

Chemical Analysis Report

WQAP-2017-08-09-01

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

Event Description: **RUN 8**
Request ID: **RQ-2017-08-07-22**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Tampa, FL 33637
Attn: Judy Ashton

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

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 30-AUG-2017 13:46



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: Dead Lady

Collection Date/Time: 08/08/2017 10:00

Field ID: G1SW0021

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919990	EPA 180.1 Rev. 2.0	Turbidity	3.1		NTU	P329944	
	EPA 300.0 Rev. 2.1	Chloride	31		mg Cl/L	P329986	
		Sulfate	7.2		mg SO4/L	P329988	
	SM 2120 B	Color (true)	150		PCU	P329953	
	SM 2320 B-97	Total Alkalinity	22		mg CaCO3/L	P330132	
	SM 2540 C-97	TDS	136		mg/L	P330170	
	SM 2540 D-97	TSS	3	I	mg/L	P330572	
	SM 4500 F-C-97	Fluoride	0.074	I	mg F/L	P330135	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P330140	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P330075	
1919995	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P330103	
	EPA 365.1 Rev. 2.0	Total-P	0.051		mg P/L	P330038	
	SM 5310 B-00	Organic Carbon	20		mg C/L	P330330	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P329962	
	dissolved						

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: Juanita

Collection Date/Time: 08/08/2017 10:43

Field ID: G1SW0019

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919991	EPA 180.1 Rev. 2.0	Turbidity	2.3	A	NTU	P329944	
	EPA 300.0 Rev. 2.1	Chloride	27		mg Cl/L	P330084	
		Sulfate	5.9		mg SO4/L	P330086	
	SM 2120 B	Color (true)	46	A	PCU	P329954	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P330132	
	SM 2540 C-97	TDS	89		mg/L	P330170	
	SM 2540 D-97	TSS	2	I	mg/L	P330572	
	SM 4500 F-C-97	Fluoride	0.067	I	mg F/L	P330135	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P330140	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.83		mg N/L	P330075	
1919996	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P330103	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P330038	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P330330	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P329962	
	dissolved						

Ref. Method and Comment:

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

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Rock Lake

Collection Date/Time: 08/08/2017 11:20

Field ID: G1SW0010

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919992	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P329944	

Field ID: G1SW0010

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919992	EPA 300.0 Rev. 2.1	Chloride	34	A	mg Cl/L	P330084	
		Sulfate	7.5	A	mg SO4/L	P330086	
	SM 2120 B	Color (true)	250		PCU	P329954	
	SM 2320 B-97	Total Alkalinity	29		mg CaCO3/L	P330132	
	SM 2540 C-97	TDS	150		mg/L	P330170	
	SM 2540 D-97	TSS	3	I	mg/L	P330572	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P330135	
1919997	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P330140	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P330076	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P330103	
	EPA 365.1 Rev. 2.0	Total-P	0.055		mg P/L	P330038	
	SM 5310 B-00	Organic Carbon	25		mg C/L	P330330	
1920002	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P329962	

Ref. Method and Comment:

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

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Lake Estes

Collection Date/Time: 08/08/2017 12:00

Field ID: G1SW0027

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919993	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P329944	
	EPA 300.0 Rev. 2.1	Chloride	32		mg Cl/L	P330084	
		Sulfate	13		mg SO4/L	P330086	
	SM 2120 B	Color (true)	43		PCU	P329954	
	SM 2320 B-97	Total Alkalinity	45	A	mg CaCO3/L	P330132	
	SM 2540 C-97	TDS	134		mg/L	P330170	
	SM 2540 D-97	TSS	4	I	mg/L	P330572	
1919998	SM 4500 F-C-97	Fluoride	0.066	I	mg F/L	P330135	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P330137	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.92		mg N/L	P330076	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P330103	
	EPA 365.1 Rev. 2.0	Total-P	0.035		mg P/L	P330038	
1920003	SM 5310 B-00	Organic Carbon	13		mg C/L	P330330	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P329962	

Ref. Method and Comment:

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

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Chapman

Collection Date/Time: 08/08/2017 12:30

Field ID: G1SW0064

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919994	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P329944	
	EPA 300.0 Rev. 2.1	Chloride	55		mg Cl/L	P330084	

Field ID: G1SW0064

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1919994	EPA 300.0 Rev. 2.1	Sulfate	22		mg SO4/L	P330086	
	SM 2120 B	Color (true)	55		PCU	P329954	
	SM 2320 B-97	Total Alkalinity	60		mg CaCO3/L	P330132	
	SM 2540 C-97	TDS	216	A	mg/L	P330170	
	SM 2540 D-97	TSS	5	IA	mg/L	P330572	
	SM 4500 F-C-97	Fluoride	0.093	I	mg F/L	P330135	
1919999	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P330154	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P330076	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P330100	
	EPA 365.1 Rev. 2.0	Total-P	0.050		mg P/L	P330038	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P330330	
1920004	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P329962	

