

Chemical Analysis Report

SE-DIST-2019-11-13-01

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

Event Description: **SMP-Drum**
Request ID: **RQ-2019-11-04-30**
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: Drew Liddick

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: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 05-DEC-2019 17:48



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: Moores Creek @ 7th

Collection Date/Time: 11/12/2019 10:25

Field ID: G2SE0016

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2135397	EPA 180.1 Rev. 2.0	Turbidity	4.1		NTU	P374358	
	EPA 300.0	Bromide	48		mg Br/L	P374769	
	EPA 300.0 Rev. 2.1	Sulfate	1.9E+03		mg SO4/L	P374779	
	SM 2320 B-97	Total Alkalinity	122		mg CaCO3/L	P374290	
	SM 2540 D-97	TSS	10	A	mg/L	P374821	
	SM 4500 F-C-97	Fluoride	0.84		mg F/L	P374292	
2135398	EPA 350.1 Rev. 2.0	Ammonia-N	0.097		mg N/L	P374263	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.50		mg N/L	P374398	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.037		mg N/L	P374367	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P374237	
	SM 5310 B-00	Organic Carbon	8.4		mg C/L	P374272	
2135399	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.064		mg P/L	P374185	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries and relative percent difference are unavailable because of high analyte concentration in the QC sample.

Sample Location: Sweetwater Branch @ 441

Collection Date/Time: 11/12/2019 13:06

Field ID: G3SE0025

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2135388	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P374358	
	EPA 300.0 Rev. 2.1	Chloride	30		mg Cl/L	P374326	
		Sulfate	6.4		mg SO4/L	P374328	
	SM 2120 B	Color (true)	79		PCU	P374169	
	SM 2320 B-97	Total Alkalinity	28		mg CaCO3/L	P374493	
	SM 2540 C-97	TDS	116		mg/L	P374826	
	SM 2540 D-97	TSS	2	I	mg/L	P374816	
	SM 4500 F-C-97	Fluoride	0.093	I	mg F/L	P374497	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.032		mg N/L	P374262	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P374420	
2135389	EPA 353.2 Rev. 2.0	NO2NO3-N	0.053		mg N/L	P374240	
	EPA 365.1 Rev. 2.0	Total-P	0.20		mg P/L	P374426	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P374270	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.16		mg P/L	P374183	
	dissolved						

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 12/03/2019.

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

Sample Location: Sweetwater Branch @ 441

Collection Date/Time: 11/12/2019 13:15

Field ID: G3SE0025_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2135394	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P374358	
	EPA 300.0 Rev. 2.1	Chloride	30		mg Cl/L	P374326	
		Sulfate	6.6		mg SO4/L	P374328	
	SM 2120 B	Color (true)	82		PCU	P374169	
	SM 2320 B-97	Total Alkalinity	28		mg CaCO3/L	P374493	
	SM 2540 C-97	TDS	117		mg/L	P374827	
	SM 2540 D-97	TSS	2	I	mg/L	P374817	
	SM 4500 F-C-97	Fluoride	0.090	I	mg F/L	P374497	
2135395	EPA 350.1 Rev. 2.0	Ammonia-N	0.033		mg N/L	P374262	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.47		mg N/L	P374420	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.052		mg N/L	P374240	
	EPA 365.1 Rev. 2.0	Total-P	0.21		mg P/L	P374426	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P374270	
2135396	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.17		mg P/L	P374183	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 12/03/2019.

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

Sample Location: Sweetwater Branch @ 441

Collection Date/Time: 11/12/2019 13:20

Field ID: FB_11122019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2135391	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P374358	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P374326	
		Sulfate	0.20	U	mg SO4/L	P374328	
	SM 2120 B	Color (true)	2.5	U	PCU	P374169	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P374493	
	SM 2540 C-97	TDS	15	U	mg/L	P374826	
	SM 2540 D-97	TSS	2	U	mg/L	P374816	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P374497	
2135392	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P374436	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P374420	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P374240	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P374426	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P374271	
2135393	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P374183	

