Chemical Analysis Report

WQAP-2017-05-05-01

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

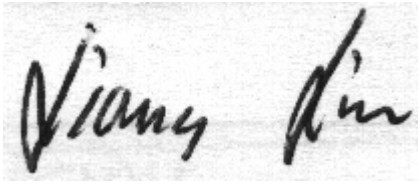
Event Description: **2017 SMP Kit Template 1**
Request ID: **RQ-2017-05-01-37**
Customer: **WQAP**
Project ID: **SMP**

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: Liang Lin, Environmental Administrator

Date Certified: 01-JUN-2017 11:31



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: Moon Lake **Collection Date/Time: 05/04/2017 09:30**

Field ID: G5SW0100 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896953	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P324726	
	EPA 300.0 Rev. 2.1	Chloride	27		mg Cl/L	P325191	
		Sulfate	1.9		mg SO4/L	P325188	
	SM 2120 B	Color (true)	26		PCU	P324718	
	SM 2320 B-97	Total Alkalinity	30		mg CaCO3/L	P325405	
	SM 2540 C-97	TDS	100	A	mg/L	P325341	
	SM 2540 D-97	TSS	3	IA	mg/L	P325325	
	SM 4500 F-C-97	Fluoride	0.087	I	mg F/L	P325406	
1896957	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P324812	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.80		mg N/L	P325084	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324999	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P324841	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P324947	
1896961	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P324731	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Pierce **Collection Date/Time: 05/04/2017 10:25**

Field ID: G5SW0104 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896954	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P324726	
	EPA 300.0 Rev. 2.1	Chloride	7.7		mg Cl/L	P325191	
		Sulfate	0.94		mg SO4/L	P325188	
	SM 2120 B	Color (true)	40		PCU	P324718	
	SM 2320 B-97	Total Alkalinity	4.1		mg CaCO3/L	P325405	
	SM 2540 C-97	TDS	48		mg/L	P325341	
	SM 2540 D-97	TSS	3	I	mg/L	P325325	
	SM 4500 F-C-97	Fluoride	0.051	I	mg F/L	P325406	
1896958	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P324812	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P325084	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324999	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P324843	
	SM 5310 B-00	Organic Carbon	9.3		mg C/L	P324947	
1896962	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P324731	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Green **Collection Date/Time: 05/04/2017 11:05**

Field ID: G5SW0107 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896955	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P324726	

Field ID: G5SW0107 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896955	EPA 300.0 Rev. 2.1	Chloride	19	A	mg Cl/L	P325191	
		Sulfate	0.22	IA	mg SO4/L	P325188	
	SM 2120 B	Color (true)	25		PCU	P324718	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P325405	
	SM 2540 C-97	TDS	87		mg/L	P325341	
	SM 2540 D-97	TSS	4	I	mg/L	P325325	
	SM 4500 F-C-97	Fluoride	0.073	I	mg F/L	P325406	
1896959	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P324813	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.98		mg N/L	P325086	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324999	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P324843	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P324947	
1896963	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P324731	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Vienna N **Collection Date/Time: 05/04/2017 12:00**

Field ID: G5SW0115 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896956	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P324726	
	EPA 300.0 Rev. 2.1	Chloride	30		mg Cl/L	P325191	
		Sulfate	14		mg SO4/L	P325188	
	SM 2120 B	Color (true)	34	A	PCU	P324720	
	SM 2320 B-97	Total Alkalinity	32	A	mg CaCO3/L	P325405	
	SM 2540 C-97	TDS	126		mg/L	P325341	
	SM 2540 D-97	TSS	4	I	mg/L	P325325	
	SM 4500 F-C-97	Fluoride	0.085	I	mg F/L	P325406	
1896960	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P324813	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.88		mg N/L	P325086	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324999	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P324843	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P324947	
1896964	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P324732	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P324726

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report
Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P325188

