Chemical Analysis Report

TLH-ROC-2018-11-19-01

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

Event Description: **G2 Run 8**
Request ID: **RQ-2018-10-29-74**
Customer: **TLH-ROC**
Project ID: **SMP**

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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 10-DEC-2018 14:37

B. Steinbock

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: Horseshoe Creek 100m upstream from Intercoastal/Lake Wimico

Collection Date/Time: 11/19/2018 11:35

Field ID: G2TLHR0033

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2042501	EPA 180.1 Rev. 2.0	Turbidity	7.1	A	NTU	P354997	
	EPA 300.0 Rev. 2.1	Chloride	98	A	mg Cl/L	P355363	
		Sulfate	8.1	A	mg SO4/L	P355366	
	SM 2120 B	Color (true)	170		PCU	P355003	
	SM 2320 B-97	Total Alkalinity	24		mg CaCO3/L	P355190	
	SM 2540 C-97	TDS	238	A	mg/L	P355235	
	SM 2540 D-97	TSS	4	IA	mg/L	P355194	
	SM 4500 F-C-97	Fluoride	0.051	I	mg F/L	P355193	
2042505	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P355245	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.62		mg N/L	P355099	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P355256	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P355029	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P355171	
2042509	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P354992	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high 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: Double Bayou 800m upstream from Lake Wimico

Collection Date/Time: 11/19/2018 12:10

Field ID: G2TLHR0003

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2042502	EPA 180.1 Rev. 2.0	Turbidity	5.9		NTU	P354997	
	EPA 300.0 Rev. 2.1	Chloride	190		mg Cl/L	P355363	
		Sulfate	14		mg SO4/L	P355366	
	SM 2120 B	Color (true)	62	A	PCU	P355003	
	SM 2320 B-97	Total Alkalinity	35		mg CaCO3/L	P355190	
	SM 2540 C-97	TDS	394		mg/L	P355235	
	SM 2540 D-97	TSS	4	I	mg/L	P355194	
	SM 4500 F-C-97	Fluoride	0.063	I	mg F/L	P355193	
2042506	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P355245	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P355308	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P355257	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P355029	
	SM 5310 B-00	Organic Carbon	9.5		mg C/L	P355171	
2042510	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P354992	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high 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: SAUL CREEK @ MOUTH **Collection Date/Time: 11/19/2018 12:30**

Field ID: G2TLHR0014 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2042503	EPA 180.1 Rev. 2.0	Turbidity	5.2		NTU	P354997	
	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P355363	
		Sulfate	8.4		mg SO4/L	P355366	
	SM 2120 B	Color (true)	39		PCU	P355003	
	SM 2320 B-97	Total Alkalinity	37		mg CaCO3/L	P355190	
	SM 2540 C-97	TDS	88		mg/L	P355235	
	SM 2540 D-97	TSS	3	I	mg/L	P355194	
	SM 4500 F-C-97	Fluoride	0.076	I	mg F/L	P355193	
2042507	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P355245	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.42		mg N/L	P355099	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P355257	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P355029	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P355171	
2042511	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P354992	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high 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: BROTHERS RIVER @ MOUTH **Collection Date/Time: 11/19/2018 13:00**

Field ID: G2TLHR0013 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2042504	EPA 180.1 Rev. 2.0	Turbidity	5.8		NTU	P354997	
	EPA 300.0 Rev. 2.1	Chloride	6.2		mg Cl/L	P355363	
		Sulfate	7.3		mg SO4/L	P355366	
	SM 2120 B	Color (true)	39		PCU	P355003	
	SM 2320 B-97	Total Alkalinity	37		mg CaCO3/L	P355190	
	SM 2540 C-97	TDS	77		mg/L	P355235	
	SM 2540 D-97	TSS	4	I	mg/L	P355194	
	SM 4500 F-C-97	Fluoride	0.081	I	mg F/L	P355193	
2042508	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P355246	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.33		mg N/L	P355100	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.18		mg N/L	P355257	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P355029	
	SM 5310 B-00	Organic Carbon	5.1		mg C/L	P355171	
2042512	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P354992	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high 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: P354997

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355363

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355366

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355245

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355246

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355099

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355100

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355308

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355256

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: P355257

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355029

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P354992

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

Reference Method: SM 2120 B
Batch ID: P355003

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P355190

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

Reference Method: SM 2540 C-97
Batch ID: P355235

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P355194

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P355193

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P355171

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: P355363

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355366

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355245

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355246

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355099

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: P355100

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: P355308

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	108		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355256

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355257

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355029

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P354992

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.9		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P355003

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.5		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P355190

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P355193

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	103		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P355171

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.6		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355363

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042503	Chloride	94.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355366

