

Chemical Analysis Report

SE-DIST-2019-08-22-01

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

Event Description: **SMP-Kevin Run**
Request ID: **RQ-2019-08-19-37**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Matthew Sewell

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: 16-SEP-2019 15:17

A handwritten signature in black ink, appearing to read "Liang Lin", is shown 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: Lemkin Creek @ 78

Collection Date/Time: 08/20/2019 11:45

Field ID: G1SE0026

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2113331	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P369550	
	EPA 300.0 Rev. 2.1	Chloride	130		mg Cl/L	P369765	
		Sulfate	89		mg SO4/L	P369767	
	SM 2120 B	Color (true)	130	Q	PCU	P369558	
	SM 2320 B-97	Total Alkalinity	129		mg CaCO3/L	P369866	
	SM 2540 C-97	TDS	508		mg/L	P369986	
	SM 2540 D-97	TSS	2	U	mg/L	P369686	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P369869	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.24		mg N/L	P369881	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P370086	
2113332	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P369823	
	EPA 365.1 Rev. 2.0	Total-P	0.26		mg P/L	P369743	
	SM 5310 B-00	Organic Carbon	21		mg C/L	P369623	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.21	Q	mg P/L	P369524	
	dissolved						

Ref. Method and Comment:

SM 2120 B: The sample expired upon receipt.

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

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired upon receipt.

Sample Location: Taylor Creek @ 98

Collection Date/Time: 08/20/2019 12:05

Field ID: G1SE0025

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2113334	EPA 180.1 Rev. 2.0	Turbidity	5.4		NTU	P369550	
	EPA 300.0 Rev. 2.1	Chloride	34		mg Cl/L	P369765	
		Sulfate	23		mg SO4/L	P369767	
	SM 2120 B	Color (true)	200	Q	PCU	P369489	
	SM 2320 B-97	Total Alkalinity	118		mg CaCO3/L	P369866	
	SM 2540 C-97	TDS	272	A	mg/L	P369986	
	SM 2540 D-97	TSS	10	IA	mg/L	P369686	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P369869	
2113338	EPA 350.1 Rev. 2.0	Ammonia-N	0.21		mg N/L	P369881	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.1		mg N/L	P370086	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P369823	
	EPA 365.1 Rev. 2.0	Total-P	0.35		mg P/L	P369743	
	SM 5310 B-00	Organic Carbon	23		mg C/L	P369623	
2113342	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.25	Q	mg P/L	P369524	

Ref. Method and Comment:

SM 2120 B: The sample expired upon receipt.

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

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired upon receipt.

Sample Location: L-63 @ SE 59th Blvd.

Collection Date/Time: 08/20/2019 12:30

Field ID: G1SE0029

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2113335	EPA 180.1 Rev. 2.0	Turbidity	3.5		NTU	P369550	
	EPA 300.0 Rev. 2.1	Chloride	27		mg Cl/L	P369765	
		Sulfate	10		mg SO4/L	P369767	
	SM 2120 B	Color (true)	560	Q	PCU	P369489	
	SM 2320 B-97	Total Alkalinity	36		mg CaCO3/L	P369866	
	SM 2540 C-97	TDS	193		mg/L	P369986	
	SM 2540 D-97	TSS	4	I	mg/L	P369686	
	SM 4500 F-C-97	Fluoride	0.072	I	mg F/L	P369869	
2113339	EPA 350.1 Rev. 2.0	Ammonia-N	0.17		mg N/L	P369881	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.4		mg N/L	P370086	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.060		mg N/L	P369823	
	EPA 365.1 Rev. 2.0	Total-P	0.67		mg P/L	P369743	
	SM 5310 B-00	Organic Carbon	37		mg C/L	P369623	
2113343	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.57		mg P/L	P369524	

Ref. Method and Comment:

SM 2120 B: The sample expired upon receipt.

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

Sample Location: L-63 canal @ SE 86th Blvd.