Ref. Method and Comment:
 EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
 SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P329944

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P329986

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P329988

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P330084

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P330086

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330137

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330140

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330154

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330075

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330076

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330100

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330103

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330038

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329962

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2120 B
Batch ID: P329953

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P329954

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P330132

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P330170

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P330572

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P330135

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P330330

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: P329986

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	106		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329988

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: P329988

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	106		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330084

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330086

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330137

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330140

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330154

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330075

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330076

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: P330100

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330103

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	105		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330038

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329962

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

Reference Method: SM 2320 B-97
Batch ID: P330132

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P330135

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P330330

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919936	Chloride	104		P	90 - 110
1919939	Chloride	98.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329988

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919936	Sulfate	102		P	90 - 110
1919939	Sulfate	98.8		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1920398	Chloride	99.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330086

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919992	Sulfate	101		P	90 - 110
1920398	Sulfate	96.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330137

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919557	Ammonia-N	100	98.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330140

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919923	Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330154

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919999	Ammonia-N	98.9	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330075

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919922	Kjeldahl Nitrogen	101	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330076

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1920099	Kjeldahl Nitrogen	103	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330100

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919542	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330103

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919969	NO2NO3-N	103	104	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330038

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919981	Total-P	91.4	95.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329962

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1920003	O-Phosphate-P	93.1	91.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P330135

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919993	Fluoride	98.4	98.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P330330

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1919150	Organic Carbon	99.2	98.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P329944

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919991	Turbidity	7.08	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919936	Chloride	1.33	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329988

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919936	Sulfate	0.267	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919992	Chloride	3.54	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P330086

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919992	Sulfate	4.30	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330137

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919557	Ammonia-N	1.82	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330140

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919923	Ammonia-N	0.324	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P330154

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919999	Ammonia-N	0.0274	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330075

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919922	Kjeldahl Nitrogen	2.67	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P330076

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1920099	Kjeldahl Nitrogen	0.993	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330100

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919542	NO2NO3-N	0.623	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P330103

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919969	NO2NO3-N	0.426	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P330038

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919981	Total-P	2.44	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329962

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1920003	O-Phosphate-P	1.24	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P329953

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919916	Color (true)	3.19	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P329954

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919991	Color (true)	0.979	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P330132

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919993	Total Alkalinity	0.0254	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P330170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919994	TDS	4.16	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P330135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919993	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P330330

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1919150	Organic Carbon	0.791	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: A78270

Included Lab Sample IDs: 1919990, 1919991, 1919992, 1919993, 1919994

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	104	P/P	90 - 110
Chloride	103	102	P/P	90 - 110
Sulfate	101	105	P/P	90 - 110
Sulfate	102	99.8	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A78298

Included Lab Sample IDs: 1919990, 1919991, 1919992, 1919993, 1919994

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

Reference Method: SM 2120 B

Run ID: A78299

Included Lab Sample IDs: 1919990, 1919991, 1919992, 1919993, 1919994

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	99.7	P/P	85 - 115
Color (true)	101	101	P/P	85 - 115
Color (true)	99.7	101	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A78303

Included Lab Sample IDs: 1920000, 1920001, 1920002, 1920003, 1920004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	98.7	P/P	90 - 110
O-Phosphate-P	98.2	100	P/P	90 - 110
O-Phosphate-P	98.6	97.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A78345

Included Lab Sample IDs: 1919997

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.9	97.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A78348

Included Lab Sample IDs: 1919995, 1919996, 1919998, 1919999

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	100	P/P	90 - 110
Total-P	99.5	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A78349

Included Lab Sample IDs: 1919995, 1919996, 1919997, 1919998, 1919999

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110
NO2NO3-N	102	102	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A78364

Included Lab Sample IDs: 1919990, 1919991, 1919992, 1919993, 1919994

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

Reference Method: SM 4500 F-C-97

Run ID: A78364

Included Lab Sample IDs: 1919990, 1919991, 1919992, 1919993, 1919994

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A78366

Included Lab Sample IDs: 1919995, 1919996, 1919997, 1919998

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A78369

Included Lab Sample IDs: 1919999

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A78402

Included Lab Sample IDs: 1919997, 1919998, 1919999

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	109	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A78404