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042501	Sulfate	98.2		P	90 - 110
2042503	Sulfate	95.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042506	Ammonia-N	101	97.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355246

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042508	Ammonia-N	95.2	94.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355099

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042327	Kjeldahl Nitrogen	95.9	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355100

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042508	Kjeldahl Nitrogen	99.4	97.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355308

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043841	Kjeldahl Nitrogen	105	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355256

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042294	NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355257

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042506	NO2NO3-N	100	101	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355029

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042535	Total-P	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P354992

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042512	O-Phosphate-P	95.3	97.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P355193

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042533	Fluoride	101	102	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P355171

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042318	Organic Carbon	109		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P354997

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042501	Turbidity	0.847	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355363

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042501	Chloride	0.126	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355366

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042501	Sulfate	0.456	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042506	Ammonia-N	2.98	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355246

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042508	Ammonia-N	0.931	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355099

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042327	Kjeldahl Nitrogen	4.59	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355100

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042508	Kjeldahl Nitrogen	1.21	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355308

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043841	Kjeldahl Nitrogen	0.639	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355256

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042294	NO2NO3-N	0.746	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355257

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042506	NO2NO3-N	0.314	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355029

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042535	Total-P	0.508	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P354992

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042512	O-Phosphate-P	2.15	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P355003

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042502	Color (true)	2.69	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P355190

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042533	Total Alkalinity	0.00789	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P355235

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042501	TDS	1.26	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P355193

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042533	Fluoride	0.463	Spike	P	0 - 3.5

Quality Assurance Report
Precision

Reference Method: SM 5310 B-00
Batch ID: P355171

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042318	Organic Carbon	0.573	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: A87896
Included Lab Sample IDs: 2042509, 2042510, 2042511, 2042512

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.4	P/P	90 - 110
O-Phosphate-P	100	98.8	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A87897
Included Lab Sample IDs: 2042501, 2042502, 2042503, 2042504

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

Reference Method: SM 2120 B
Run ID: A87898
Included Lab Sample IDs: 2042501, 2042502, 2042503, 2042504

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	90 - 115
Color (true)	98.3	99.6	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A87959
Included Lab Sample IDs: 2042505, 2042506, 2042507, 2042508

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A87965
Included Lab Sample IDs: 2042505, 2042507, 2042508

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.0	98.1	P/P	90 - 110
Kjeldahl Nitrogen	98.1	93.8	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A87989
Included Lab Sample IDs: 2042505, 2042506, 2042507, 2042508

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.8	95.7	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A87993
Included Lab Sample IDs: 2042501, 2042502, 2042503, 2042504

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.3	99.4	P/P	90 - 110
Chloride	99.4	99.9	P/P	90 - 110
Sulfate	100	100	P/P	90 - 110
Sulfate	99.4	100	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A87997
Included Lab Sample IDs: 2042501, 2042502, 2042503, 2042504

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	99.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A87997
Included Lab Sample IDs: 2042501, 2042502, 2042503, 2042504

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A88015
Included Lab Sample IDs: 2042505, 2042506, 2042507, 2042508

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	99.6	P/P	90 - 110
Ammonia-N	103	99.9	P/P	90 - 110
Ammonia-N	99.6	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A88017
Included Lab Sample IDs: 2042505, 2042506, 2042507, 2042508

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A88056
Included Lab Sample IDs: 2042506

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.3	100	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					0.847	
EPA 300.0 Rev. 2.1	Chloride	98.6	94.6			0.126	
	Sulfate	98.9	98.2	95.7		0.456	
EPA 350.1 Rev. 2.0	Ammonia-N	95.2	101	97.0			2.98
	Ammonia-N	96.7	95.2	94.2			0.931
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	95.9	103			4.59
	Kjeldahl Nitrogen	102	99.4	97.9			1.21
	Kjeldahl Nitrogen	108	105	104			0.639
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	100	101			0.746
	NO2NO3-N	100	100	101			0.314
EPA 365.1 Rev. 2.0	Total-P	103	102	102			0.508
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.9	95.3	97.5			2.15
SM 2120 B	Color (true)	99.5				2.69	
SM 2320 B-97	Total Alkalinity	101				0.0078	
SM 2540 C-97	TDS					1.26	
SM 4500 F-C-97	Fluoride	103	101	102			0.463
SM 5310 B-00	Organic Carbon	97.6	109				0.573

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2042501, 2042502, 2042503, 2042504
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2042501, 2042502, 2042503, 2042504
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2042501, 2042502, 2042503, 2042504
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2042505, 2042506, 2042507, 2042508
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2042505, 2042506, 2042507, 2042508
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2042505, 2042506, 2042507, 2042508
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2042505, 2042506, 2042507, 2042508
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2042509, 2042510, 2042511, 2042512
SM 2120 B / E31780	True Color measured at 450 nm	2042501, 2042502, 2042503, 2042504
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2042501, 2042502, 2042503, 2042504
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2042501, 2042502, 2042503, 2042504
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2042501, 2042502, 2042503, 2042504
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2042501, 2042502, 2042503, 2042504
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2042505, 2042506, 2042507, 2042508

