

Chemical Analysis Report

TLH-ROC-2019-01-29-02

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

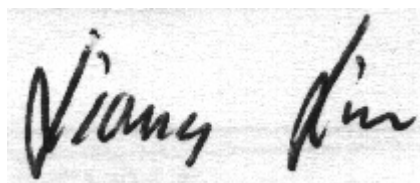
Event Description: **Run 10**
Request ID: **RQ-2019-01-21-13**
Customer: **TLH-ROC**
Project ID: **SMP**

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

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 15-FEB-2019 16:19

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

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 by the Florida Department of Health Environmental Laboratory Certification Program 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: LITTLE SANDY CREEK @ MOUTH

Collection Date/Time: 01/29/2019 12:16

Field ID: G3TLHR0039

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2057955	EPA 180.1 Rev. 2.0	Turbidity	5.3		NTU	P358074	
	EPA 300.0 Rev. 2.1	Chloride	29		mg Cl/L	P358372	
		Sulfate	5.0		mg SO4/L	P358373	
	SM 2120 B	Color (true)	140		PCU	P358005	
	SM 2320 B-97	Total Alkalinity	1.1	I	mg CaCO3/L	P358555	
	SM 2540 C-97	TDS	79		mg/L	P358345	
	SM 2540 D-97	TSS	2	U	mg/L	P358334	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P358558	
2057959	EPA 350.1 Rev. 2.0	Ammonia-N	0.045		mg N/L	P358206	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P358152	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.27		mg N/L	P358110	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P358158	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P358265	
2057963	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P358071	

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: MULE CREEK @ MOUTH

Collection Date/Time: 01/29/2019 12:30

Field ID: G3TLHR0038

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2057956	EPA 180.1 Rev. 2.0	Turbidity	29	A	NTU	P358074	
	EPA 300.0 Rev. 2.1	Chloride	8.0		mg Cl/L	P358372	
		Sulfate	1.5		mg SO4/L	P358373	
	SM 2120 B	Color (true)	57		PCU	P358004	
	SM 2320 B-97	Total Alkalinity	11		mg CaCO3/L	P358555	
	SM 2540 C-97	TDS	70		mg/L	P358345	
	SM 2540 D-97	TSS	14		mg/L	P358334	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P358558	
2057960	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P358206	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.38		mg N/L	P358152	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P358110	
	EPA 365.1 Rev. 2.0	Total-P	0.041		mg P/L	P358096	
	SM 5310 B-00	Organic Carbon	6.1		mg C/L	P358265	
2057964	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P358071	

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: SANDY CREEK UPSTREAM OF BOAT RAMP

Collection Date/Time: 01/29/2019 12:40

Field ID: G3TLHR0037

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2057957	EPA 180.1 Rev. 2.0	Turbidity	6.1		NTU	P358074	
	EPA 300.0 Rev. 2.1	Chloride	7.9		mg Cl/L	P358372	
		Sulfate	1.3		mg SO4/L	P358373	
	SM 2120 B	Color (true)	160		PCU	P358005	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P358555	
	SM 2540 C-97	TDS	38		mg/L	P358345	
	SM 2540 D-97	TSS	3	I	mg/L	P358334	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P358558	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.045		mg N/L	P358206	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P358152	
2057961	EPA 353.2 Rev. 2.0	NO2NO3-N	0.055		mg N/L	P358111	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P358162	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P358265	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P358071	
	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 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
 EPA 353.2 Rev. 2.0: The result was confirmed on 01/31/2019.

Sample Location: SANDY CREEK UPSTREAM OF BOAT RAMP

Collection Date/Time: 01/29/2019 12:45

Field ID: G3TLHR0037_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2057958	EPA 180.1 Rev. 2.0	Turbidity	6.0		NTU	P358074	
	EPA 300.0 Rev. 2.1	Chloride	8.0		mg Cl/L	P358372	
		Sulfate	1.3		mg SO4/L	P358373	
	SM 2120 B	Color (true)	170		PCU	P358005	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P358555	
	SM 2540 C-97	TDS	33		mg/L	P358345	
	SM 2540 D-97	TSS	2	I	mg/L	P358334	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P358558	
2057962	EPA 350.1 Rev. 2.0	Ammonia-N	0.045		mg N/L	P358206	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P358152	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.17		mg N/L	P358111	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P358162	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P358265	
2057966	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P358071	

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 353.2 Rev. 2.0: The result was confirmed on 01/31/2019.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P358074

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358372

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358373

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358206

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358152

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358110

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358111

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358096

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358158

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358162

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358071

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

Reference Method: SM 2120 B
Batch ID: P358004

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P358005

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P358555

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

Reference Method: SM 2540 C-97
Batch ID: P358345

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P358334

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P358558

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P358265

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: P358372

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358373

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358206

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358152

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358110

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358111

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: P358096

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358158

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358162

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358071

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.3		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P358004