Collection Date/Time: 08/20/2019 12:48

Field ID: G1SE0022

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2113336	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P369550	
	EPA 300.0 Rev. 2.1	Chloride	63		mg Cl/L	P369765	
		Sulfate	14		mg SO4/L	P369767	
	SM 2120 B	Color (true)	410		PCU	P369489	
	SM 2320 B-97	Total Alkalinity	41		mg CaCO3/L	P369866	
	SM 2540 C-97	TDS	254		mg/L	P369986	
	SM 2540 D-97	TSS	4	I	mg/L	P369686	
	SM 4500 F-C-97	Fluoride	0.095	I	mg F/L	P369869	
2113340	EPA 350.1 Rev. 2.0	Ammonia-N	0.071		mg N/L	P369881	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.0		mg N/L	P370086	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P369823	
	EPA 365.1 Rev. 2.0	Total-P	0.65		mg P/L	P369743	
	SM 5310 B-00	Organic Carbon	35		mg C/L	P369623	
2113344	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.55		mg P/L	P369524	

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: L-65 upstream of S-153

Collection Date/Time: 08/20/2019 13:30

Field ID: G1SE0050

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2113337	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P369550	
	EPA 300.0 Rev. 2.1	Chloride	120		mg Cl/L	P369765	
		Sulfate	28		mg SO4/L	P369767	
	SM 2120 B	Color (true)	130		PCU	P369489	
	SM 2320 B-97	Total Alkalinity	156		mg CaCO3/L	P369866	
	SM 2540 C-97	TDS	447		mg/L	P369987	
	SM 2540 D-97	TSS	2	U	mg/L	P369687	
	SM 4500 F-C-97	Fluoride	0.21		mg F/L	P369869	
2113341	EPA 350.1 Rev. 2.0	Ammonia-N	0.059		mg N/L	P369881	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P369829	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.043		mg N/L	P369823	
	EPA 365.1 Rev. 2.0	Total-P	0.23		mg P/L	P369743	
	SM 5310 B-00	Organic Carbon	22		mg C/L	P369623	
2113345	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.19		mg P/L	P369524	

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: P369550

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369765

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369767

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369881

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369829

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370086

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369823

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369743

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369524

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2120 B
Batch ID: P369489

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P369558

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P369866

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

Reference Method: SM 2540 C-97
Batch ID: P369986

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P369987

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P369686

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P369687

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P369869

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P369623

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: P369765

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369767

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369881

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369829

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370086

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369823

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369743

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369524

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.4		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P369489

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2120 B
Batch ID: P369558

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

Reference Method: SM 2320 B-97
Batch ID: P369866

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P369869

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P369623

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369765

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2113298	Chloride	103		P	90 - 110
2113393	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369767

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2113298	Sulfate	103		P	90 - 110
2113393	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369881

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2113306	Ammonia-N	107	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369829

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2113406	Kjeldahl Nitrogen	108	98.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370086

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2115541	Kjeldahl Nitrogen	97.6	97.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369823

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2113307	NO2NO3-N	94.6	93.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369743

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2113306	Total-P	99.0	92.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369524

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2113290	O-Phosphate-P	97.1	97.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P369869

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2113198	Fluoride	99.5	98.8	P/P	89 - 106

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P369623

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2113303	Organic Carbon	97.6	97.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369550

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113298	Turbidity	0.756	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369765

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113298	Chloride	0.502	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369767

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113298	Sulfate	0.0203	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369881

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113306	Ammonia-N	0.560	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369829

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113406	Kjeldahl Nitrogen	6.11	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370086

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2115541	Kjeldahl Nitrogen	0.348	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369823

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113307	NO2NO3-N	0.730	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369743

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113306	Total-P	6.06	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369524

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113290	O-Phosphate-P	0.514	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P369489

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113297	Color (true)	0.535	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P369558

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113535	Color (true)	0.197	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P369866

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113198	Total Alkalinity	0.463	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P369986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113334	TDS	3.30	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P369987

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113395	TDS	8.57	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P369869

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113198	Fluoride	0.476	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P369623

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113303	Organic Carbon	0.0864	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: SM 2120 B

Run ID: A93715

Included Lab Sample IDs: 2113334, 2113335, 2113336, 2113337

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	90 - 115
Color (true)	99.0	101	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A93725

Included Lab Sample IDs: 2113333, 2113342, 2113343, 2113344, 2113345

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.3	99.9	P/P	90 - 110
O-Phosphate-P	98.7	98.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A93736

Included Lab Sample IDs: 2113331, 2113334, 2113335, 2113336, 2113337

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	102	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A93738

Included Lab Sample IDs: 2113331

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.7	102	P/P	90 - 115

Reference Method: SM 5310 B-00

Run ID: A93766

Included Lab Sample IDs: 2113332, 2113338, 2113339, 2113340, 2113341

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	98.2	P/P	90 - 110
Organic Carbon	94.8	95.6	P/P	90 - 110
Organic Carbon	98.2	94.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A93819