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: P374358

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0
Batch ID: P374769

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374326

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374328

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374779

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374262

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374263

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374436

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374398

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374420

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374240

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374367

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374237

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374426

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374183

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374185

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

Reference Method: SM 2120 B
Batch ID: P374169

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P374290

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P374493

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

Reference Method: SM 2540 C-97
Batch ID: P374826

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P374827

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P374816

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P374817

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P374821

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P374292

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P374497

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P374270

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

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P374271

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

Reference Method: SM 5310 B-00
Batch ID: P374272

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P374358

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

Reference Method: EPA 300.0
Batch ID: P374769

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374326

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374328

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374779

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374262

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: P374263

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374436

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374398

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374420

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374240

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374367

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: P374237

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374426

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374183

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374185

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.1		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P374169

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

Reference Method: SM 2320 B-97
Batch ID: P374290

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.7		P	98 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P374493

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P374292

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.9		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P374497

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.2		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P374270

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	103		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P374271

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	104		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P374272

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	104		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0
Batch ID: P374769

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2135473	Bromide	97.8	99.8	P/P	90 - 110
2135668	Bromide	97.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374326

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2134921	Chloride	98.8		P	90 - 110
2135287	Chloride	98.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374328

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2134921	Sulfate	99.1		P	90 - 110
2135287	Sulfate	97.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374262

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2135382	Ammonia-N	93.8	94.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374263

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2134787	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374436

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2135437	Ammonia-N	98.7	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374398

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2134948	Kjeldahl Nitrogen	98.0	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374420

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2135389	Kjeldahl Nitrogen	106	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2135087	NO2NO3-N	97.8	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374367

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2134272	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374237

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2134788	Total-P	98.1	91.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374426

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2135289	Total-P	105	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374183

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2135293	O-Phosphate-P	100	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374185

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2135399	O-Phosphate-P	101	99.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P374292

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2135714	Fluoride	96.5	98.1	P/P	89 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P374497

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2134912	Fluoride	97.7	97.1	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P374270

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2134974	Organic Carbon	103	104	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P374271

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2135431	Organic Carbon	102	102	P/P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P374272

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2135398	Organic Carbon	104	106	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P374358

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135373	Turbidity	4.04	Sample	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P374769

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135473	Bromide	1.96	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374326

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2134921	Chloride	0.353	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374328

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2134921	Sulfate	0.131	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374262

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135382	Ammonia-N	1.13	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374263

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2134787	Ammonia-N	0.452	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374436

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135437	Ammonia-N	0.884	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374398

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2134948	Kjeldahl Nitrogen	2.33	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374420

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135389	Kjeldahl Nitrogen	0.957	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135087	NO2NO3-N	3.13	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374367

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2134272	NO2NO3-N	0.491	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374237

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2134788	Total-P	6.61	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374426

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135289	Total-P	3.31	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374183

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135293	O-Phosphate-P	0.535	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374185

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135399	O-Phosphate-P	0.729	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P374169

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135373	Color (true)	0.949	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P374290

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135714	Total Alkalinity	0.195	Sample	P	0 - 2.8

Reference Method: SM 2320 B-97
Batch ID: P374493

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2134912	Total Alkalinity	2.22	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P374826

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135373	TDS	4.76	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P374827

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135414	TDS	3.37	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P374821

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135397	TSS	8.00	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P374292

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135714	Fluoride	1.01	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-97
Batch ID: P374497

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2134912	Fluoride	0.495	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P374270

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2134974	Organic Carbon	0.465	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P374271

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135431	Organic Carbon	0.285	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P374272

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2135398	Organic Carbon	1.59	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B

Run ID: A95713

Included Lab Sample IDs: 2135388, 2135391, 2135394

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A95717

Included Lab Sample IDs: 2135390, 2135393, 2135396, 2135399

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.5	99.1	P/P	90 - 110
O-Phosphate-P	99.1	99.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A95734

Included Lab Sample IDs: 2135389, 2135392, 2135395

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A95747

Included Lab Sample IDs: 2135389, 2135395, 2135398

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.3	P/P	90 - 110
Ammonia-N	101	100	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A95750

Included Lab Sample IDs: 2135389, 2135392, 2135395, 2135398

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	107	106	P/P	90 - 110
Organic Carbon	107	106	P/P	90 - 110
Organic Carbon	108	107	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A95757

