Chemical Analysis Report

TLH-ROC-2019-01-23-01

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

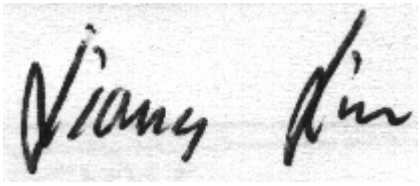
Event Description: **Run 5**
Request ID: **RQ-2018-12-31-32**
Customer: **TLH-ROC**
Project ID: **SMP**

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: Liang Lin, Environmental Administrator

Date Certified: 08-FEB-2019 16:15



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: STEINHATCHEE RIVER @ S CANAL RD **Collection Date/Time: 01/23/2019 12:00**

Field ID: G1TLHR0064 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2056382	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P357796	
	EPA 300.0 Rev. 2.1	Chloride	6.2		mg Cl/L	P358034	
		Sulfate	1.2		mg SO4/L	P358035	
	SM 2120 B	Color (true)	490		PCU	P357802	
	SM 2320 B-97	Total Alkalinity	53		mg CaCO3/L	P358236	
	SM 2540 C-97	TDS	142		mg/L	P358050	
	SM 2540 D-97	TSS	2	I	mg/L	P358062	
	SM 4500 F-C-97	Fluoride	0.064	I	mg F/L	P358240	
2056385	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P357943	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.92		mg N/L	P357928	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P357853	
	EPA 365.1 Rev. 2.0	Total-P	0.072		mg P/L	P357784	
	SM 5310 B-00	Organic Carbon	38		mg C/L	P357820	
2056388	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.043		mg P/L	P357731	

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: STEINHATCHEE RIVER 40M N OF YEARLING RD **Collection Date/Time: 01/23/2019 12:20**

Field ID: G1TLHR0065 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2056383	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P357796	
	EPA 300.0 Rev. 2.1	Chloride	6.5		mg Cl/L	P358034	
		Sulfate	1.3		mg SO4/L	P358035	
	SM 2120 B	Color (true)	340		PCU	P357802	
	SM 2320 B-97	Total Alkalinity	69		mg CaCO3/L	P358236	
	SM 2540 C-97	TDS	136		mg/L	P358050	
	SM 2540 D-97	TSS	2	I	mg/L	P358062	
	SM 4500 F-C-97	Fluoride	0.084	I	mg F/L	P358240	
2056386	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P357944	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.88		mg N/L	P357928	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P357853	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P357784	
	SM 5310 B-00	Organic Carbon	31		mg C/L	P357910	
2056389	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.065		mg P/L	P357731	

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: MIDDLE WARRIOR CREEK **Collection Date/Time: 01/23/2019 11:20**

Field ID: G1TLHR0007 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2056384	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P357796	
	EPA 300.0 Rev. 2.1	Chloride	5.3		mg Cl/L	P358034	
		Sulfate	0.20	U	mg SO4/L	P358035	
	SM 2120 B	Color (true)	360		PCU	P357802	
	SM 2320 B-97	Total Alkalinity	30		mg CaCO3/L	P358236	
	SM 2540 C-97	TDS	114		mg/L	P358050	
	SM 2540 D-97	TSS	2	I	mg/L	P358062	
	SM 4500 F-C-97	Fluoride	0.050	I	mg F/L	P358240	
2056387	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P357944	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P357928	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P357853	
	EPA 365.1 Rev. 2.0	Total-P	0.055		mg P/L	P357787	
	SM 5310 B-00	Organic Carbon	33		mg C/L	P357910	
2056390	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.028		mg P/L	P357731	

Ref. Method and Comment:
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: P357796

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358034

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358035

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357943

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357944

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357928

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357853

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357784

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357787

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 dissolved
Batch ID: P357731

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

Reference Method: SM 2120 B
Batch ID: P357802

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P358236

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

Reference Method: SM 2540 C-97
Batch ID: P358050

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P358062

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P358240

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P357820

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Reference Method: SM 5310 B-00
Batch ID: P357910

