulfate	96.3		P	90 - 110
1866173	Sulfate	97.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318934

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866166	Chloride	102		P	90 - 110
1866173	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319053

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866104	Chloride	102		P	90 - 110
1866250	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319056

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866104	Sulfate	97.2		P	90 - 110
1866250	Sulfate	97.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318944

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866218	Ammonia-N	97.2	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318752

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866251	Kjeldahl Nitrogen	105	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318753

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866254	Kjeldahl Nitrogen	97.2	94.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318938

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866255	NO2NO3-N	91.0	90.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318776

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318776

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866234	Total-P	97.7	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318778

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866262	Total-P	94.4	95.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318727

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866178	O-Phosphate-P	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318729

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866258	O-Phosphate-P	100	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P318858

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866246	Fluoride	99.3	100	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P318782

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866251	Organic Carbon	98.6	97.2	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P318723

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866174	Turbidity	1.04	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866173	Sulfate	0.569	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318934

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866173	Chloride	0.523	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319053

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866104	Chloride	0.496	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319056

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866104	Sulfate	1.72	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318944

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866218	Ammonia-N	1.77	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318752

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866251	Kjeldahl Nitrogen	4.00	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318753

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866254	Kjeldahl Nitrogen	2.88	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318938

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866255	NO2NO3-N	1.10	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318776

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866234	Total-P	0.422	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318778

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866262	Total-P	1.59	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318727

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866178	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318729

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866258	O-Phosphate-P	1.09	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P318733

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866261	Color (true)	1.48	Sample	P	0 - 20

Reference Method: SM 2540 C-97
Batch ID: P319149

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866215	TDS	4.43	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P319187

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866372	TDS	3.41	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P318858

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866246	Fluoride	0.520	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P318782

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866251	Organic Carbon	1.43	Spike	P	0 - 20

Quality Assurance Report
Precision

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A74088
Included Lab Sample IDs: 1866246

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	103	P/P	90 - 110
Sulfate	96.1	99.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A74103
Included Lab Sample IDs: 1866246, 1866247, 1866248, 1866249, 1866250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A74104
Included Lab Sample IDs: 1866256, 1866257, 1866258, 1866259, 1866260

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

Reference Method: SM 2120 B
Run ID: A74106
Included Lab Sample IDs: 1866246, 1866247, 1866248, 1866249, 1866250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	85 - 115
Color (true)	104	102	P/P	85 - 115

Reference Method: SM 5310 B-00
Run ID: A74125
Included Lab Sample IDs: 1866251, 1866252, 1866253, 1866254, 1866255

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	97.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A74143
Included Lab Sample IDs: 1866246, 1866247, 1866248, 1866249, 1866250

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A74144
Included Lab Sample IDs: 1866251, 1866252, 1866254, 1866255

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.4	99.8	P/P	90 - 110
Total-P	100	99.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A74157
Included Lab Sample IDs: 1866251, 1866252, 1866253

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.0	95.3	P/P	90 - 110
Kjeldahl Nitrogen	99.4	98.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A74162
Included Lab Sample IDs: 1866251, 1866252, 1866253, 1866254, 1866255

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A74163
Included Lab Sample IDs: 1866253

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A74164
Included Lab Sample IDs: 1866251, 1866252, 1866253, 1866254, 1866255

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.1	P/P	90 - 110
Ammonia-N	99.1	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A74166
Included Lab Sample IDs: 1866254, 1866255

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	108	107	P/P	90 - 110
Kjeldahl Nitrogen	99.7	108	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A74206
Included Lab Sample IDs: 1866247, 1866248, 1866249, 1866250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	102	P/P	90 - 110
Chloride	102	102	P/P	90 - 110
Chloride	102	102	P/P	90 - 110
Sulfate	93.3	98.4	P/P	90 - 110
Sulfate	94.9	98.4	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A74206
Included Lab Sample IDs: 1866247, 1866248, 1866249, 1866250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	98.4	93.3	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					1.04	
EPA 300.0 Rev. 2.1	Chloride	103	101	102		0.523	
	Chloride	101	102	102		0.496	
	Sulfate	98.5	97.1	96.3		0.569	
	Sulfate	100	97.2	97.0		1.72	
EPA 350.1 Rev. 2.0	Ammonia-N	103	97.2	100			1.77
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	105	101			4.00
	Kjeldahl Nitrogen	105	97.2	94.2			2.88
EPA 353.2 Rev. 2.0	NO2NO3-N	98.0	91.0	90.0			1.10
EPA 365.1 Rev. 2.0	Total-P	94.3	97.7	97.0			0.422
	Total-P	94.2	94.4	95.9			1.59
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	101	101			0.0
	O-Phosphate-P	102	100	102			1.09
SM 2120 B	Color (true)					1.48	
SM 2540 C-97	TDS					4.43	
	TDS					3.41	
SM 4500 F-C-97	Fluoride	98.8	99.3	100			0.520
SM 5310 B-00	Organic Carbon	97.8	98.6	97.2			1.43

