

Chemical Analysis Report

TLH-ROC-2018-08-22-01

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

Event Description: **Run 8**
Request ID: **RQ-2018-08-20-61**
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: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 07-SEP-2018 14:37



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: 08/22/2018 11:45

Field ID: G2TLHR0033

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2019137	EPA 180.1 Rev. 2.0	Turbidity	4.7		NTU	P350782	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P350986	
		Sulfate	4.1		mg SO4/L	P350989	
	SM 2120 B	Color (true)	190		PCU	P350676	
	SM 2320 B-97	Total Alkalinity	29		mg CaCO3/L	P350902	
	SM 2540 C-97	TDS	101		mg/L	P351022	
	SM 2540 D-97	TSS	3	I	mg/L	P351017	
	SM 4500 F-C-97	Fluoride	0.057	I	mg F/L	P350904	
2019141	EPA 350.1 Rev. 2.0	Ammonia-N	0.031		mg N/L	P350841	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.67		mg N/L	P350752	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.068		mg N/L	P350855	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P350909	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P350836	
2019145	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P350695	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Double Bayou 800m upstream from Lake Wimico

Collection Date/Time: 08/22/2018 12:20

Field ID: G2TLHR0003

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2019138	EPA 180.1 Rev. 2.0	Turbidity	6.3		NTU	P350782	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P350986	
		Sulfate	3.8		mg SO4/L	P350989	
	SM 2120 B	Color (true)	93		PCU	P350676	
	SM 2320 B-97	Total Alkalinity	40		mg CaCO3/L	P350902	
	SM 2540 C-97	TDS	86		mg/L	P351022	
	SM 2540 D-97	TSS	5	I	mg/L	P351017	
	SM 4500 F-C-97	Fluoride	0.062	I	mg F/L	P350904	
2019142	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P350841	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P350752	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.096		mg N/L	P350855	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P350909	
	SM 5310 B-00	Organic Carbon	8.5		mg C/L	P350836	
2019146	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P350695	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: SAUL CREEK @ MOUTH

Collection Date/Time: 08/22/2018 12:40

Field ID: G2TLHR0014

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2019139	EPA 180.1 Rev. 2.0	Turbidity	6.4		NTU	P350782	
	EPA 300.0 Rev. 2.1	Chloride	5.8		mg Cl/L	P350986	
		Sulfate	4.6		mg SO4/L	P350989	
	SM 2120 B	Color (true)	56	A	PCU	P350676	
	SM 2320 B-97	Total Alkalinity	44		mg CaCO3/L	P350902	
	SM 2540 C-97	TDS	71		mg/L	P351022	
	SM 2540 D-97	TSS	4	I	mg/L	P351017	
	SM 4500 F-C-97	Fluoride	0.067	I	mg F/L	P350904	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P350841	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37		mg N/L	P350752	
2019143	EPA 353.2 Rev. 2.0	NO2NO3-N	0.26		mg N/L	P350855	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P350909	
	SM 5310 B-00	Organic Carbon	5.8		mg C/L	P350836	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.010		mg P/L	P350695	
	dissolved						

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: BROTHERS RIVER @ MOUTH

Collection Date/Time: 08/22/2018 13:05

Field ID: G2TLHR0013

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2019140	EPA 180.1 Rev. 2.0	Turbidity	8.0		NTU	P350782	
	EPA 300.0 Rev. 2.1	Chloride	5.4		mg Cl/L	P350986	
		Sulfate	4.6		mg SO4/L	P350989	
	SM 2120 B	Color (true)	53		PCU	P350676	
	SM 2320 B-97	Total Alkalinity	46		mg CaCO3/L	P350902	
	SM 2540 C-97	TDS	76		mg/L	P351022	
	SM 2540 D-97	TSS	4	I	mg/L	P351017	
	SM 4500 F-C-97	Fluoride	0.068	I	mg F/L	P350904	
2019144	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P350841	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36		mg N/L	P350752	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.28		mg N/L	P350855	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P350909	
	SM 5310 B-00	Organic Carbon	5.3		mg C/L	P350836	
2019148	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.011		mg P/L	P350695	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 5310 B-00: 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: P350782

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350986

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350989

Component	Result	Code	Units
Sulfate	0.20	U	mg SO ₄ /L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350841