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: P358034

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358035

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357943

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357944

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357928

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357853

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: P357784

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357787

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357731

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2120 B
Batch ID: P357802

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

Reference Method: SM 2320 B-97
Batch ID: P358236

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

Reference Method: SM 4500 F-C-97
Batch ID: P358240

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.3		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P357820

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.4		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P357910

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	100		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358034

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056361	Chloride	97.8		P	90 - 110
2056423	Chloride	94.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358035

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056361	Sulfate	100		P	90 - 110
2056423	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357943

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056362	Ammonia-N	104	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357944

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056426	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357928

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056362	Kjeldahl Nitrogen	102	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357853

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056308	NO2NO3-N	100	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357784

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056362	Total-P	102	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357787

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056425	Total-P	106	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357731

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056363	O-Phosphate-P	94.6	97.0	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P358240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057237	Fluoride	97.7	97.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P357820

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2055898	Organic Carbon	95.8		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P357910

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056386	Organic Carbon	97.0		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P357796

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056533	Turbidity	1.62	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358034

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056361	Chloride	1.18	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358035

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056361	Sulfate	1.63	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357943

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056362	Ammonia-N	0.960	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357944

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056426	Ammonia-N	0.723	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357928

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056362	Kjeldahl Nitrogen	2.14	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357853

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056308	NO2NO3-N	2.39	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357784

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056362	Total-P	3.88	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357787

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056425	Total-P	0.309	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357731

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056363	O-Phosphate-P	1.97	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P357802

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056420	Color (true)	0.0521	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P358236

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057237	Total Alkalinity	0.0203	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P358050

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056220	TDS	2.72	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P358240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057237	Fluoride	0.477	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P357820

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055898	Organic Carbon	6.93	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P357910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056386	Organic Carbon	0.626	Spike	P	0 - 20

Quality Assurance Report
Precision

* 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: A88975
Included Lab Sample IDs: 2056388, 2056389, 2056390

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.9	98.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A89003
Included Lab Sample IDs: 2056382, 2056383, 2056384

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

Reference Method: SM 2120 B
Run ID: A89005
Included Lab Sample IDs: 2056382, 2056383, 2056384

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

Reference Method: SM 5310 B-00
Run ID: A89008
Included Lab Sample IDs: 2056385

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	99.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A89022
Included Lab Sample IDs: 2056385, 2056386, 2056387

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A89039
Included Lab Sample IDs: 2056385, 2056386, 2056387

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	100	P/P	90 - 110
Total-P	99.0	99.7	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A89043
Included Lab Sample IDs: 2056386, 2056387

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.8	99.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A89059
Included Lab Sample IDs: 2056385, 2056386, 2056387

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A89059
Included Lab Sample IDs: 2056385, 2056386, 2056387

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A89065
Included Lab Sample IDs: 2056385, 2056386, 2056387

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	98.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A89089
Included Lab Sample IDs: 2056382, 2056383, 2056384

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

Reference Method: SM 2320 B-97
Run ID: A89154
Included Lab Sample IDs: 2056382, 2056383, 2056384

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A89154
Included Lab Sample IDs: 2056382, 2056383, 2056384

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	98.1	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					1.62	
EPA 300.0 Rev. 2.1	Chloride	101	97.8	94.2		1.18	
	Sulfate	102	100	100		1.63	
EPA 350.1 Rev. 2.0	Ammonia-N	99.0	104	103			0.960
	Ammonia-N	100	102	103			0.723
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.5	102	105			2.14
EPA 353.2 Rev. 2.0	NO2NO3-N	102	100	103			2.39
EPA 365.1 Rev. 2.0	Total-P	103	102	106			3.88
	Total-P	107	106	106			0.309
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.0	94.6	97.0			1.97
SM 2120 B	Color (true)	101				0.0521	
SM 2320 B-97	Total Alkalinity	102				0.0203	
SM 2540 C-97	TDS					2.72	
SM 4500 F-C-97	Fluoride	95.3	97.7	97.1			0.477
SM 5310 B-00	Organic Carbon	97.4	95.8				6.93
	Organic Carbon	100	97.0				0.626

