Chemical Analysis Report

TLH-ROC-2018-06-21-01

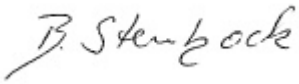
Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **kit A w/ bacteria**
Request ID: **RQ-2018-05-14-54**
Customer: **TLH-ROC**
Project ID: **SMP**

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

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 12-JUL-2018 14:33



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: OWL CREEK **Collection Date/Time: 06/21/2018 12:00**

Field ID: G1TLHR0010 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2002797	EPA 180.1 Rev. 2.0	Turbidity	3.7		NTU	P347297	
	EPA 300.0 Rev. 2.1	Chloride	5.3		mg Cl/L	P347633	
		Sulfate	0.20	U	mg SO4/L	P347636	
	SM 2120 B	Color (true)	630		PCU	P347358	
	SM 2320 B-97	Total Alkalinity	34		mg CaCO3/L	P347844	
	SM 2540 C-97	TDS	155		mg/L	P347651	
	SM 2540 D-97	TSS	7	I	mg/L	P347564	
	SM 4500 F-C-97	Fluoride	0.080	I	mg F/L	P347848	
2002801	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P347553	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P348019	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P347584	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P347713	
	SM 5310 B-00	Organic Carbon	52		mg C/L	P347795	
2002805	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.048		mg P/L	P347328	

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: EIGHTMILE CREEK @ NW 798 S **Collection Date/Time: 06/21/2018 12:25**

Field ID: G1TLHR0078 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2002798	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P347297	
	EPA 300.0 Rev. 2.1	Chloride	4.8		mg Cl/L	P347633	
		Sulfate	0.20	U	mg SO4/L	P347636	
	SM 2120 B	Color (true)	340		PCU	P347358	
	SM 2320 B-97	Total Alkalinity	82		mg CaCO3/L	P347844	
	SM 2540 C-97	TDS	173	A	mg/L	P347651	
	SM 2540 D-97	TSS	4	IA	mg/L	P347564	
	SM 4500 F-C-97	Fluoride	0.051	I	mg F/L	P347848	
2002802	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P347553	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P348019	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.032		mg N/L	P347584	
	EPA 365.1 Rev. 2.0	Total-P	0.065		mg P/L	P347713	
	SM 5310 B-00	Organic Carbon	34		mg C/L	P347795	
2002806	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.040		mg P/L	P347328	

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: ROCKY CREEK **Collection Date/Time: 06/21/2018 12:50**

Field ID: G1TLHR0004 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2002799	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P347297	
	EPA 300.0 Rev. 2.1	Chloride	4.3	A	mg Cl/L	P347634	
		Sulfate	0.20	UA	mg SO4/L	P347637	
	SM 2120 B	Color (true)	210		PCU	P347358	
	SM 2320 B-97	Total Alkalinity	101		mg CaCO3/L	P347844	
	SM 2540 C-97	TDS	167		mg/L	P347651	
	SM 2540 D-97	TSS	2	U	mg/L	P347565	
	SM 4500 F-C-97	Fluoride	0.057	I	mg F/L	P347848	
2002803	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P347553	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.86		mg N/L	P348019	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P347585	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P347713	
	SM 5310 B-00	Organic Carbon	25		mg C/L	P347795	
2002807	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P347328	

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: Sand Hill Creek **Collection Date/Time: 06/21/2018 13:15**

Field ID: G1TLHR0060 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2002800	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P347297	
	EPA 300.0 Rev. 2.1	Chloride	7.4		mg Cl/L	P347634	
		Sulfate	0.50	I	mg SO4/L	P347637	
	SM 2120 B	Color (true)	110	A	PCU	P347327	
	SM 2320 B-97	Total Alkalinity	180	A	mg CaCO3/L	P347844	
	SM 2540 C-97	TDS	236		mg/L	P347651	
	SM 2540 D-97	TSS	4	IA	mg/L	P347565	
	SM 4500 F-C-97	Fluoride	0.053	I	mg F/L	P347848	
2002804	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P347553	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P348019	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.052		mg N/L	P347585	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P347714	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P347795	
2002808	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P347328	

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: P347297

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347633

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347634

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347636

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347637

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347553

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348019

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347584

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347585

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347713

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347714

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347328

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

Reference Method: SM 2120 B
Batch ID: P347327

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P347358

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P347844

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

Reference Method: SM 2540 C-97
Batch ID: P347651

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P347564

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P347565

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P347848

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P347795

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: P347633

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347634

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347636

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347637

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347553

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348019

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	90.4		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347584

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347585

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347713

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.6		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347714

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	93.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347328

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.4		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P347844

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P347848

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.8		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P347795

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347633

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002586	Chloride	102		P	90 - 110
2002678	Chloride	99.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347634