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P325191

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324812

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324813

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325084

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325086

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324999

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324841

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324843

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324731

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324732

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

Reference Method: SM 2120 B
Batch ID: P324718

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P324720

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P325405

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

Reference Method: SM 2540 C-97
Batch ID: P325341

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P325325

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P325406

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P324947

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: P325188

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	95.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P325191

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324812

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324813

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325084

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325086

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324999

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324841

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324843

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324731

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324732

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.1		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P325405

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

Reference Method: SM 4500 F-C-97
Batch ID: P325406

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.8		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P324947

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.1		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P325188

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896912	Sulfate	94.4		P	90 - 110
1896955	Sulfate	94.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P325191

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896912	Chloride	98.2		P	90 - 110
1896955	Chloride	95.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324812

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896834	Ammonia-N	97.4	98.8	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324813

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896960	Ammonia-N	98.1	97.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896916	Kjeldahl Nitrogen	103	107	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325086

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1897161	Kjeldahl Nitrogen	106	110	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324999

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896835	NO2NO3-N	101	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324841

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896957	Total-P	100	97.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324843

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896960	Total-P	101	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324731

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896961	O-Phosphate-P	95.9	96.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324732

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896964	O-Phosphate-P	90.5	91.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P325406

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896956	Fluoride	102	104	P/P	91 - 105

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P324947

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1896834	Organic Carbon	92.5	92.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P324726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896915	Turbidity	0.892	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P325191

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896955	Chloride	0.214	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324812

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896834	Ammonia-N	1.28	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P324813

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896960	Ammonia-N	0.414	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896916	Kjeldahl Nitrogen	3.20	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325086

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1897161	Kjeldahl Nitrogen	3.17	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324999

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896835	NO2NO3-N	3.41	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324841

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896957	Total-P	2.93	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P324843

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896960	Total-P	3.82	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324731

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896961	O-Phosphate-P	0.831	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P324732

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896964	O-Phosphate-P	0.551	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P324718

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896881	Color (true)	0.538	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P324720

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896956	Color (true)	3.03	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P325405

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896956	Total Alkalinity	0.801	Sample	P	0 - 4.8

Quality Assurance Report
Precision

Reference Method: SM 2540 C-97
Batch ID: P325341

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896953	TDS	0.995	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P325406

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896956	Fluoride	1.61	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P324947

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896834	Organic Carbon	0.158	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: A76218
Included Lab Sample IDs: 1896953, 1896954, 1896955, 1896956

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	85 - 115
Color (true)	101	103	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A76221
Included Lab Sample IDs: 1896953, 1896954, 1896955, 1896956

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A76222
Included Lab Sample IDs: 1896961, 1896962, 1896963, 1896964

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.3	96.4	P/P	90 - 110
O-Phosphate-P	97.5	97.8	P/P	90 - 110
O-Phosphate-P	97.9	96.3	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A76241
Included Lab Sample IDs: 1896957, 1896958, 1896959, 1896960

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	101	P/P	90 - 110
Ammonia-N	99.5	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A76269
Included Lab Sample IDs: 1896953, 1896954, 1896955, 1896956

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Chloride	102	102	P/P	90 - 110
Sulfate	96.7	96.9	P/P	90 - 110
Sulfate	97.7	96.8	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A76303
Included Lab Sample IDs: 1896957, 1896958, 1896959, 1896960

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	92.2	93.8	P/P	90 - 110
Organic Carbon	93.8	92.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A76314
Included Lab Sample IDs: 1896957, 1896958, 1896959, 1896960

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A76370
Included Lab Sample IDs: 1896957, 1896958, 1896959, 1896960

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	98.5	P/P	90 - 110
Total-P	98.2	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A76416
Included Lab Sample IDs: 1896957, 1896958, 1896959, 1896960

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	104	P/P	90 - 110
Kjeldahl Nitrogen	104	109	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A76469
Included Lab Sample IDs: 1896953, 1896954, 1896955, 1896956

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A76469
Included Lab Sample IDs: 1896953, 1896954, 1896955, 1896956