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2056382, 2056383, 2056384
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2056382, 2056383, 2056384
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2056382, 2056383, 2056384
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2056385, 2056386, 2056387
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2056385, 2056386, 2056387
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2056385, 2056386, 2056387
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2056385, 2056386, 2056387
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2056388, 2056389, 2056390
SM 2120 B / E31780	True Color measured at 450 nm	2056382, 2056383, 2056384
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2056382, 2056383, 2056384
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2056382, 2056383, 2056384
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2056382, 2056383, 2056384
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2056382, 2056383, 2056384
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2056385, 2056386, 2056387

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	01/23/2019			01/24/2019 16:10	Megan Treadwell	2056382, 2056383, 2056384
EPA 300.0 Rev. 2.1	01/23/2019			01/25/2019 18:40	Lipi Saha	2056382
	01/23/2019			01/25/2019 18:52	Lipi Saha	2056383
	01/23/2019			01/25/2019 19:04	Lipi Saha	2056384
EPA 350.1 Rev. 2.0	01/23/2019			01/28/2019 11:46	Ping Hua	2056385
	01/23/2019			01/28/2019 11:56	Ping Hua	2056387
	01/23/2019			01/28/2019 12:11	Ping Hua	2056386
EPA 351.2 Rev. 2.0	01/23/2019	01/28/2019 12:15	Adrian Shelby	01/29/2019 10:45	Joseph Suarez	2056385
	01/23/2019	01/28/2019 12:15	Adrian Shelby	01/29/2019 10:47	Joseph Suarez	2056386
	01/23/2019	01/28/2019 12:15	Adrian Shelby	01/29/2019 10:48	Joseph Suarez	2056387
EPA 353.2 Rev. 2.0	01/23/2019			01/25/2019 11:47	Beverly Y. Sanders	2056385
	01/23/2019			01/25/2019 11:48	Beverly Y. Sanders	2056386
	01/23/2019			01/25/2019 11:49	Beverly Y. Sanders	2056387
EPA 365.1 Rev. 2.0	01/23/2019	01/24/2019 12:50	Sima Feizi	01/25/2019 21:51	Rosalyn Ballman	2056385
	01/23/2019	01/24/2019 12:50	Sima Feizi	01/25/2019 21:52	Rosalyn Ballman	2056386
	01/23/2019	01/24/2019 12:50	Sima Feizi	01/25/2019 22:33	Rosalyn Ballman	2056387
EPA 365.1 Rev. 2.0 dissolved	01/23/2019			01/23/2019 17:19	Jhamieka S. Greenwood	2056388
	01/23/2019			01/23/2019 17:20	Jhamieka S. Greenwood	2056389
	01/23/2019			01/23/2019 17:24	Jhamieka S. Greenwood	2056390
SM 2120 B	01/23/2019			01/24/2019 15:08	Chelsea Hernandez	2056382
	01/23/2019			01/24/2019 15:09	Chelsea Hernandez	2056383
	01/23/2019			01/24/2019 15:10	Chelsea Hernandez	2056384
SM 2320 B-97	01/23/2019			02/02/2019 08:45	Dale L. Simmons	2056382
	01/23/2019			02/02/2019 08:58	Dale L. Simmons	2056383
	01/23/2019			02/02/2019 09:10	Dale L. Simmons	2056384
SM 2540 C-97	01/23/2019			01/25/2019 14:17	Yijie Li	2056382, 2056383, 2056384
SM 2540 D-97	01/23/2019			01/25/2019 14:17	Yijie Li	2056382, 2056383, 2056384
SM 4500 F-C-97	01/23/2019			02/02/2019 08:45	Dale L. Simmons	2056382
	01/23/2019			02/02/2019 08:58	Dale L. Simmons	2056383
	01/23/2019			02/02/2019 09:10	Dale L. Simmons	2056384
SM 5310 B-00	01/23/2019			01/24/2019 19:26	Megan Treadwell	2056385
	01/23/2019			01/25/2019 14:18	Megan Treadwell	2056386
	01/23/2019			01/25/2019 15:07	Megan Treadwell	2056387