

Chemical Analysis Report

WQAP-2017-01-18-01

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

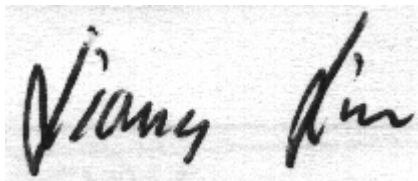
Event Description: **Gainesville South**
Request ID: **RQ-2017-01-16-12**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
NE ROC
8800 Baymeadows Way West
jacksonville, FL 32256
Attn: Nicole Frederick

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

Certified by: Liang Lin, Environmental Administrator

Date Certified: 14-FEB-2017 15:38

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

NON-CONFORMANCE REPORT INCLUDED

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: Cross Creek @ SR 325

Collection Date/Time: 01/17/2017 11:55

Field ID: G1NE0105 01172017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1864384	EPA 180.1 Rev. 2.0	Turbidity	5.2	Y	NTU	P318377	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P318667	
		Sulfate	2.8	Y	mg SO4/L	P318669	
	SM 2120 B	Color (true)	47	Y	PCU	P318372	
	SM 2320 B-97	Total Alkalinity	34	Y	mg CaCO3/L	P318491	
	SM 2540 C-97	TDS	84	Y	mg/L	P318677	
	SM 2540 D-97	TSS	13	IY	mg/L	P318681	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P318495	
1864386	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	IY	mg N/L	P318409	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4	Y	mg N/L	P318387	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	IY	mg N/L	P318421	
	EPA 365.1 Rev. 2.0	Total-P	0.079	Y	mg P/L	P318427	
	SM 5310 B-00	Organic Carbon	21	Y	mg C/L	P318521	
1864388	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	IY	mg P/L	P318369	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Sample temperature was outside the acceptable range when received at the laboratory.

EPA 300.0 Rev. 2.1: Sulfate: Sample temperature was outside the acceptable range when received at the laboratory.

SM 2120 B: Sample temperature was outside the acceptable range when received at the laboratory.

SM 2320 B-97: Sample temperature was outside the acceptable range when received at the laboratory.

SM 2540 C-97: Sample temperature was outside the acceptable range when received at the laboratory.

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. Sample temperature was outside the acceptable range when received at the laboratory.

EPA 350.1 Rev. 2.0: Sample temperature was outside the acceptable range when received at the laboratory.

EPA 351.2 Rev. 2.0: Sample temperature was outside the acceptable range when received at the laboratory.

EPA 353.2 Rev. 2.0: Sample temperature was outside the acceptable range when received at the laboratory.

EPA 365.1 Rev. 2.0: Total-P: Sample temperature was outside the acceptable range when received at the laboratory.

SM 5310 B-00: Sample temperature was outside the acceptable range when received at the laboratory.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Sample temperature was outside the acceptable range when received at the laboratory.

Sample Location: Prairie Creek @ SR 20

Collection Date/Time: 01/17/2017 12:50

Field ID: G1NE0095 01172017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1864385	EPA 180.1 Rev. 2.0	Turbidity	18	Y	NTU	P318377	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P318667	
		Sulfate	2.0	Y	mg SO4/L	P318669	
	SM 2120 B	Color (true)	56	Y	PCU	P318372	
	SM 2320 B-97	Total Alkalinity	17	Y	mg CaCO3/L	P318491	
	SM 2540 C-97	TDS	50	Y	mg/L	P318677	
	SM 2540 D-97	TSS	40	IY	mg/L	P318681	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P318495	
1864387	EPA 350.1 Rev. 2.0	Ammonia-N	0.024	Y	mg N/L	P318409	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.4	Y	mg N/L	P318387	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.026	Y	mg N/L	P318421	
	EPA 365.1 Rev. 2.0	Total-P	0.17	Y	mg P/L	P318427	
	SM 5310 B-00	Organic Carbon	24	Y	mg C/L	P318521	
1864389	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	UY	mg P/L	P318369	

Field ID: G1NE0095 01172017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
Ref. Method and Comment:							
EPA 180.1 Rev. 2.0: Sample temperature was outside the acceptable range when received at the laboratory.							
EPA 300.0 Rev. 2.1: Sulfate: Sample temperature was outside the acceptable range when received at the laboratory.							
SM 2120 B: Sample temperature was outside the acceptable range when received at the laboratory.							
SM 2320 B-97: Sample temperature was outside the acceptable range when received at the laboratory.							
SM 2540 C-97: Sample temperature was outside the acceptable range when received at the laboratory.							
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. Sample temperature was outside the acceptable range when received at the laboratory.							
EPA 350.1 Rev. 2.0: Sample temperature was outside the acceptable range when received at the laboratory.							
EPA 351.2 Rev. 2.0: Sample temperature was outside the acceptable range when received at the laboratory.							
EPA 353.2 Rev. 2.0: Sample temperature was outside the acceptable range when received at the laboratory.							
EPA 365.1 Rev. 2.0: Total-P: Sample temperature was outside the acceptable range when received at the laboratory.							
SM 5310 B-00: Sample temperature was outside the acceptable range when received at the laboratory.							
EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Sample temperature was outside the acceptable range when received at the laboratory.							