Included Lab Sample IDs: 2113331, 2113334, 2113335, 2113336, 2113337

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	105	P/P	90 - 110
Chloride	105	105	P/P	90 - 110
Sulfate	105	107	P/P	90 - 110
Sulfate	107	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A93831

Included Lab Sample IDs: 2113332, 2113338, 2113339, 2113340, 2113341

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A93836

Included Lab Sample IDs: 2113332, 2113338, 2113339, 2113340, 2113341

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.0	98.0	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A93845

Included Lab Sample IDs: 2113331, 2113334, 2113335, 2113336, 2113337

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	105	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A93845

Included Lab Sample IDs: 2113331, 2113334, 2113335, 2113336, 2113337

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A93846

Included Lab Sample IDs: 2113332, 2113338, 2113339, 2113340, 2113341

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	107	107	P/P	90 - 110
Ammonia-N	107	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93890

Included Lab Sample IDs: 2113341

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.4	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93984

Included Lab Sample IDs: 2113332, 2113338, 2113339, 2113340

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.1	90.1	P/P	90 - 110
Kjeldahl Nitrogen	98.2	96.1	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	MS
EPA 180.1 Rev. 2.0	Turbidity				0.756	
EPA 300.0 Rev. 2.1	Chloride	104	103	104	0.502	
	Sulfate	105	103	102	0.0203	
EPA 350.1 Rev. 2.0	Ammonia-N	105	107	106		0.560
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	108	98.4		6.11
	Kjeldahl Nitrogen	94.8	97.6	97.0		0.348
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.0	94.6	93.6		0.730
EPA 365.1 Rev. 2.0	Total-P	95.3	99.0	92.8		6.06
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.4	97.1	97.6		0.514
SM 2120 B	Color (true)	100			0.535	
	Color (true)	101			0.197	
SM 2320 B-97	Total Alkalinity	105			0.463	
SM 2540 C-97	TDS				3.30	
	TDS				8.57	
SM 4500 F-C-97	Fluoride	98.9	99.5	98.8		0.476
SM 5310 B-00	Organic Carbon	96.6	97.6	97.7		0.0864

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2113331, 2113334, 2113335, 2113336, 2113337
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2113331, 2113334, 2113335, 2113336, 2113337
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2113331, 2113334, 2113335, 2113336, 2113337
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2113332, 2113338, 2113339, 2113340, 2113341
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2113332, 2113338, 2113339, 2113340, 2113341
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2113332, 2113338, 2113339, 2113340, 2113341
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2113332, 2113338, 2113339, 2113340, 2113341
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2113333, 2113342, 2113343, 2113344, 2113345
SM 2120 B / E31780	True Color measured at 450 nm	2113331, 2113334, 2113335, 2113336, 2113337
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2113331, 2113334, 2113335, 2113336, 2113337
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2113331, 2113334, 2113335, 2113336, 2113337
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2113331, 2113334, 2113335, 2113336, 2113337
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2113331, 2113334, 2113335, 2113336, 2113337
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2113332, 2113338, 2113339, 2113340, 2113341

