

Chemical Analysis Report

WQAP-2017-05-23-01

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

Event Description: **SMP 2016 Freshwater Kit A**
Request ID: **RQ-2017-05-08-45**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
MS #3560
Tallahassee, FL 32399-2400
Attn: Michael Eckles

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: Liang Lin, Environmental Administrator

Date Certified: 16-JUN-2017 11:58

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored 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: Alligator Creek @ CR NW 86th

Collection Date/Time: 05/22/2017 11:50

Field ID: G1TLHR0017-2017-02

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1900624	EPA 180.1 Rev. 2.0	Turbidity	1.9	A	NTU	P325720	
	EPA 300.0 Rev. 2.1	Chloride	10		mg Cl/L	P326715	
	SM 2120 B	Color (true)	140		PCU	P325710	
	SM 2320 B-97	Total Alkalinity	58		mg CaCO3/L	P325879	
	SM 2540 C-97	TDS	122		mg/L	P325988	
	SM 2540 D-97	TSS	3	I	mg/L	P326001	
	SM 4500 F-C-97	Fluoride	0.26		mg F/L	P325881	RPD
1900630	EPA 350.1 Rev. 2.0	Ammonia-N	0.032		mg N/L	P325858	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P325727	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.076		mg N/L	P325754	
	EPA 365.1 Rev. 2.0	Total-P	0.53		mg P/L	P325748	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P326022	
1900636	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.44		mg P/L	P325742	

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: Alpha River Rise @ Suwannee River

Collection Date/Time: 05/22/2017 12:50

Field ID: Alpha River Rise @ Suwannee Ri

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1900625	EPA 180.1 Rev. 2.0	Turbidity	0.90		NTU	P325720	
	EPA 300.0 Rev. 2.1	Chloride	8.0		mg Cl/L	P326772	
	SM 2120 B	Color (true)	53	A	PCU	P325710	
	SM 2320 B-97	Total Alkalinity	108		mg CaCO3/L	P325879	
	SM 2540 C-97	TDS	166		mg/L	P325988	
	SM 2540 D-97	TSS	3	I	mg/L	P326001	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P325881	RPD
1900631	EPA 350.1 Rev. 2.0	Ammonia-N	0.038		mg N/L	P325858	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.30		mg N/L	P325727	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.44		mg N/L	P325754	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P325748	
	SM 5310 B-00	Organic Carbon	6.1		mg C/L	P326022	
1900637	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.096		mg P/L	P325742	

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: Ellaville Spring Vent

Collection Date/Time: 05/22/2017 13:50

Field ID: G1TLHR0027-2017-02

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1900626	EPA 180.1 Rev. 2.0	Turbidity	0.20		NTU	P325720	
	EPA 300.0 Rev. 2.1	Chloride	5.2		mg Cl/L	P326772	
	SM 2120 B	Color (true)	18		PCU	P325710	
	SM 2320 B-97	Total Alkalinity	193	A	mg CaCO3/L	P325879	
	SM 2540 C-97	TDS	220		mg/L	P325988	

Field ID: G1TLHR0027-2017-02

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1900626	SM 2540 D-97	TSS	2	I	mg/L	P326001	
	SM 4500 F-C-97	Fluoride	0.13	J	mg F/L	P325881	RPD
1900632	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P325858	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23		mg N/L	P325728	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.69		mg N/L	P325754	
	EPA 365.1 Rev. 2.0	Total-P	0.044		mg P/L	P325748	
	SM 5310 B-00	Organic Carbon	2.2		mg C/L	P326022	
1900638	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.043		mg P/L	P325742	

Ref. Method and Comment:

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

SM 4500 F-C-97: Refer to the narrative for an explanation of QC Codes.