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.4	99.5	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		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					0.892	
EPA 300.0 Rev. 2.1	Chloride	101	95.4	98.2		0.214	
	Sulfate	95.7	94.3	94.4			
EPA 350.1 Rev. 2.0	Ammonia-N	98.1	97.4	98.8			1.28
	Ammonia-N	98.1	98.1	97.7			0.414
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	103	107			3.20
	Kjeldahl Nitrogen	104	106	110			3.17
EPA 353.2 Rev. 2.0	NO2NO3-N	106	101	104			3.41
EPA 365.1 Rev. 2.0	Total-P	107	100	97.1			2.93
	Total-P	98.5	101	97.0			3.82
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.8	95.9	96.7			0.831
	O-Phosphate-P	96.1	90.5	91.0			0.551
SM 2120 B	Color (true)					0.538	
	Color (true)					3.03	
SM 2320 B-97	Total Alkalinity	103				0.801	
SM 2540 C-97	TDS					0.995	
SM 4500 F-C-97	Fluoride	96.8	102	104			1.61
SM 5310 B-00	Organic Carbon	93.1	92.5	92.3			0.158

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1896953, 1896954, 1896955, 1896956
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1896953, 1896954, 1896955, 1896956
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1896953, 1896954, 1896955, 1896956
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1896957, 1896958, 1896959, 1896960
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1896957, 1896958, 1896959, 1896960
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1896957, 1896958, 1896959, 1896960
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1896957, 1896958, 1896959, 1896960
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1896961, 1896962, 1896963, 1896964
SM 2120 B / E31780	True Color measured at 450 nm	1896953, 1896954, 1896955, 1896956
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1896953, 1896954, 1896955, 1896956

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1896953, 1896954, 1896955, 1896956
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1896953, 1896954, 1896955, 1896956
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1896953, 1896954, 1896955, 1896956
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1896957, 1896958, 1896959, 1896960

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	05/05/2017			05/05/2017 15:29	Sima Feizi	1896953, 1896954, 1896955, 1896956
EPA 300.0 Rev. 2.1	05/05/2017			05/11/2017	Ping Hua	1896953, 1896954, 1896955, 1896956
EPA 350.1 Rev. 2.0	05/05/2017			05/08/2017	Julia Storbeck	1896957, 1896958, 1896959, 1896960
EPA 351.2 Rev. 2.0	05/05/2017	05/11/2017	Adrian Shelby	05/15/2017	Joseph Suarez	1896957, 1896958, 1896959, 1896960
EPA 353.2 Rev. 2.0	05/05/2017			05/10/2017	Beverly Y. Sanders	1896957, 1896958, 1896959, 1896960
EPA 365.1 Rev. 2.0	05/05/2017	05/09/2017	Adrian Shelby	05/10/2017	Lipi Saha	1896957, 1896958, 1896959, 1896960
EPA 365.1 Rev. 2.0 dissolved	05/05/2017			05/05/2017 16:30	Anthony C. Onicha	1896961
	05/05/2017			05/05/2017 17:01	Anthony C. Onicha	1896962, 1896963
	05/05/2017			05/05/2017 17:08	Anthony C. Onicha	1896964
SM 2120 B	05/05/2017			05/05/2017 15:09	Julia Storbeck	1896953
	05/05/2017			05/05/2017 15:10	Julia Storbeck	1896954
	05/05/2017			05/05/2017 15:11	Julia Storbeck	1896955
	05/05/2017			05/05/2017 15:15	Julia Storbeck	1896956
SM 2320 B-97	05/05/2017			05/16/2017	Dale L. Simmons	1896953, 1896954, 1896955, 1896956
SM 2540 C-97	05/05/2017			05/10/2017	Yijie Li	1896953, 1896954, 1896955, 1896956
SM 2540 D-97	05/05/2017			05/10/2017	Yijie Li	1896953, 1896954, 1896955, 1896956
SM 4500 F-C-97	05/05/2017			05/16/2017	Dale L. Simmons	1896953, 1896954, 1896955, 1896956
SM 5310 B-00	05/05/2017			05/09/2017	Christopher Armour	1896957, 1896958, 1896959, 1896960