

Chemical Analysis Report

WQAP-2017-01-20-01

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

Event Description: **Interlachen 2**
Request ID: **RQ-2017-01-16-14**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
NE ROC
8800 baymeadow 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: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 15-FEB-2017 15:38



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: Galilee Lake Center

Collection Date/Time: 01/19/2017 12:00

Field ID: G1NE0870 01192017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1865238	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P318514	
	EPA 300.0 Rev. 2.1	Chloride	8.9		mg Cl/L	P318866	
		Sulfate	5.0		mg SO4/L	P318870	
	SM 2120 B	Color (true)	9.2		PCU	P318619	
	SM 2320 B-97	Total Alkalinity	0.72	I	mg CaCO3/L	P318703	
	SM 2540 C-97	TDS	33		mg/L	P318832	
	SM 2540 D-97	TSS	3	I	mg/L	P318711	
	SM 4500 F-C-97	Fluoride	0.037	I	mg F/L	P318705	
1865242	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P318744	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37		mg N/L	P318532	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.042		mg N/L	P318689	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P318612	
	SM 5310 B-00	Organic Carbon	3.9		mg C/L	P318553	
1865246	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P318510	

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: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Fanny Center

Collection Date/Time: 01/19/2017 10:40

Field ID: G1NE0074 01192017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1865239	EPA 180.1 Rev. 2.0	Turbidity	0.55		NTU	P318514	
	EPA 300.0 Rev. 2.1	Chloride	13	A	mg Cl/L	P318866	
		Sulfate	13	A	mg SO4/L	P318870	
	SM 2120 B	Color (true)	3.2	I	PCU	P318619	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P318703	
	SM 2540 C-97	TDS	42		mg/L	P318832	
	SM 2540 D-97	TSS	2	I	mg/L	P318711	
	SM 4500 F-C-97	Fluoride	0.049	I	mg F/L	P318705	
1865243	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P318841	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.22		mg N/L	P318532	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P318689	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P318612	
	SM 5310 B-00	Organic Carbon	2.5		mg C/L	P318553	
1865247	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P318510	

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: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Cowpen Lake Center

Collection Date/Time: 01/19/2017 09:50

Field ID: G1NE0039 01192017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1865240	EPA 180.1 Rev. 2.0	Turbidity	0.60		NTU	P318514	

Field ID: G1NE0039 01192017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1865240	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P318867	
		Sulfate	3.7		mg SO4/L	P318871	
	SM 2120 B	Color (true)	11		PCU	P318619	
	SM 2320 B-97	Total Alkalinity	2.7		mg CaCO3/L	P318703	
	SM 2540 C-97	TDS	38		mg/L	P318832	
	SM 2540 D-97	TSS	2	I	mg/L	P318711	
	SM 4500 F-C-97	Fluoride	0.046	I	mg F/L	P318705	
1865244	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P318841	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P318532	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P318690	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P318612	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P318553	
1865248	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P318510	

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: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Gillis Pond Center

Collection Date/Time: 01/19/2017 11:20

Field ID: G1NE0863 01192017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1865241	EPA 180.1 Rev. 2.0	Turbidity	0.45		NTU	P318514	
	EPA 300.0 Rev. 2.1	Chloride	13	A	mg Cl/L	P318867	
		Sulfate	6.1	A	mg SO4/L	P318871	
	SM 2120 B	Color (true)	2.5	U	PCU	P318619	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P318981	
	SM 2540 C-97	TDS	35		mg/L	P318832	
	SM 2540 D-97	TSS	2	I	mg/L	P318711	
1865245	SM 4500 F-C-97	Fluoride	0.036	I	mg F/L	P318705	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P318837	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25		mg N/L	P318532	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.034		mg N/L	P318690	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P318612	
1865249	SM 5310 B-00	Organic Carbon	1.7		mg C/L	P318553	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P318510	

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: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P318514