Sample Location: Middle of Lake Francis

Collection Date/Time: 05/22/2017 14:50

Field ID: G1TLHR0045-2017-02

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1900627	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P325720	
	EPA 300.0 Rev. 2.1	Chloride	2.6		mg Cl/L	P326772	
	SM 2120 B	Color (true)	11		PCU	P325710	
	SM 2320 B-97	Total Alkalinity	84		mg CaCO3/L	P325879	
	SM 2540 C-97	TDS	92		mg/L	P325988	
	SM 2540 D-97	TSS	6	I	mg/L	P326001	
	SM 4500 F-C-97	Fluoride	0.071	I	mg F/L	P325881	RPD
1900633	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P325858	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P325728	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P325754	
	EPA 365.1 Rev. 2.0	Total-P	0.075		mg P/L	P325748	
	SM 5310 B-00	Organic Carbon	6.1		mg C/L	P326022	
1900639	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P325742	

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: Middle of Lake Francis

Collection Date/Time: 05/22/2017 14:50

Field ID: G1TLHR0045-2017-02-dup

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1900628	EPA 180.1 Rev. 2.0	Turbidity	3.1		NTU	P325720	
	EPA 300.0 Rev. 2.1	Chloride	2.6		mg Cl/L	P326772	
	SM 2120 B	Color (true)	10		PCU	P325710	
	SM 2320 B-97	Total Alkalinity	84		mg CaCO3/L	P325879	
	SM 2540 C-97	TDS	98		mg/L	P325988	
	SM 2540 D-97	TSS	6	I	mg/L	P326001	
	SM 4500 F-C-97	Fluoride	0.070	I	mg F/L	P325881	RPD
1900634	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P325858	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P325728	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P325754	

Field ID: G1TLHR0045-2017-02-dup

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1900634	EPA 365.1 Rev. 2.0	Total-P	0.074		mg P/L	P325748	
	SM 5310 B-00	Organic Carbon	6.0		mg C/L	P326022	
1900640	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.014		mg P/L	P325742	

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: QA BLANK

Collection Date/Time: 05/22/2017 15:00

Field ID: QA BLANK

Matrix: W-EQPMT-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1900629	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P325720	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P326772	
	SM 2120 B	Color (true)	2.5	U	PCU	P325710	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P325952	
	SM 2540 C-97	TDS	15	U	mg/L	P325988	
	SM 2540 D-97	TSS	2	U	mg/L	P326001	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P325955	RPD
1900635	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P325858	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P325728	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P325755	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P325749	
	SM 5310 B-00	Organic Carbon	0.79	I	mg C/L	P326022	
1900641	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P325742	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

SM 5310 B-00: The result was confirmed on 05/31/2017.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P325720

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P326715

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P326772

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P325858

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325727

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325728

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325754

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325755

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325748

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325749

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325742

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

Reference Method: SM 2120 B
Batch ID: P325710

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P325879

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

Reference Method: SM 2320 B-97
Batch ID: P325952

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

Reference Method: SM 2540 C-97
Batch ID: P325988

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P326001

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P325881

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P325955

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P326022

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: P326715

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326772

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326772

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P325858

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325727

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325728

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325754

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325755

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: P325748

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325749

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325742

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.8		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P325879

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

Reference Method: SM 2320 B-97
Batch ID: P325952

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

Reference Method: SM 4500 F-C-97
Batch ID: P325881

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.8		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P325955

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	92.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P326022

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900582	Chloride	108		P	90 - 110
1900712	Chloride	105		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326772

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900916	Chloride	103		P	90 - 110
1900917	Chloride	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P325858

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900611	Ammonia-N	94.9	98.3	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325727

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900544	Kjeldahl Nitrogen	101	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325728

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900632	Kjeldahl Nitrogen	93.2	95.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325754

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900630	NO2NO3-N	105	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325755

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900656	NO2NO3-N	106	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325748

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900584	Total-P	106	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325742

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900639	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P325881

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900626	Fluoride	93.6	99.3	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P325955

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1901062	Fluoride	94.4	98.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P326022

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900630	Organic Carbon	96.8	97.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P325720

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900624	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900582	Chloride	1.54	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326772

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900916	Chloride	0.798	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P325858

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900611	Ammonia-N	2.89	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325727

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900544	Kjeldahl Nitrogen	1.74	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325728