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002799	Chloride	100		P	90 - 110
2002952	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347636

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002586	Sulfate	102		P	90 - 110
2002678	Sulfate	99.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347637

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002799	Sulfate	99.5		P	90 - 110
2002952	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347553

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002767	Ammonia-N	95.1	91.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348019

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002825	Kjeldahl Nitrogen	90.6	94.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347584

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002712	NO2NO3-N	99.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347585

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002803	NO2NO3-N	98.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347713

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347713

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002768	Total-P	93.9	93.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347714

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002858	Total-P	93.2	94.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347328

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002828	O-Phosphate-P	100	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P347848

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002800	Fluoride	97.7	98.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P347795

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002766	Organic Carbon	96.8	95.9	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P347297

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002762	Turbidity	3.01	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347633

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002586	Chloride	2.15	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347634

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002799	Chloride	1.47	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347636

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002586	Sulfate	1.33	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347553

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002767	Ammonia-N	2.33	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348019

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002825	Kjeldahl Nitrogen	1.90	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347584

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002712	NO2NO3-N	0.208	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347585

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002803	NO2NO3-N	0.506	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347713

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002768	Total-P	0.0236	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347714

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002858	Total-P	0.703	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347328

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002828	O-Phosphate-P	1.58	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P347327

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002800	Color (true)	1.83	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P347358

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002851	Color (true)	0.498	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P347844

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002800	Total Alkalinity	0.238	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P347651

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002798	TDS	0.0	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P347848

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002800	Fluoride	0.472	Spike	P	0 - 3.5

Quality Assurance Report
Precision

Reference Method: SM 5310 B-00
Batch ID: P347795

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002766	Organic Carbon	0.605	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 180.1 Rev. 2.0
Run ID: A84760
Included Lab Sample IDs: 2002797, 2002798, 2002799, 2002800

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	99.0	P/P	95 - 105

Reference Method: SM 2120 B
Run ID: A84772
Included Lab Sample IDs: 2002800

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A84773
Included Lab Sample IDs: 2002805, 2002806, 2002807, 2002808

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	99.7	P/P	90 - 110
O-Phosphate-P	99.7	98.0	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A84779
Included Lab Sample IDs: 2002797, 2002798, 2002799

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	90 - 115

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A84847
Included Lab Sample IDs: 2002797, 2002798, 2002799, 2002800

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	100	P/P	90 - 110
Chloride	99.9	103	P/P	90 - 110
Sulfate	101	105	P/P	90 - 110
Sulfate	105	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A84852
Included Lab Sample IDs: 2002801, 2002802, 2002803, 2002804

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.2	99.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A84871
Included Lab Sample IDs: 2002801, 2002802, 2002803, 2002804

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A84954
Included Lab Sample IDs: 2002801, 2002802, 2002803, 2002804

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.8	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84964
Included Lab Sample IDs: 2002801, 2002802

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	99.0	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A84969
Included Lab Sample IDs: 2002797, 2002798, 2002799, 2002800

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

Reference Method: SM 4500 F-C-97
Run ID: A84969
Included Lab Sample IDs: 2002797, 2002798, 2002799, 2002800

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84978
Included Lab Sample IDs: 2002803, 2002804

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85086
Included Lab Sample IDs: 2002801, 2002802, 2002803, 2002804

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.3	97.1	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		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					3.01	
EPA 300.0 Rev. 2.1	Chloride	100	102	99.7		2.15	
	Chloride	105	100	102		1.47	
	Sulfate	102	102	99.9		1.33	
	Sulfate	105	99.5	102			
EPA 350.1 Rev. 2.0	Ammonia-N	103	95.1	91.0			2.33
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	90.4	90.6	94.2			1.90
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	99.8				0.208
	NO2NO3-N	99.5	98.5	99.0			0.506
EPA 365.1 Rev. 2.0	Total-P	95.6	93.9	93.9			0.0236
	Total-P	93.0	93.2	94.0			0.703
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.4	100	102			1.58
SM 2120 B	Color (true)					1.83	
	Color (true)					0.498	
SM 2320 B-97	Total Alkalinity	104				0.238	
SM 2540 C-97	TDS					0.0	
SM 4500 F-C-97	Fluoride	98.8	97.7	98.2			0.472
SM 5310 B-00	Organic Carbon	96.8	96.8	95.9			0.605

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2002797, 2002798, 2002799, 2002800
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2002797, 2002798, 2002799, 2002800
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2002797, 2002798, 2002799, 2002800
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2002801, 2002802, 2002803, 2002804
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2002801, 2002802, 2002803, 2002804
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2002801, 2002802, 2002803, 2002804
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2002801, 2002802, 2002803, 2002804
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2002805, 2002806, 2002807, 2002808
SM 2120 B / E31780	True Color measured at 450 nm	2002797, 2002798, 2002799, 2002800
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2002797, 2002798, 2002799, 2002800
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2002797, 2002798, 2002799, 2002800
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2002797, 2002798, 2002799, 2002800
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2002797, 2002798, 2002799, 2002800
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2002801, 2002802, 2002803, 2002804