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	103		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P358005

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	103		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P358555

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P358558

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

Reference Method: SM 5310 B-00
Batch ID: P358265

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358372

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057693	Chloride	97.8		P	90 - 110
2057955	Chloride	95.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358373

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057693	Sulfate	97.8		P	90 - 110
2057955	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358206

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057845	Ammonia-N	100	91.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358152

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057898	Kjeldahl Nitrogen	107	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358110

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057290	NO2NO3-N	97.5	97.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358111

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057986	NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358096

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057456	Total-P	103	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358158

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057752	Total-P	99.9	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358162

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2058019	Total-P	102	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358071

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057964	O-Phosphate-P	95.5	96.7	P/P	90 - 110

Reference Method: SM 5310 B-00
Batch ID: P358265

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057898	Organic Carbon	97.1	98.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P358074

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057956	Turbidity	4.54	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358372

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057693	Chloride	0.188	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358373

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057693	Sulfate	0.321	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358206

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057845	Ammonia-N	7.59	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358152

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057898	Kjeldahl Nitrogen	0.819	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358110

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057290	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358111

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057986	NO2NO3-N	0.442	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358096

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057456	Total-P	2.56	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358158

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057752	Total-P	2.06	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358162

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2058019	Total-P	0.472	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358071

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057964	O-Phosphate-P	1.16	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P358004

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057593	Color (true)	0.0398	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P358005

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057957	Color (true)	4.36	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P358555

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2058115	Total Alkalinity	0.494	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P358345

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057751	TDS	6.06	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P358558

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2058115	Fluoride	0.509	Spike	P	0 - 3.5

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P358265

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057898	Organic Carbon	0.836	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: A89075

Included Lab Sample IDs: 2057955, 2057956, 2057957, 2057958

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115
Color (true)	102	101	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A89101

Included Lab Sample IDs: 2057963, 2057964, 2057965, 2057966

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.3	98.5	P/P	90 - 110
O-Phosphate-P	99.8	99.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A89102

Included Lab Sample IDs: 2057955, 2057956, 2057957, 2057958

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	100	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A89117

Included Lab Sample IDs: 2057959, 2057960, 2057961, 2057962

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A89146

Included Lab Sample IDs: 2057959, 2057960, 2057961, 2057962

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	92.9	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A89161

Included Lab Sample IDs: 2057959, 2057960

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.8	P/P	90 - 110
Total-P	99.8	99.2	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A89165

Included Lab Sample IDs: 2057959, 2057960, 2057961, 2057962

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.4	97.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89169

Included Lab Sample IDs: 2057959, 2057960, 2057961, 2057962

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	103	P/P	90 - 110
Kjeldahl Nitrogen	103	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A89180

Included Lab Sample IDs: 2057961, 2057962

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A89205

Included Lab Sample IDs: 2057955, 2057956, 2057957, 2057958

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

Reference Method: SM 2320 B-97

Run ID: A89272

Included Lab Sample IDs: 2057955, 2057956, 2057957, 2057958

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.9	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A89272

Included Lab Sample IDs: 2057955, 2057956, 2057957, 2057958

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	101	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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					4.54	
EPA 300.0 Rev. 2.1	Chloride	100	97.8	95.6		0.188	
	Sulfate	100	97.8	101		0.321	
EPA 350.1 Rev. 2.0	Ammonia-N	98.2	100	91.9			7.59
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	107	108			0.819
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	97.5	97.5			0.0
	NO ₂ NO ₃ -N	102	100	101			0.442
EPA 365.1 Rev. 2.0	Total-P	104	103	100			2.56
	Total-P	101	99.9	96.0			2.06
	Total-P	105	102	103			0.472
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.3	95.5	96.7			1.16
SM 2120 B	Color (true)	103				0.0398	
	Color (true)	103				4.36	
SM 2320 B-97	Total Alkalinity	102				0.494	
SM 2540 C-97	TDS					6.06	
SM 4500 F-C-97	Fluoride	98.4					0.509
SM 5310 B-00	Organic Carbon	98.2	97.1	98.0			0.836

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2057955, 2057956, 2057957, 2057958
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2057955, 2057956, 2057957, 2057958
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2057955, 2057956, 2057957, 2057958
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2057959, 2057960, 2057961, 2057962
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2057959, 2057960, 2057961, 2057962
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2057959, 2057960, 2057961, 2057962
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2057959, 2057960, 2057961, 2057962
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2057963, 2057964, 2057965, 2057966
SM 2120 B / E31780	True Color measured at 450 nm	2057955, 2057956, 2057957, 2057958
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2057955, 2057956, 2057957, 2057958
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2057955, 2057956, 2057957, 2057958
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2057955, 2057956, 2057957, 2057958
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2057955, 2057956, 2057957, 2057958
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2057959, 2057960, 2057961, 2057962