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: P318866

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318867

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318870

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318871

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318744

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318837

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318841

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318532

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318689

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318690

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318612

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318510

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

Reference Method: SM 2120 B
Batch ID: P318619

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P318703

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

Reference Method: SM 2320 B-97
Batch ID: P318981

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

Reference Method: SM 2540 C-97
Batch ID: P318832

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P318711

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P318705

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P318553

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: P318866

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318867

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318870

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318871

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: P318744

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318837

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318841

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: P318532

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318532

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318689

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318690

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318612

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318510

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

Reference Method: SM 2320 B-97
Batch ID: P318703

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

Reference Method: SM 2320 B-97
Batch ID: P318981

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

Reference Method: SM 4500 F-C-97
Batch ID: P318705

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P318553

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318866

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865238	Chloride	99.4		P	90 - 110
1865239	Chloride	98.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318867

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865240	Chloride	100		P	90 - 110
1865241	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318870

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865238	Sulfate	92.6		P	90 - 110
1865239	Sulfate	93.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318871

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865240	Sulfate	96.7		P	90 - 110
1865241	Sulfate	97.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318837

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865245	Ammonia-N	97.9	96.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318841

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865244	Ammonia-N	109	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318532

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865245	Kjeldahl Nitrogen	97.3	92.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865122	NO2NO3-N	98.5	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318690

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318690

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865244	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318612

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865242	Total-P	96.0	92.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318510

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865246	O-Phosphate-P	103	104	P/P	90 - 110

Reference Method: SM 5310 B-00
Batch ID: P318553

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865107	Organic Carbon	99.0	97.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P318514

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865218	Turbidity	0.892	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318866

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865239	Chloride	0.0839	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318867

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865241	Chloride	0.346	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318870

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865239	Sulfate	0.244	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318871

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865241	Sulfate	1.47	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318744

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865180	Ammonia-N	0.0696	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865245	Ammonia-N	1.15	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318841

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865244	Ammonia-N	3.06	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318532

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865245	Kjeldahl Nitrogen	3.92	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865122	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318690

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865244	NO2NO3-N	0.482	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318612

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865242	Total-P	4.16	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318510

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865246	O-Phosphate-P	0.867	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P318619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865219	Color (true)	3.95	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P318703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865344	Total Alkalinity	0.518	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P318981

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866884	Total Alkalinity	0.624	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P318832

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865316	TDS	5.60	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P318705

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865344	Fluoride	0.980	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P318553

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865107	Organic Carbon	1.09	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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A74030

Included Lab Sample IDs: 1865246, 1865247, 1865248, 1865249

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.0	98.6	P/P	90 - 110
O-Phosphate-P	98.6	98.8	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A74031

Included Lab Sample IDs: 1865238, 1865239, 1865240, 1865241

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

Reference Method: SM 5310 B-00

Run ID: A74044

Included Lab Sample IDs: 1865242, 1865243, 1865244, 1865245

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.2	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A74066

Included Lab Sample IDs: 1865242, 1865243, 1865244, 1865245

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.8	98.7	P/P	90 - 110
Kjeldahl Nitrogen	98.9	102	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A74073

Included Lab Sample IDs: 1865238, 1865239, 1865240, 1865241

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.0	98.6	P/P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A74088

Included Lab Sample IDs: 1865238, 1865239, 1865240, 1865241

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Chloride	103	101	P/P	90 - 110
Sulfate	95.3	99.3	P/P	90 - 110
Sulfate	97.2	98.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A74095

Included Lab Sample IDs: 1865242, 1865243, 1865244, 1865245

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.0	97.5	P/P	90 - 110
NO2NO3-N	98.5	98.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A74096

Included Lab Sample IDs: 1865238, 1865239, 1865240

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

Reference Method: SM 4500 F-C-97

Run ID: A74096

Included Lab Sample IDs: 1865238, 1865239, 1865240, 1865241

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	100	P/P	90 - 110
Fluoride	99.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A74101

Included Lab Sample IDs: 1865242, 1865243, 1865244, 1865245

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	98.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A74111

Included Lab Sample IDs: 1865242

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A74141

Included Lab Sample IDs: 1865243, 1865244, 1865245

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.2	P/P	90 - 110
Ammonia-N	99.4	99.0	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A74180