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350752

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350855

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350909

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350695

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

Reference Method: SM 2120 B
Batch ID: P350676

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P350902

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P351022

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P351017

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P350904

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P350836

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: P350986

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350989

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350841

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350752

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350855

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: P350909

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: P350695

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

Reference Method: SM 2120 B
Batch ID: P350676

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

Reference Method: SM 2320 B-97
Batch ID: P350902

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P350904

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.6		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P350836

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: P350986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019112	Chloride	101		P	90 - 110
2019302	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350989

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019112	Sulfate	98.6		P	90 - 110
2019302	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350841

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019126	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350752

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019144	Kjeldahl Nitrogen	106	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350855

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019141	NO2NO3-N	96.1	99.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350909

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019393	Total-P	101	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350695

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019127	O-Phosphate-P	96.9	97.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P350904

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019112	Fluoride	98.4	98.4	P/P	91 - 105

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P350782

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019302	Turbidity	2.99	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019112	Chloride	0.922	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350989

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019112	Sulfate	0.483	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350841

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019126	Ammonia-N	1.35	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350752

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019144	Kjeldahl Nitrogen	1.19	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350855

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019141	NO2NO3-N	2.28	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350909

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019393	Total-P	4.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350695

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019127	O-Phosphate-P	0.515	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
 Batch ID: P350676

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019139	Color (true)	1.83	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P350902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019112	Total Alkalinity	0.187	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
 Batch ID: P351022

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019110	TDS	3.97	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P350904

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019112	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P350836

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019004	Organic Carbon	0.204	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B

Run ID: A86089

Included Lab Sample IDs: 2019137, 2019138, 2019139, 2019140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.5	98.5	P/P	90 - 115
Color (true)	99.7	101	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A86099

Included Lab Sample IDs: 2019145, 2019146, 2019147, 2019148

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.2	98.1	P/P	90 - 110
O-Phosphate-P	98.9	98.2	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A86127

Included Lab Sample IDs: 2019137, 2019138, 2019139, 2019140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86149

Included Lab Sample IDs: 2019141, 2019142, 2019143, 2019144

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

Reference Method: SM 5310 B-00

Run ID: A86150

Included Lab Sample IDs: 2019141, 2019142, 2019143, 2019144

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.8	96.6	P/P	90 - 110
Organic Carbon	96.0	95.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A86153

Included Lab Sample IDs: 2019141, 2019142, 2019143, 2019144

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A86155

Included Lab Sample IDs: 2019141, 2019142, 2019143, 2019144

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A86172

Included Lab Sample IDs: 2019137, 2019138, 2019139, 2019140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A86172

Included Lab Sample IDs: 2019137, 2019138, 2019139, 2019140

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A86194

Included Lab Sample IDs: 2019137, 2019138, 2019139, 2019140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	103	P/P	90 - 110
Chloride	106	102	P/P	90 - 110
Sulfate	101	101	P/P	90 - 110
Sulfate	105	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86208

Included Lab Sample IDs: 2019141, 2019142, 2019143, 2019144

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	99.2	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	MS
EPA 180.1 Rev. 2.0	Turbidity				2.99	
EPA 300.0 Rev. 2.1	Chloride	105	101	100	0.922	
	Sulfate	104	98.6	102	0.483	
EPA 350.1 Rev. 2.0	Ammonia-N	97.1	101	102		1.35
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	106	108		1.19
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	96.1	99.1		2.28
EPA 365.1 Rev. 2.0	Total-P	98.5	101	96.0		4.02
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.7	96.9	97.4		0.515
SM 2120 B	Color (true)	98.3			1.83	
SM 2320 B-97	Total Alkalinity	104			0.187	
SM 2540 C-97	TDS				3.97	
SM 4500 F-C-97	Fluoride	96.6	98.4	98.4		0.0
SM 5310 B-00	Organic Carbon	96.8				0.204

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2019137, 2019138, 2019139, 2019140
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2019137, 2019138, 2019139, 2019140
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2019137, 2019138, 2019139, 2019140
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2019141, 2019142, 2019143, 2019144
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2019141, 2019142, 2019143, 2019144
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2019141, 2019142, 2019143, 2019144
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2019141, 2019142, 2019143, 2019144
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2019145, 2019146, 2019147, 2019148
SM 2120 B / E31780	True Color measured at 450 nm	2019137, 2019138, 2019139, 2019140
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2019137, 2019138, 2019139, 2019140
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2019137, 2019138, 2019139, 2019140
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2019137, 2019138, 2019139, 2019140
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2019137, 2019138, 2019139, 2019140
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2019141, 2019142, 2019143, 2019144