Sample Location: FIELD BLANK 01172017

Collection Date/Time: 01/17/2017 13:20

Field ID: FIELD BLANK 01172017

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1864390	EPA 180.1 Rev. 2.0	Turbidity	0.10	UY	NTU	P318377	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P318667	
		Sulfate	0.20	UY	mg SO4/L	P318669	
	SM 2120 B	Color (true)	2.5	U Y	PCU	P318372	
	SM 2320 B-97	Total Alkalinity	0.65	UY	mg CaCO3/L	P318491	
	SM 2540 C-97	TDS	15	UY	mg/L	P318677	
	SM 2540 D-97	TSS	2	UY	mg/L	P318681	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P318495	
1864391	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	UY	mg N/L	P318439	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	UY	mg N/L	P318387	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	UY	mg N/L	P318421	
	EPA 365.1 Rev. 2.0	Total-P	0.002	UY	mg P/L	P318427	
	SM 5310 B-00	Organic Carbon	0.50	UY	mg C/L	P318521	
1864392	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	UY	mg P/L	P318369	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Sample temperature was outside the acceptable range when received at the laboratory.

EPA 300.0 Rev. 2.1: Sulfate: Sample temperature was outside the acceptable range when received at the laboratory.

SM 2120 B: Sample temperature was outside the acceptable range when received at the laboratory.

SM 2320 B-97: Sample temperature was outside the acceptable range when received at the laboratory.

SM 2540 C-97: Sample temperature was outside the acceptable range when received at the laboratory.

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. Sample temperature was outside the acceptable range when received at the laboratory.

EPA 350.1 Rev. 2.0: Sample temperature was outside the acceptable range when received at the laboratory.

EPA 351.2 Rev. 2.0: Sample temperature was outside the acceptable range when received at the laboratory.

EPA 353.2 Rev. 2.0: Sample temperature was outside the acceptable range when received at the laboratory.

EPA 365.1 Rev. 2.0: Total-P: Sample temperature was outside the acceptable range when received at the laboratory.

SM 5310 B-00: Sample temperature was outside the acceptable range when received at the laboratory.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Sample temperature was outside the acceptable range when received at the laboratory.

Non-Conformance Report

NCR ID: 6208

Event(s)

WQAP-2017-01-18-01

Job(s)

TLH-2017-01-18-07

Sample(s)

Test(s)

Non-Conformance Report

NCR ID: 6208

<u>Event(s)</u>	<u>Job(s)</u>	<u>Sample(s)</u>	<u>Test(s)</u>
NCR Type:	SHIPPING/RECEIVING	NCR Category:	Preservation Not Intact
Observation:	Samples received for RQ-2017-01-16-12 on 1/18/2017 exceeded the 6 degree C temperature threshold.		
Resolution:	The customers were notified (Brian Davis, Pat O'Connor) and analyses performed. All results needing temperature preservation were 'Y' qualified.		

Authorised by/Date: Kathy Lurding 2/1/2017

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P318377

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318667

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318669

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318409

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318439

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318387

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318421

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318427

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318369

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

Reference Method: SM 2120 B
Batch ID: P318372

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P318491

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

Reference Method: SM 2540 C-97
Batch ID: P318677

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P318681

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P318495

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P318521

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: P318667

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318669

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318409

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318439

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318387

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318421

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318427

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: P318369

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

Reference Method: SM 2320 B-97
Batch ID: P318491

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P318495

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.8		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P318521

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318667

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864385	Chloride	99.8		P	90 - 110
1864474	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318669

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864385	Sulfate	97.4		P	90 - 110
1864474	Sulfate	97.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318409

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864348	Ammonia-N	95.9	94.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318439

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864348	Ammonia-N	95.9	94.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318387

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864428	Kjeldahl Nitrogen	91.9	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318421

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864353	NO2NO3-N	98.2	98.5	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318427

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864350	Total-P	97.8	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318369

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864354	O-Phosphate-P	97.0	96.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P318495

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864627	Fluoride	98.4	99.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P318521

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864443	Organic Carbon	98.9	98.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P318377

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864312	Turbidity	3.48	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318667

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864474	Chloride	0.429	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318669

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864474	Sulfate	0.369	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318409

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864348	Ammonia-N	1.28	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318439

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864348	Ammonia-N	1.28	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864428	Kjeldahl Nitrogen	4.14	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318421

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864353	NO2NO3-N	0.141	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318427

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864350	Total-P	0.403	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318369

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864354	O-Phosphate-P	0.276	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P318372

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864426	Color (true)	0.645	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P318491

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864627	Total Alkalinity	0.382	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P318677

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864427	TDS	5.95	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P318495

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864627	Fluoride	0.966	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P318521