Included Lab Sample IDs: 1865241

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	103	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				0.892	
EPA 300.0 Rev. 2.1	Chloride	99.5	98.7 99.4		0.0839	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision SMP	MS
			LCS			
EPA 300.0 Rev. 2.1	Chloride	101	100	100	0.346	
	Sulfate	96.7	93.6	92.6	0.244	
	Sulfate	97.8	97.0	96.7	1.47	
EPA 350.1 Rev. 2.0	Ammonia-N	98.8				0.0696
	Ammonia-N	98.8	97.9	96.7		1.15
	Ammonia-N	95.4	109	105		3.06
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	97.3	92.8		3.92
EPA 353.2 Rev. 2.0	NO2NO3-N	102	98.5	98.5		0.0
	NO2NO3-N	102	104	104		0.482
EPA 365.1 Rev. 2.0	Total-P	96.3	96.0	92.0		4.16
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	103	104		0.867
SM 2120 B	Color (true)				3.95	
SM 2320 B-97	Total Alkalinity	103			0.518	
	Total Alkalinity	103			0.624	
SM 2540 C-97	TDS				5.60	
SM 4500 F-C-97	Fluoride	96.9				0.980
SM 5310 B-00	Organic Carbon	99.8	99.0	97.9		1.09

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1865238, 1865239, 1865240, 1865241
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1865238, 1865239, 1865240, 1865241
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1865238, 1865239, 1865240, 1865241
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1865242, 1865243, 1865244, 1865245
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1865242, 1865243, 1865244, 1865245
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1865242, 1865243, 1865244, 1865245
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1865242, 1865243, 1865244, 1865245
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1865246, 1865247, 1865248, 1865249
SM 2120 B / E31780	True Color measured at 450 nm	1865238, 1865239, 1865240, 1865241
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1865238, 1865239, 1865240, 1865241
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1865238, 1865239, 1865240, 1865241
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1865238, 1865239, 1865240, 1865241
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1865238, 1865239, 1865240, 1865241
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1865242, 1865243, 1865244, 1865245

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	01/20/2017			01/20/2017 14:29	Sima Feizi	1865238, 1865239, 1865240, 1865241
EPA 300.0 Rev. 2.1	01/20/2017			01/26/2017	Ping Hua	1865238, 1865239, 1865241
	01/20/2017			01/27/2017	Ping Hua	1865240
EPA 350.1 Rev. 2.0	01/20/2017			01/24/2017	Sofia Elnemr	1865242
	01/20/2017			01/26/2017	Sofia Elnemr	1865243, 1865244, 1865245
EPA 351.2 Rev. 2.0	01/20/2017	01/23/2017	Adrian Shelby	01/24/2017	Joseph Suarez	1865242, 1865243, 1865244, 1865245
EPA 353.2 Rev. 2.0	01/20/2017			01/25/2017	Beverly Y. Sanders	1865242, 1865243, 1865244, 1865245
EPA 365.1 Rev. 2.0	01/20/2017	01/24/2017	Vijayalakshmi Reddy	01/25/2017	Lipi Saha	1865242, 1865243, 1865244, 1865245
EPA 365.1 Rev. 2.0 dissolved	01/20/2017			01/20/2017 14:24	Julia Storbeck	1865246
	01/20/2017			01/20/2017 14:37	Julia Storbeck	1865247
	01/20/2017			01/20/2017 14:38	Julia Storbeck	1865248
	01/20/2017			01/20/2017 14:39	Julia Storbeck	1865249
SM 2120 B	01/20/2017			01/20/2017 15:30	Jared I. Manley	1865238
	01/20/2017			01/20/2017 15:31	Jared I. Manley	1865239, 1865240
	01/20/2017			01/20/2017 15:32	Jared I. Manley	1865241
SM 2320 B-97	01/20/2017			01/25/2017	Dale L. Simmons	1865238, 1865239, 1865240
	01/20/2017			01/31/2017	Dale L. Simmons	1865241
SM 2540 C-97	01/20/2017			01/24/2017	Yijie Li	1865238, 1865239, 1865240, 1865241
SM 2540 D-97	01/20/2017			01/24/2017	Yijie Li	1865238, 1865239, 1865240, 1865241
SM 4500 F-C-97	01/20/2017			01/25/2017	Dale L. Simmons	1865238, 1865239, 1865240, 1865241
SM 5310 B-00	01/20/2017			01/21/2017	Julie Michelle Frank	1865242, 1865243, 1865244, 1865245