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	08/22/2018			08/23/2018 17:10	Megan Treadwell	2019137, 2019138, 2019139, 2019140
EPA 300.0 Rev. 2.1	08/22/2018			08/30/2018 13:55	Lipi Saha	2019137
	08/22/2018			08/30/2018 14:31	Lipi Saha	2019138
	08/22/2018			08/30/2018 14:43	Lipi Saha	2019139
	08/22/2018			08/30/2018 14:55	Lipi Saha	2019140
EPA 350.1 Rev. 2.0	08/22/2018			08/27/2018 12:19	Ping Hua	2019141
	08/22/2018			08/27/2018 12:21	Ping Hua	2019142
	08/22/2018			08/27/2018 12:22	Ping Hua	2019143
	08/22/2018			08/27/2018 12:24	Ping Hua	2019144
EPA 351.2 Rev. 2.0	08/22/2018	08/27/2018 11:00	Adrian Shelby	08/28/2018 12:14	Joseph Suarez	2019141
	08/22/2018	08/27/2018 11:00	Adrian Shelby	08/28/2018 12:16	Joseph Suarez	2019142
	08/22/2018	08/27/2018 11:00	Adrian Shelby	08/28/2018 12:17	Joseph Suarez	2019143
	08/22/2018	08/27/2018 11:00	Adrian Shelby	08/28/2018 12:19	Joseph Suarez	2019144
EPA 353.2 Rev. 2.0	08/22/2018			08/28/2018 12:26	Lauren Bottorf	2019141
	08/22/2018			08/28/2018 12:33	Lauren Bottorf	2019142
	08/22/2018			08/28/2018 12:34	Lauren Bottorf	2019143
	08/22/2018			08/28/2018 12:36	Lauren Bottorf	2019144
EPA 365.1 Rev. 2.0	08/22/2018	08/29/2018 13:20	Sima Feizi	08/30/2018 12:09	Beverly Y. Sanders	2019141
	08/22/2018	08/29/2018 13:20	Sima Feizi	08/30/2018 12:10	Beverly Y. Sanders	2019142
	08/22/2018	08/29/2018 13:20	Sima Feizi	08/30/2018 12:11	Beverly Y. Sanders	2019143
	08/22/2018	08/29/2018 13:20	Sima Feizi	08/30/2018 12:12	Beverly Y. Sanders	2019144
EPA 365.1 Rev. 2.0 dissolved	08/22/2018			08/23/2018 14:23	Julia Storbeck	2019145
	08/22/2018			08/23/2018 14:24	Julia Storbeck	2019146
	08/22/2018			08/23/2018 14:26	Julia Storbeck	2019147
	08/22/2018			08/23/2018 14:32	Julia Storbeck	2019148
SM 2120 B	08/22/2018			08/23/2018 15:39	William L. Brown IV	2019138
	08/22/2018			08/23/2018 15:40	William L. Brown IV	2019139
	08/22/2018			08/23/2018 15:41	William L. Brown IV	2019140
	08/22/2018			08/23/2018 16:06	William L. Brown IV	2019137
SM 2320 B-97	08/22/2018			08/28/2018 19:42	Dale L. Simmons	2019137
	08/22/2018			08/28/2018 19:52	Dale L. Simmons	2019138
	08/22/2018			08/28/2018 20:02	Dale L. Simmons	2019139
	08/22/2018			08/28/2018 20:13	Dale L. Simmons	2019140
SM 2540 C-97	08/22/2018			08/24/2018 16:01	Yijie Li	2019137, 2019138, 2019139, 2019140
SM 2540 D-97	08/22/2018			08/24/2018 16:01	Yijie Li	2019137, 2019138, 2019139, 2019140
SM 4500 F-C-97	08/22/2018			08/28/2018 19:42	Dale L. Simmons	2019137
	08/22/2018			08/28/2018 19:52	Dale L. Simmons	2019138
	08/22/2018			08/28/2018 20:02	Dale L. Simmons	2019139
	08/22/2018			08/28/2018 20:13	Dale L. Simmons	2019140
SM 5310 B-00	08/22/2018			08/28/2018 04:19	Megan Treadwell	2019141

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	08/22/2018			08/28/2018 04:32	Megan Treadwell	2019142
	08/22/2018			08/28/2018 04:46	Megan Treadwell	2019143
	08/22/2018			08/28/2018 05:28	Megan Treadwell	2019144