Included Lab Sample IDs: 1919995, 1919996

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

Reference Method: SM 5310 B-00

Run ID: A78438

Included Lab Sample IDs: 1919995, 1919996, 1919997, 1919998, 1919999

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A78438

Included Lab Sample IDs: 1919995, 1919996, 1919997, 1919998, 1919999

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

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				7.08	
EPA 300.0 Rev. 2.1	Chloride	106	104 98.9		1.33	
	Chloride	101	99.0		3.54	
	Sulfate	106	102 98.8		0.267	
	Sulfate	102	101 96.6		4.30	
EPA 350.1 Rev. 2.0	Ammonia-N	99.7	100 98.5			1.82
	Ammonia-N	101	102 102			0.324
	Ammonia-N	101	98.9 98.8			0.0274
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	101 106			2.67
	Kjeldahl Nitrogen	105	103 101			0.993
EPA 353.2 Rev. 2.0	NO2NO3-N	106	100 102			0.623
	NO2NO3-N	105	103 104			0.426
EPA 365.1 Rev. 2.0	Total-P	98.5	91.4 95.2			2.44
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	93.1 91.9			1.24
SM 2120 B	Color (true)				3.19	
	Color (true)				0.979	
SM 2320 B-97	Total Alkalinity	102			0.0254	
SM 2540 C-97	TDS				4.16	
SM 4500 F-C-97	Fluoride	101	98.4 98.4			0.0
SM 5310 B-00	Organic Carbon	98.8	99.2 98.2			0.791

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1919990, 1919991, 1919992, 1919993, 1919994
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1919990, 1919991, 1919992, 1919993, 1919994
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1919990, 1919991, 1919992, 1919993, 1919994
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1919995, 1919996, 1919997, 1919998, 1919999
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1919995, 1919996, 1919997, 1919998, 1919999
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1919995, 1919996, 1919997, 1919998, 1919999
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1919995, 1919996, 1919997, 1919998, 1919999
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1920000, 1920001, 1920002, 1920003, 1920004

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2120 B / E31780	True Color measured at 450 nm	1919990, 1919991, 1919992, 1919993, 1919994
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1919990, 1919991, 1919992, 1919993, 1919994
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1919990, 1919991, 1919992, 1919993, 1919994
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1919990, 1919991, 1919992, 1919993, 1919994
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1919990, 1919991, 1919992, 1919993, 1919994
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1919995, 1919996, 1919997, 1919998, 1919999

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	08/09/2017			08/09/2017 15:43	DeAsia Armster	1919990, 1919991, 1919992, 1919993, 1919994
EPA 300.0 Rev. 2.1	08/09/2017			08/09/2017	Julia Storbeck	1919990
	08/09/2017			08/10/2017	Julia Storbeck	1919991, 1919992, 1919993, 1919994
EPA 350.1 Rev. 2.0	08/09/2017			08/10/2017	Sofia Elnemr	1919995, 1919996, 1919997, 1919998
	08/09/2017			08/11/2017	Sofia Elnemr	1919999
EPA 351.2 Rev. 2.0	08/09/2017	08/11/2017	Adrian Shelby	08/15/2017	Joseph Suarez	1919995, 1919996, 1919997, 1919998, 1919999
EPA 353.2 Rev. 2.0	08/09/2017			08/11/2017	Beverly Y. Sanders	1919995, 1919996, 1919997, 1919998, 1919999
EPA 365.1 Rev. 2.0	08/09/2017	08/10/2017	Sima Feizi	08/11/2017	Lipi Saha	1919995, 1919996, 1919997, 1919998, 1919999
EPA 365.1 Rev. 2.0 dissolved	08/09/2017			08/09/2017 14:05	Ping Hua	1920003
	08/09/2017			08/09/2017 14:41	Ping Hua	1920000
	08/09/2017			08/09/2017 14:42	Ping Hua	1920001
	08/09/2017			08/09/2017 14:43	Ping Hua	1920004
	08/09/2017			08/09/2017 15:09	Ping Hua	1920002
SM 2120 B	08/09/2017			08/09/2017 15:40	Tanya Welborn	1919990
	08/09/2017			08/09/2017 15:44	Tanya Welborn	1919991
	08/09/2017			08/09/2017 15:46	Tanya Welborn	1919993
	08/09/2017			08/09/2017 15:47	Tanya Welborn	1919994
	08/09/2017			08/09/2017 15:58	Tanya Welborn	1919992
SM 2320 B-97	08/09/2017			08/12/2017	Dale L. Simmons	1919990, 1919991, 1919992, 1919993, 1919994
SM 2540 C-97	08/09/2017			08/10/2017	Yijie Li	1919990, 1919991, 1919992, 1919993, 1919994
SM 2540 D-97	08/09/2017			08/10/2017	Yijie Li	1919990, 1919991, 1919992, 1919993, 1919994
SM 4500 F-C-97	08/09/2017			08/12/2017	Dale L. Simmons	1919990, 1919991, 1919992, 1919993, 1919994
SM 5310 B-00	08/09/2017			08/15/2017	Sofia Elnemr	1919995, 1919996, 1919997, 1919998, 1919999