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1866246, 1866247, 1866248, 1866249, 1866250
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1866246, 1866247, 1866248, 1866249, 1866250
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1866246, 1866247, 1866248, 1866249, 1866250
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1866251, 1866252, 1866253, 1866254, 1866255
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1866251, 1866252, 1866253, 1866254, 1866255
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1866251, 1866252, 1866253, 1866254, 1866255
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1866251, 1866252, 1866253, 1866254, 1866255
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1866256, 1866257, 1866258, 1866259, 1866260
SM 2120 B / E31780	True Color measured at 450 nm	1866246, 1866247, 1866248, 1866249, 1866250

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1866246, 1866247, 1866248, 1866249, 1866250
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1866246, 1866247, 1866248, 1866249, 1866250
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1866246, 1866247, 1866248, 1866249, 1866250
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1866251, 1866252, 1866253, 1866254, 1866255

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	01/25/2017			01/25/2017 15:28	Sima Feizi	1866246, 1866247, 1866248, 1866249, 1866250
EPA 300.0 Rev. 2.1	01/25/2017			01/27/2017	Ping Hua	1866246
	01/25/2017			01/31/2017	Ping Hua	1866247, 1866248, 1866249, 1866250
EPA 350.1 Rev. 2.0	01/25/2017			01/27/2017	Sofia Elnemr	1866251, 1866252, 1866253, 1866254, 1866255
EPA 351.2 Rev. 2.0	01/25/2017	01/26/2017	Adrian Shelby	01/27/2017	Joseph Suarez	1866251, 1866252, 1866253
	01/25/2017	01/26/2017	Adrian Shelby	01/30/2017	Joseph Suarez	1866254, 1866255
EPA 353.2 Rev. 2.0	01/25/2017			01/30/2017	Beverly Y. Sanders	1866251, 1866252, 1866253, 1866254, 1866255
EPA 365.1 Rev. 2.0	01/25/2017	01/26/2017	Vijayalakshmi Reddy	01/27/2017	Lipi Saha	1866251, 1866252, 1866253, 1866254, 1866255
EPA 365.1 Rev. 2.0 dissolved	01/25/2017			01/25/2017 15:54	Julia Storbeck	1866258
	01/25/2017			01/25/2017 16:21	Julia Storbeck	1866256
	01/25/2017			01/25/2017 16:22	Julia Storbeck	1866257
	01/25/2017			01/25/2017 16:23	Julia Storbeck	1866259
	01/25/2017			01/25/2017 16:37	Julia Storbeck	1866260
SM 2120 B	01/25/2017			01/25/2017 16:46	Jared I. Manley	1866246
	01/25/2017			01/25/2017 16:47	Jared I. Manley	1866247
	01/25/2017			01/25/2017 16:48	Jared I. Manley	1866248
	01/25/2017			01/25/2017 16:49	Jared I. Manley	1866249
	01/25/2017			01/25/2017 17:17	Jared I. Manley	1866250
SM 2540 C-97	01/25/2017			01/27/2017	Blanca Fach	1866246
	01/25/2017			01/30/2017	Blanca Fach	1866247, 1866248, 1866249, 1866250
SM 2540 D-97	01/25/2017			01/27/2017	Blanca Fach	1866246
	01/25/2017			01/30/2017	Blanca Fach	1866247, 1866248, 1866249, 1866250
SM 4500 F-C-97	01/25/2017			01/27/2017	Dale L. Simmons	1866246, 1866247, 1866248, 1866249, 1866250
SM 5310 B-00	01/25/2017			01/26/2017	Julie Michelle Frank	1866251, 1866252, 1866253, 1866254, 1866255