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900632	Kjeldahl Nitrogen	1.71	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900630	NO2NO3-N	2.08	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325755

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900656	NO2NO3-N	0.475	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325748

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900584	Total-P	0.132	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325749

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900656	Total-P	2.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325742

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900639	O-Phosphate-P	1.57	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P325710

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900625	Color (true)	1.17	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P325879

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900626	Total Alkalinity	0.199	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P325952

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901062	Total Alkalinity	0.393	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P325988

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900610	TDS	6.06	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P325881

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900626	Fluoride	4.43	Spike	F	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P325955

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901062	Fluoride	3.89	Spike	F	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P326022

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900630	Organic Carbon	0.159	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: SM 2120 B
Run ID: A76628
Included Lab Sample IDs: 1900624, 1900625, 1900626, 1900627, 1900628, 1900629

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	95.9	99.3	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A76632
Included Lab Sample IDs: 1900624, 1900625, 1900626, 1900627, 1900628, 1900629

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A76634
Included Lab Sample IDs: 1900636, 1900637, 1900638, 1900639, 1900640, 1900641

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.0	102	P/P	90 - 110
O-Phosphate-P	99.4	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A76646
Included Lab Sample IDs: 1900630, 1900631, 1900632, 1900633, 1900634, 1900635

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	103	P/P	90 - 110
NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A76666
Included Lab Sample IDs: 1900630, 1900631, 1900633, 1900634

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A76666

Included Lab Sample IDs: 1900630, 1900631, 1900633, 1900634

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	106	109	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A76675

Included Lab Sample IDs: 1900630, 1900631, 1900632, 1900633, 1900634, 1900635

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	101	P/P	90 - 110
Kjeldahl Nitrogen	97.7	97.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A76677

Included Lab Sample IDs: 1900632, 1900635

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	92.8	94.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A76683

Included Lab Sample IDs: 1900630, 1900631, 1900632, 1900633, 1900634, 1900635

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	100	P/P	90 - 110
Ammonia-N	99.0	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A76685

Included Lab Sample IDs: 1900624, 1900625, 1900626, 1900627, 1900628

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110
Total Alkalinity	104	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A76685

Included Lab Sample IDs: 1900624, 1900625, 1900626, 1900627, 1900628

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	95.5	97.1	P/P	90 - 110
Fluoride	96.1	95.5	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A76730

Included Lab Sample IDs: 1900629

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A76730

Included Lab Sample IDs: 1900629

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	93.9	101	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A76775

Included Lab Sample IDs: 1900630, 1900631, 1900632, 1900633, 1900634, 1900635

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.2	94.4	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A77053

Included Lab Sample IDs: 1900624

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.3	98.9	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A77076

Included Lab Sample IDs: 1900625, 1900626, 1900627, 1900628, 1900629

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.5	98.9	P/P	90 - 110
Chloride	99.1	97.5	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				0.0	
EPA 300.0 Rev. 2.1	Chloride	103	108 105		1.54	
	Chloride	101	103 101		0.798	
EPA 350.1 Rev. 2.0	Ammonia-N	95.4	94.9 98.3			2.89
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.7	101 103			1.74
	Kjeldahl Nitrogen	97.3	93.2 95.1			1.71
EPA 353.2 Rev. 2.0	NO2NO3-N	103	105 108			2.08
	NO2NO3-N	105	106 105			0.475
EPA 365.1 Rev. 2.0	Total-P	103	106 106			0.132
	Total-P	106				2.02
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.8	101 102			1.57
SM 2120 B	Color (true)				1.17	
SM 2320 B-97	Total Alkalinity	103			0.199	
	Total Alkalinity	103			0.393	
SM 2540 C-97	TDS				6.06	
SM 4500 F-C-97	Fluoride	95.8	93.6 99.3			4.43
	Fluoride	92.5	94.4 98.9			3.89

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
SM 5310 B-00	Organic Carbon	97.4	96.8	97.1	SMP	0.159