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	01/29/2019			01/30/2019 16:34	Adrian Shelby	2057955, 2057956, 2057957, 2057958
EPA 300.0 Rev. 2.1	01/29/2019			02/04/2019 21:13	Lipi Saha	2057955
	01/29/2019			02/05/2019 00:25	Lipi Saha	2057956
	01/29/2019			02/05/2019 00:40	Lipi Saha	2057957
	01/29/2019			02/05/2019 00:55	Lipi Saha	2057958
EPA 350.1 Rev. 2.0	01/29/2019			02/01/2019 13:04	Ping Hua	2057959
	01/29/2019			02/01/2019 13:05	Ping Hua	2057960
	01/29/2019			02/01/2019 13:07	Ping Hua	2057961
	01/29/2019			02/01/2019 13:08	Ping Hua	2057962
EPA 351.2 Rev. 2.0	01/29/2019	02/01/2019 13:15	Adrian Shelby	02/04/2019 12:46	Joseph Suarez	2057959
	01/29/2019	02/01/2019 13:15	Adrian Shelby	02/04/2019 12:50	Joseph Suarez	2057960
	01/29/2019	02/01/2019 13:15	Adrian Shelby	02/04/2019 12:52	Joseph Suarez	2057961
	01/29/2019	02/01/2019 13:15	Adrian Shelby	02/04/2019 12:54	Joseph Suarez	2057962
EPA 353.2 Rev. 2.0	01/29/2019			01/31/2019 10:12	Beverly Y. Sanders	2057959
	01/29/2019			01/31/2019 10:13	Beverly Y. Sanders	2057960
	01/29/2019			01/31/2019 10:26	Beverly Y. Sanders	2057961
	01/29/2019			01/31/2019 10:27	Beverly Y. Sanders	2057962
EPA 365.1 Rev. 2.0	01/29/2019	01/31/2019 14:30	Sima Feizi	02/01/2019 14:33	Rosalyn Ballman	2057960
	01/29/2019	01/31/2019 14:30	Sima Feizi	02/01/2019 15:15	Rosalyn Ballman	2057959
	01/29/2019	02/01/2019 14:00	Sima Feizi	02/04/2019 17:18	Rosalyn Ballman	2057961
	01/29/2019	02/01/2019 14:00	Sima Feizi	02/04/2019 17:19	Rosalyn Ballman	2057962
EPA 365.1 Rev. 2.0 dissolved	01/29/2019			01/30/2019 15:04	Jhamieka S. Greenwood	2057964
	01/29/2019			01/30/2019 15:21	Jhamieka S. Greenwood	2057963
	01/29/2019			01/30/2019 15:22	Jhamieka S. Greenwood	2057965
	01/29/2019			01/30/2019 15:23	Jhamieka S. Greenwood	2057966
SM 2120 B	01/29/2019			01/29/2019 16:36	Chelsea Hernandez	2057956
	01/29/2019			01/29/2019 16:42	Chelsea Hernandez	2057955
	01/29/2019			01/29/2019 16:46	Chelsea Hernandez	2057957
	01/29/2019			01/29/2019 16:47	Chelsea Hernandez	2057958
SM 2320 B-97	01/29/2019			02/07/2019 12:38	Dale L. Simmons	2057955
	01/29/2019			02/07/2019 12:51	Dale L. Simmons	2057956
	01/29/2019			02/07/2019 13:00	Dale L. Simmons	2057957
	01/29/2019			02/07/2019 13:09	Dale L. Simmons	2057958
SM 2540 C-97	01/29/2019			01/31/2019 14:21	Yijie Li	2057955, 2057956, 2057957, 2057958
SM 2540 D-97	01/29/2019			01/31/2019 14:21	Yijie Li	2057955, 2057956, 2057957, 2057958
SM 4500 F-C-97	01/29/2019			02/07/2019 12:38	Dale L. Simmons	2057955
	01/29/2019			02/07/2019 12:51	Dale L. Simmons	2057956
	01/29/2019			02/07/2019 13:00	Dale L. Simmons	2057957
	01/29/2019			02/07/2019 13:09	Dale L. Simmons	2057958
SM 5310 B-00	01/29/2019			02/01/2019 19:49	Julia Storbeck	2057959

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	01/29/2019			02/01/2019 20:01	Julia Storbeck	2057960
	01/29/2019			02/01/2019 20:14	Julia Storbeck	2057961
	01/29/2019			02/01/2019 20:26	Julia Storbeck	2057962