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	11/19/2018			11/20/2018 16:59	Megan Treadwell	2042501, 2042502, 2042503, 2042504
EPA 300.0 Rev. 2.1	11/19/2018			11/29/2018 15:54	Lipi Saha	2042501
	11/19/2018			11/29/2018 16:18	Lipi Saha	2042503
	11/19/2018			11/29/2018 18:30	Lipi Saha	2042502
	11/19/2018			11/29/2018 18:42	Lipi Saha	2042504
EPA 350.1 Rev. 2.0	11/19/2018			11/28/2018 12:06	Ping Hua	2042506
	11/19/2018			11/28/2018 12:25	Ping Hua	2042505
	11/19/2018			11/28/2018 12:27	Ping Hua	2042507
	11/19/2018			11/28/2018 12:39	Ping Hua	2042508
EPA 351.2 Rev. 2.0	11/19/2018	11/26/2018 16:00	Adrian Shelby	11/27/2018 10:00	Joseph Suarez	2042505
	11/19/2018	11/26/2018 16:00	Adrian Shelby	11/27/2018 10:03	Joseph Suarez	2042507
	11/19/2018	11/26/2018 16:00	Adrian Shelby	11/27/2018 10:17	Joseph Suarez	2042508
	11/19/2018	11/29/2018 13:00	Adrian Shelby	11/30/2018 08:56	Joseph Suarez	2042506
EPA 353.2 Rev. 2.0	11/19/2018			11/28/2018 12:24	Lauren Bottorf	2042505
	11/19/2018			11/28/2018 12:31	Lauren Bottorf	2042506
	11/19/2018			11/28/2018 12:37	Lauren Bottorf	2042507
	11/19/2018			11/28/2018 12:38	Lauren Bottorf	2042508
EPA 365.1 Rev. 2.0	11/19/2018	11/21/2018 13:00	Sima Feizi	11/26/2018 15:05	Beverly Y. Sanders	2042505
	11/19/2018	11/21/2018 13:00	Sima Feizi	11/26/2018 15:06	Beverly Y. Sanders	2042506
	11/19/2018	11/21/2018 13:00	Sima Feizi	11/26/2018 15:07	Beverly Y. Sanders	2042507
	11/19/2018	11/21/2018 13:00	Sima Feizi	11/26/2018 15:08	Beverly Y. Sanders	2042508
EPA 365.1 Rev. 2.0 dissolved	11/19/2018			11/20/2018 14:37	Jhamieka S. Greenwood	2042512
	11/19/2018			11/20/2018 15:02	Jhamieka S. Greenwood	2042509
	11/19/2018			11/20/2018 15:03	Jhamieka S. Greenwood	2042510, 2042511
SM 2120 B	11/19/2018			11/20/2018 15:12	Chelsea Hernandez	2042502
	11/19/2018			11/20/2018 15:13	Chelsea Hernandez	2042503
	11/19/2018			11/20/2018 15:14	Chelsea Hernandez	2042504
	11/19/2018			11/20/2018 16:00	Chelsea Hernandez	2042501
SM 2320 B-97	11/19/2018			11/27/2018 12:55	Dale L. Simmons	2042501
	11/19/2018			11/27/2018 13:05	Dale L. Simmons	2042502
	11/19/2018			11/27/2018 13:16	Dale L. Simmons	2042503
	11/19/2018			11/27/2018 13:26	Dale L. Simmons	2042504
SM 2540 C-97	11/19/2018			11/21/2018 16:40	Blanca Fach	2042501, 2042502, 2042503, 2042504
SM 2540 D-97	11/19/2018			11/21/2018 16:40	Blanca Fach	2042501, 2042502, 2042503, 2042504
SM 4500 F-C-97	11/19/2018			11/27/2018 12:55	Dale L. Simmons	2042501
	11/19/2018			11/27/2018 13:05	Dale L. Simmons	2042502
	11/19/2018			11/27/2018 13:16	Dale L. Simmons	2042503
	11/19/2018			11/27/2018 13:26	Dale L. Simmons	2042504
SM 5310 B-00	11/19/2018			11/21/2018 19:02	Megan Treadwell	2042505
	11/19/2018			11/21/2018 19:15	Megan Treadwell	2042506

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	11/19/2018			11/21/2018 19:28	Megan Treadwell	2042507
	11/19/2018			11/21/2018 19:41	Megan Treadwell	2042508