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1900624, 1900625, 1900626, 1900627, 1900628, 1900629
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1900624, 1900625, 1900626, 1900627, 1900628, 1900629
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1900630, 1900631, 1900632, 1900633, 1900634, 1900635
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1900630, 1900631, 1900632, 1900633, 1900634, 1900635
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1900630, 1900631, 1900632, 1900633, 1900634, 1900635
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1900630, 1900631, 1900632, 1900633, 1900634, 1900635
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1900636, 1900637, 1900638, 1900639, 1900640, 1900641
SM 2120 B / E31780	True Color measured at 450 nm	1900624, 1900625, 1900626, 1900627, 1900628, 1900629
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1900624, 1900625, 1900626, 1900627, 1900628, 1900629
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1900624, 1900625, 1900626, 1900627, 1900628, 1900629
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1900624, 1900625, 1900626, 1900627, 1900628, 1900629
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1900624, 1900625, 1900626, 1900627, 1900628, 1900629
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1900630, 1900631, 1900632, 1900633, 1900634, 1900635

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	05/23/2017			05/23/2017 15:59	Sima Feizi	1900624, 1900625, 1900626, 1900627, 1900628, 1900629
EPA 300.0 Rev. 2.1	05/23/2017			06/09/2017	Julia Storbeck	1900624
	05/23/2017			06/12/2017	Julia Storbeck	1900625, 1900626, 1900627, 1900628, 1900629
EPA 350.1 Rev. 2.0	05/23/2017			05/25/2017	Julia Storbeck	1900630, 1900631, 1900632, 1900633, 1900634, 1900635
EPA 351.2 Rev. 2.0	05/23/2017	05/24/2017	Adrian Shelby	05/25/2017	Joseph Suarez	1900630, 1900631, 1900632, 1900633, 1900634, 1900635
EPA 353.2 Rev. 2.0	05/23/2017			05/24/2017	Beverly Y. Sanders	1900630, 1900631, 1900632, 1900633, 1900634, 1900635
EPA 365.1 Rev. 2.0	05/23/2017	05/24/2017	Vijayalakshmi Reddy	05/25/2017	Lipi Saha	1900630, 1900631, 1900632, 1900633, 1900634, 1900635
EPA 365.1 Rev. 2.0 dissolved	05/23/2017			05/23/2017 14:29	Anthony C. Onicha	1900639
	05/23/2017			05/23/2017 14:53	Anthony C. Onicha	1900636
	05/23/2017			05/23/2017 14:57	Anthony C. Onicha	1900637
	05/23/2017			05/23/2017 14:58	Anthony C. Onicha	1900638
	05/23/2017			05/23/2017 14:59	Anthony C. Onicha	1900640
	05/23/2017			05/23/2017 15:00	Anthony C. Onicha	1900641
SM 2120 B	05/23/2017			05/23/2017 14:42	Tanya Welborn	1900624
	05/23/2017			05/23/2017 14:43	Tanya Welborn	1900625
	05/23/2017			05/23/2017 14:44	Tanya Welborn	1900626
	05/23/2017			05/23/2017 14:45	Tanya Welborn	1900627
	05/23/2017			05/23/2017 14:46	Tanya Welborn	1900628, 1900629
SM 2320 B-97	05/23/2017			05/25/2017	Dale L. Simmons	1900624, 1900626
	05/23/2017			05/26/2017	Dale L. Simmons	1900625, 1900627, 1900628, 1900629
SM 2540 C-97	05/23/2017			05/24/2017	Yijie Li	1900624, 1900625, 1900626, 1900627, 1900628, 1900629
SM 2540 D-97	05/23/2017			05/24/2017	Yijie Li	1900624, 1900625, 1900626, 1900627, 1900628, 1900629
SM 4500 F-C-97	05/23/2017			05/25/2017	Dale L. Simmons	1900624, 1900626
	05/23/2017			05/26/2017	Dale L. Simmons	1900625, 1900627, 1900628, 1900629
SM 5310 B-00	05/23/2017			05/30/2017	Julie Michelle Frank	1900630, 1900631, 1900632, 1900633, 1900634, 1900635