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864443	Organic Carbon	0.336	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A73981
Included Lab Sample IDs: 1864388, 1864389, 1864392

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

Reference Method: SM 2120 B
Run ID: A73982
Included Lab Sample IDs: 1864384, 1864385, 1864390

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	104	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A73984
Included Lab Sample IDs: 1864384, 1864385, 1864390

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A73995
Included Lab Sample IDs: 1864386, 1864387

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A73999
Included Lab Sample IDs: 1864386, 1864387, 1864391

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	98.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A74005

Included Lab Sample IDs: 1864391

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A74011

Included Lab Sample IDs: 1864386, 1864387, 1864391

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.4	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A74019

Included Lab Sample IDs: 1864386, 1864387

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	106	104	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A74022

Included Lab Sample IDs: 1864384, 1864385, 1864390

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

Reference Method: SM 4500 F-C-97

Run ID: A74022

Included Lab Sample IDs: 1864384, 1864385, 1864390

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

Reference Method: SM 5310 B-00

Run ID: A74033

Included Lab Sample IDs: 1864386, 1864387, 1864391

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A74077

Included Lab Sample IDs: 1864391

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.8	98.5	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A74088

Included Lab Sample IDs: 1864384, 1864385, 1864390

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A74088

Included Lab Sample IDs: 1864384, 1864385, 1864390

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	101	96.7	P/P	90 - 110
Sulfate	98.1	95.1	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				3.48	
EPA 300.0 Rev. 2.1	Chloride	101	100 99.8		0.429	
	Sulfate	97.8	97.1 97.4		0.369	
EPA 350.1 Rev. 2.0	Ammonia-N	104	95.9 94.1			1.28
	Ammonia-N	104	95.9 94.1			1.28
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	91.9 98.8			4.14
EPA 353.2 Rev. 2.0	NO2NO3-N	102	98.2 98.5			0.141
EPA 365.1 Rev. 2.0	Total-P	98.5	97.8 98.2			0.403
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	97.0 96.7			0.276
SM 2120 B	Color (true)				0.645	
SM 2320 B-97	Total Alkalinity	104			0.382	
SM 2540 C-97	TDS				5.95	
SM 4500 F-C-97	Fluoride	97.8	98.4 99.8			0.966
SM 5310 B-00	Organic Carbon	98.2	98.9 98.6			0.336

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1864384, 1864385, 1864390
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1864384, 1864385, 1864390
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1864384, 1864385, 1864390
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1864386, 1864387, 1864391
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1864386, 1864387, 1864391
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1864386, 1864387, 1864391
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1864386, 1864387, 1864391
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1864388, 1864389, 1864392
SM 2120 B / E31780	True Color measured at 450 nm	1864384, 1864385, 1864390
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1864384, 1864385, 1864390
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1864384, 1864385, 1864390
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1864384, 1864385, 1864390
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1864384, 1864385, 1864390

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1864386, 1864387, 1864391

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	01/18/2017			01/18/2017 16:25	Sima Feizi	1864384, 1864385, 1864390
EPA 300.0 Rev. 2.1	01/18/2017			01/24/2017	Ping Hua	1864385
	01/18/2017			01/25/2017	Ping Hua	1864384, 1864390
EPA 350.1 Rev. 2.0	01/18/2017			01/18/2017	Sofia Elnemr	1864386, 1864387, 1864391
EPA 351.2 Rev. 2.0	01/18/2017	01/19/2017	Adrian Shelby	01/19/2017	Joseph Suarez	1864386, 1864387, 1864391
EPA 353.2 Rev. 2.0	01/18/2017			01/19/2017	Beverly Y. Sanders	1864386, 1864387, 1864391
EPA 365.1 Rev. 2.0	01/18/2017	01/19/2017	Vijayalakshmi Reddy	01/20/2017	Lipi Saha	1864386, 1864387
	01/18/2017	01/19/2017	Vijayalakshmi Reddy	01/24/2017	Lipi Saha	1864391
EPA 365.1 Rev. 2.0 dissolved	01/18/2017			01/18/2017 15:26	Julia Storbeck	1864388
	01/18/2017			01/18/2017 15:27	Julia Storbeck	1864389, 1864392
SM 2120 B	01/18/2017			01/18/2017 15:14	Jared I. Manley	1864384, 1864385
	01/18/2017			01/18/2017 15:15	Jared I. Manley	1864390
SM 2320 B-97	01/18/2017			01/20/2017	Dale L. Simmons	1864384, 1864385, 1864390
SM 2540 C-97	01/18/2017			01/20/2017	Yijie Li	1864384, 1864385, 1864390
SM 2540 D-97	01/18/2017			01/20/2017	Yijie Li	1864384, 1864385, 1864390
SM 4500 F-C-97	01/18/2017			01/20/2017	Dale L. Simmons	1864384, 1864385, 1864390
SM 5310 B-00	01/18/2017			01/19/2017	Julie Michelle Frank	1864386, 1864387, 1864391