Included Lab Sample IDs: 2135397

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.7	99.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A95757

Included Lab Sample IDs: 2135397

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A95765

Included Lab Sample IDs: 2135388, 2135391, 2135394

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.3	99.0	P/P	90 - 110
Sulfate	99.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A95773

Included Lab Sample IDs: 2135398

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A95789

Included Lab Sample IDs: 2135388, 2135391, 2135394, 2135397

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: A95794

Included Lab Sample IDs: 2135398

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A95824

Included Lab Sample IDs: 2135392

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

Reference Method: SM 2320 B-97

Run ID: A95843

Included Lab Sample IDs: 2135388, 2135391, 2135394

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.9	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A95843

Included Lab Sample IDs: 2135388, 2135391, 2135394

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A95851

Included Lab Sample IDs: 2135398

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A95879

Included Lab Sample IDs: 2135389, 2135392, 2135395

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	97.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A95929

Included Lab Sample IDs: 2135389, 2135395

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A95931

Included Lab Sample IDs: 2135392

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

Reference Method: EPA 300.0

Run ID: A95940

Included Lab Sample IDs: 2135397

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	106	108	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A95941

Included Lab Sample IDs: 2135397

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	102	102	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 SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity	101				4.04	
EPA 300.0	Bromide	101	97.8	99.8	97.3		1.96
EPA 300.0 Rev. 2.1	Chloride	98.0	98.8	98.9		0.353	
	Sulfate	97.8	99.1	97.1		0.131	
	Sulfate	100					
EPA 350.1 Rev. 2.0	Ammonia-N	99.0	93.8	94.9			1.13
	Ammonia-N	97.7	102	103			0.452
	Ammonia-N	99.1	98.7	100			0.884
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	98.0	101			2.33
	Kjeldahl Nitrogen	101	106	105			0.957
EPA 353.2 Rev. 2.0	NO2NO3-N	104	97.8	101			3.13
	NO2NO3-N	102	102	102			0.491
EPA 365.1 Rev. 2.0	Total-P	106	98.1	91.8			6.61
	Total-P	106	105	102			3.31
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.7	100	99.5			0.535
	O-Phosphate-P	99.1	101	99.6			0.729
SM 2120 B	Color (true)	101				0.949	
SM 2320 B-97	Total Alkalinity	98.7				0.195	
	Total Alkalinity	101				2.22	
SM 2540 C-97	TDS					4.76	
	TDS					3.37	
SM 2540 D-97	TSS					8.00	
SM 4500 F-C-97	Fluoride	96.9	96.5	98.1			1.01
	Fluoride	97.2	97.7	97.1			0.495
SM 5310 B-00	Organic Carbon	103	103	104			0.465
	Organic Carbon	104	102	102			0.285
	Organic Carbon	104	104	106			1.59

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2135388, 2135391, 2135394, 2135397
EPA 300.0 / E31780	Bromide in aqueous matrices	2135397
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2135388, 2135391, 2135394
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2135388, 2135391, 2135394, 2135397
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2135389, 2135392, 2135395, 2135398
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2135389, 2135392, 2135395, 2135398
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2135389, 2135392, 2135395, 2135398
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2135389, 2135392, 2135395, 2135398
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2135390, 2135393, 2135396, 2135399
SM 2120 B / E31780	True Color measured at 450 nm	2135388, 2135391, 2135394
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2135388, 2135391, 2135394, 2135397
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2135388, 2135391, 2135394
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2135388, 2135391, 2135394, 2135397
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2135388, 2135391, 2135394, 2135397
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2135389, 2135392, 2135395, 2135398