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	06/21/2018			06/21/2018 17:00	William L. Brown IV	2002797, 2002798, 2002799, 2002800
EPA 300.0 Rev. 2.1	06/21/2018			06/26/2018 23:01	Lipi Saha	2002797
	06/21/2018			06/26/2018 23:13	Lipi Saha	2002798
	06/21/2018			06/27/2018 00:37	Lipi Saha	2002799
	06/21/2018			06/27/2018 01:24	Lipi Saha	2002800
EPA 350.1 Rev. 2.0	06/21/2018			06/26/2018 11:52	Adrian Shelby	2002801
	06/21/2018			06/26/2018 11:54	Adrian Shelby	2002802
	06/21/2018			06/26/2018 11:55	Adrian Shelby	2002803
	06/21/2018			06/26/2018 11:57	Adrian Shelby	2002804
EPA 351.2 Rev. 2.0	06/21/2018	07/06/2018 11:15	Adrian Shelby	07/09/2018 14:01	Joseph Suarez	2002801
	06/21/2018	07/06/2018 11:15	Adrian Shelby	07/09/2018 14:03	Joseph Suarez	2002802
	06/21/2018	07/06/2018 11:15	Adrian Shelby	07/09/2018 14:04	Joseph Suarez	2002803
	06/21/2018	07/06/2018 11:15	Adrian Shelby	07/09/2018 14:06	Joseph Suarez	2002804
EPA 353.2 Rev. 2.0	06/21/2018			06/27/2018 11:26	Lauren Bottorf	2002801
	06/21/2018			06/27/2018 11:27	Lauren Bottorf	2002802
	06/21/2018			06/27/2018 11:34	Lauren Bottorf	2002803
	06/21/2018			06/27/2018 11:40	Lauren Bottorf	2002804
EPA 365.1 Rev. 2.0	06/21/2018	06/28/2018 11:45	Sima Feizi	06/29/2018 10:04	Beverly Y. Sanders	2002801
	06/21/2018	06/28/2018 11:45	Sima Feizi	06/29/2018 10:05	Beverly Y. Sanders	2002802
	06/21/2018	06/28/2018 11:45	Sima Feizi	07/02/2018 17:07	Beverly Y. Sanders	2002803
	06/21/2018	06/28/2018 11:45	Sima Feizi	07/02/2018 17:09	Beverly Y. Sanders	2002804
EPA 365.1 Rev. 2.0 dissolved	06/21/2018			06/22/2018 10:37	Megan Treadwell	2002805, 2002806
	06/21/2018			06/22/2018 10:38	Megan Treadwell	2002807
	06/21/2018			06/22/2018 10:43	Megan Treadwell	2002808
SM 2120 B	06/21/2018			06/22/2018 10:19	Tanya Welborn	2002800
	06/21/2018			06/22/2018 14:49	Tanya Welborn	2002797
	06/21/2018			06/22/2018 14:50	Tanya Welborn	2002798
	06/21/2018			06/22/2018 14:51	Tanya Welborn	2002799
SM 2320 B-97	06/21/2018			07/02/2018 08:31	Dale L. Simmons	2002800
	06/21/2018			07/02/2018 09:13	Dale L. Simmons	2002797
	06/21/2018			07/02/2018 09:24	Dale L. Simmons	2002798
	06/21/2018			07/02/2018 09:35	Dale L. Simmons	2002799
SM 2540 C-97	06/21/2018			06/22/2018 15:16	William L. Brown IV	2002797, 2002798, 2002799, 2002800
SM 2540 D-97	06/21/2018			06/22/2018 15:16	William L. Brown IV	2002797, 2002798, 2002799, 2002800
SM 4500 F-C-97	06/21/2018			07/02/2018 07:57	Dale L. Simmons	2002800
	06/21/2018			07/02/2018 09:13	Dale L. Simmons	2002797
	06/21/2018			07/02/2018 09:24	Dale L. Simmons	2002798
	06/21/2018			07/02/2018 09:35	Dale L. Simmons	2002799
SM 5310 B-00	06/21/2018			06/30/2018 01:56	Megan Treadwell	2002801
	06/21/2018			06/30/2018 02:11	Megan Treadwell	2002802

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	06/21/2018			06/30/2018 02:27	Megan Treadwell	2002803
	06/21/2018			06/30/2018 02:42	Megan Treadwell	2002804