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	08/22/2019			08/22/2019 11:30	Rosalyn Ballman	2113331
	08/22/2019			08/22/2019 11:32	Rosalyn Ballman	2113334
	08/22/2019			08/22/2019 11:33	Rosalyn Ballman	2113335
	08/22/2019			08/22/2019 11:34	Rosalyn Ballman	2113336
	08/22/2019			08/22/2019 11:36	Rosalyn Ballman	2113337
EPA 300.0 Rev. 2.1	08/22/2019			08/27/2019 07:26	Jhamieka S. Greenwood	2113331
	08/22/2019			08/27/2019 07:38	Jhamieka S. Greenwood	2113334
	08/22/2019			08/27/2019 08:15	Jhamieka S. Greenwood	2113335
	08/22/2019			08/27/2019 08:27	Jhamieka S. Greenwood	2113336
	08/22/2019			08/27/2019 08:39	Jhamieka S. Greenwood	2113337
EPA 350.1 Rev. 2.0	08/22/2019			08/28/2019 15:27	Ping Hua	2113340
	08/22/2019			08/28/2019 15:29	Ping Hua	2113341
	08/22/2019			08/28/2019 15:32	Ping Hua	2113332
	08/22/2019			08/28/2019 15:44	Ping Hua	2113338
	08/22/2019			08/28/2019 15:45	Ping Hua	2113339
EPA 351.2 Rev. 2.0	08/22/2019	08/28/2019 12:55	Sima Feizi	08/29/2019 15:27	Julia Storbeck	2113341
	08/22/2019	09/03/2019 16:50	Jhamieka S. Greenwood	09/04/2019 15:33	Julia Storbeck	2113332
	08/22/2019	09/03/2019 16:50	Jhamieka S. Greenwood	09/04/2019 15:34	Julia Storbeck	2113338
	08/22/2019	09/03/2019 16:50	Jhamieka S. Greenwood	09/04/2019 15:36	Julia Storbeck	2113339
	08/22/2019	09/03/2019 16:50	Jhamieka S. Greenwood	09/04/2019 15:41	Julia Storbeck	2113340
EPA 353.2 Rev. 2.0	08/22/2019			08/28/2019 10:24	Beverly Y. Sanders	2113332
	08/22/2019			08/28/2019 10:25	Beverly Y. Sanders	2113338
	08/22/2019			08/28/2019 10:26	Beverly Y. Sanders	2113339
	08/22/2019			08/28/2019 10:27	Beverly Y. Sanders	2113340
	08/22/2019			08/28/2019 10:28	Beverly Y. Sanders	2113341
EPA 365.1 Rev. 2.0	08/22/2019	08/27/2019 13:00	Lipi Saha	08/28/2019 10:41	Lipi Saha	2113332
	08/22/2019	08/27/2019 13:00	Lipi Saha	08/28/2019 10:42	Lipi Saha	2113338
	08/22/2019	08/27/2019 13:00	Lipi Saha	08/28/2019 10:44	Lipi Saha	2113339
	08/22/2019	08/27/2019 13:00	Lipi Saha	08/28/2019 10:45	Lipi Saha	2113340
	08/22/2019	08/27/2019 13:00	Lipi Saha	08/28/2019 10:46	Lipi Saha	2113341
EPA 365.1 Rev. 2.0 dissolved	08/22/2019			08/22/2019 12:23	Ping Hua	2113343
	08/22/2019			08/22/2019 12:24	Ping Hua	2113344
	08/22/2019			08/22/2019 12:33	Ping Hua	2113333
	08/22/2019			08/22/2019 12:34	Ping Hua	2113342
	08/22/2019			08/22/2019 12:35	Ping Hua	2113345
SM 2120 B	08/22/2019			08/22/2019 12:31	Madeline Funaro	2113337
	08/22/2019			08/22/2019 12:38	Madeline Funaro	2113334
	08/22/2019			08/22/2019 12:39	Madeline Funaro	2113335
	08/22/2019			08/22/2019 12:43	Madeline Funaro	2113336
	08/22/2019			08/22/2019 17:20	Madeline Funaro	2113331

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	08/22/2019			08/28/2019 11:49	Dale L. Simmons	2113331
	08/22/2019			08/28/2019 12:02	Dale L. Simmons	2113334
	08/22/2019			08/28/2019 12:14	Dale L. Simmons	2113335
	08/22/2019			08/28/2019 12:27	Dale L. Simmons	2113336
	08/22/2019			08/28/2019 12:41	Dale L. Simmons	2113337
SM 2540 C-97	08/22/2019			08/23/2019 18:44	Rosalyn Ballman	2113331, 2113334, 2113335, 2113336, 2113337
SM 2540 D-97	08/22/2019			08/23/2019 18:44	Rosalyn Ballman	2113331, 2113334, 2113335, 2113336, 2113337
SM 4500 F-C-97	08/22/2019			08/28/2019 11:49	Dale L. Simmons	2113331
	08/22/2019			08/28/2019 12:02	Dale L. Simmons	2113334
	08/22/2019			08/28/2019 12:14	Dale L. Simmons	2113335
	08/22/2019			08/28/2019 12:27	Dale L. Simmons	2113336
	08/22/2019			08/28/2019 12:41	Dale L. Simmons	2113337
SM 5310 B-00	08/22/2019			08/23/2019 16:23	Madeline Funaro	2113332
	08/22/2019			08/23/2019 19:31	Madeline Funaro	2113338
	08/22/2019			08/23/2019 20:12	Madeline Funaro	2113339
	08/22/2019			08/23/2019 20:24	Madeline Funaro	2113340
	08/22/2019			08/23/2019 20:36	Madeline Funaro	2113341