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	11/13/2019			11/13/2019 16:10	Samantha Davila	2135388
	11/13/2019			11/13/2019 16:11	Samantha Davila	2135391
	11/13/2019			11/13/2019 16:13	Samantha Davila	2135394
	11/13/2019			11/13/2019 16:15	Samantha Davila	2135397
EPA 300.0	11/13/2019			11/21/2019 01:26	Lipi Saha	2135397
EPA 300.0 Rev. 2.1	11/13/2019			11/15/2019 18:07	Lipi Saha	2135388
	11/13/2019			11/15/2019 18:19	Lipi Saha	2135391
	11/13/2019			11/15/2019 18:31	Lipi Saha	2135394
	11/13/2019			11/23/2019 07:24	Julia Storbeck	2135397
EPA 350.1 Rev. 2.0	11/13/2019			11/14/2019 13:47	Ping Hua	2135389
	11/13/2019			11/14/2019 13:49	Ping Hua	2135395
	11/13/2019			11/14/2019 14:34	Ping Hua	2135398
	11/13/2019			11/18/2019 11:12	Ping Hua	2135392
EPA 351.2 Rev. 2.0	11/13/2019	11/19/2019 11:25	Sima Feizi	11/20/2019 13:57	Jhamieka S. Greenwood	2135398
	11/13/2019	11/19/2019 11:25	Sima Feizi	11/20/2019 16:50	Jhamieka S. Greenwood	2135389
	11/13/2019	11/19/2019 11:25	Sima Feizi	11/20/2019 16:57	Jhamieka S. Greenwood	2135392
	11/13/2019	11/19/2019 11:25	Sima Feizi	11/20/2019 16:58	Jhamieka S. Greenwood	2135395
EPA 353.2 Rev. 2.0	11/13/2019			11/14/2019 11:18	Beverly Y. Sanders	2135389
	11/13/2019			11/14/2019 11:19	Beverly Y. Sanders	2135392
	11/13/2019			11/14/2019 11:20	Beverly Y. Sanders	2135395
	11/13/2019			11/18/2019 11:47	Beverly Y. Sanders	2135398
EPA 365.1 Rev. 2.0	11/13/2019	11/14/2019 14:30	Yen Ta	11/15/2019 15:43	Benjamin T. Nordmann	2135398
	11/13/2019	11/19/2019 12:09	Yen Ta	11/22/2019 14:02	Benjamin T. Nordmann	2135392
	11/13/2019	11/19/2019 12:09	Yen Ta	11/22/2019 17:37	Benjamin T. Nordmann	2135389
	11/13/2019	11/19/2019 12:09	Yen Ta	11/22/2019 17:38	Benjamin T. Nordmann	2135395
EPA 365.1 Rev. 2.0 dissolved	11/13/2019			11/13/2019 13:32	Virginia P. Brown	2135399
	11/13/2019			11/13/2019 13:46	Virginia P. Brown	2135390
	11/13/2019			11/13/2019 13:47	Virginia P. Brown	2135393
	11/13/2019			11/13/2019 13:48	Virginia P. Brown	2135396
SM 2120 B	11/13/2019			11/13/2019 17:45	Madeline Funaro	2135388, 2135391
	11/13/2019			11/13/2019 17:46	Madeline Funaro	2135394
SM 2320 B-97	11/13/2019			11/14/2019 18:35	Dale L. Simmons	2135397
	11/13/2019			11/16/2019 00:44	Dale L. Simmons	2135388
	11/13/2019			11/16/2019 00:56	Dale L. Simmons	2135391
	11/13/2019			11/16/2019 01:07	Dale L. Simmons	2135394
SM 2540 C-97	11/13/2019			11/15/2019 15:21	Yijie Li	2135388, 2135391, 2135394
SM 2540 D-97	11/13/2019			11/15/2019 15:21	Yijie Li	2135388, 2135391, 2135394, 2135397
SM 4500 F-C-97	11/13/2019			11/14/2019 15:53	Dale L. Simmons	2135397
	11/13/2019			11/16/2019 00:44	Dale L. Simmons	2135388
	11/13/2019			11/16/2019 00:56	Dale L. Simmons	2135391

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-97	11/13/2019			11/16/2019 01:07	Dale L. Simmons	2135394
SM 5310 B-00	11/13/2019			11/14/2019 20:44	Madeline Funaro	2135389
	11/13/2019			11/14/2019 20:56	Madeline Funaro	2135395
	11/13/2019			11/14/2019 22:46	Madeline Funaro	2135392
	11/13/2019			11/15/2019 03:55	Madeline Funaro	2135398