

Chemical Analysis Report

NW-DIST-2019-08-15-01

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

Event Description: **EGLIN RUN EAST**
Request ID: **RQ-2019-08-12-25**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 208
Pensacola, FL 32502-5794
Attn: Cheryl Bunch

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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 03-SEP-2019 10:31

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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: MOUTH OF MULLET CREEK @ HWY 20

Collection Date/Time: 08/14/2019 10:50

Field ID: G3NW0137

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2111897	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P369129	
	EPA 300.0	Bromide	0.024	I	mg Br/L	P369435	
	EPA 300.0 Rev. 2.1	Chloride	4.8		mg Cl/L	P369533	
		Sulfate	1.6		mg SO4/L	P369536	
	SM 2120 B	Color (true)	37		PCU	P369151	
	SM 2320 B-97	Total Alkalinity	3.1		mg CaCO3/L	P369587	
	SM 2540 C-97	TDS	19	I	mg/L	P369423	
	SM 2540 D-97	TSS	2	U	mg/L	P369269	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P369590	
2111900	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P369692	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.18	I	mg N/L	P369426	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P369327	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P369303	
	SM 5310 B-00	Organic Carbon	2.9		mg C/L	P369285	
2111903	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P369131	

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: EAGLE CREEK UPSTREAM OF HWY 20

Collection Date/Time: 08/14/2019 11:17

Field ID: G3NW0151

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2111898	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P369126	
	EPA 300.0	Bromide	0.027	I	mg Br/L	P369435	
	EPA 300.0 Rev. 2.1	Chloride	4.9		mg Cl/L	P369533	
		Sulfate	1.1		mg SO4/L	P369536	
	SM 2120 B	Color (true)	68		PCU	P369149	
	SM 2320 B-97	Total Alkalinity	1.2	I	mg CaCO3/L	P369587	
	SM 2540 C-97	TDS	17	I	mg/L	P369423	
	SM 2540 D-97	TSS	2	I	mg/L	P369269	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P369590	
2111901	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P369692	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.24		mg N/L	P369426	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P369327	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P369303	
	SM 5310 B-00	Organic Carbon	4.7		mg C/L	P369285	
2111904	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P369131	

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: EAGLE CREEK UPSTREAM OF HWY 20

Collection Date/Time: 08/14/2019 11:22

Field ID: G3NW0151_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2111899	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P369126	
	EPA 300.0	Bromide	0.026	I	mg Br/L	P369435	
	EPA 300.0 Rev. 2.1	Chloride	4.9		mg Cl/L	P369533	
		Sulfate	1.1		mg SO4/L	P369536	
	SM 2120 B	Color (true)	68		PCU	P369149	
	SM 2320 B-97	Total Alkalinity	1.2	I	mg CaCO3/L	P369587	
	SM 2540 C-97	TDS	16	I	mg/L	P369423	
	SM 2540 D-97	TSS	3	I	mg/L	P369269	
2111902	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P369590	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P369692	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26		mg N/L	P369426	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P369327	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P369303	
2111905	SM 5310 B-00	Organic Carbon	4.7		mg C/L	P369285	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P369131	

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: EAGLE CREEK UPSTREAM OF HWY 20

Collection Date/Time: 08/14/2019 11:25

Field ID: FB_08142019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2111906	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P369129	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P369533	
		Sulfate	0.20	U	mg SO4/L	P369536	
	SM 2120 B	Color (true)	2.5	U	PCU	P369151	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P369587	
	SM 2540 C-97	TDS	15	U	mg/L	P369423	
	SM 2540 D-97	TSS	2	U	mg/L	P369269	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P369590	
2111907	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P369694	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P369426	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P369328	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P369303	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P369285	
2111908	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P369133	

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: P369126

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369129

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0
Batch ID: P369435

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369533

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369536

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369692

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369694

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369426

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369327

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369328

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369303

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369131

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369133

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

Reference Method: SM 2120 B
Batch ID: P369149

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P369151

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P369587

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

Reference Method: SM 2540 C-97
Batch ID: P369423

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P369269

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P369590

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P369285

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0
Batch ID: P369435

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369533

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369536

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369692

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369694

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369426

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369327

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369328

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: P369303

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369131

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369133

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

Reference Method: SM 2120 B
Batch ID: P369149

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.7		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P369151

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.9		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P369587

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P369590

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.3		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P369285

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0
Batch ID: P369435

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111696	Bromide	96.9	100	P/P	90 - 110
2112206	Bromide	97.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369533

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111865	Chloride	95.6		P	90 - 110
2111936	Chloride	96.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369536

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111865	Sulfate	99.2		P	90 - 110
2111936	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369692

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111839	Ammonia-N	97.8	99.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369694

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111948	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369426

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111900	Kjeldahl Nitrogen	101	98.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369327

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111867	NO2NO3-N	95.0	95.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369328

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111948	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369303

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111876	Total-P	109	106	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369131

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111903	O-Phosphate-P	96.5	97.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369133

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112041	O-Phosphate-P	94.3	96.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P369590

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112156	Fluoride	94.9	96.5	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P369285

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112038	Organic Carbon	103		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369126

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111936	Turbidity	4.54	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369129

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111866	Turbidity	1.94	Sample	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P369435

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111696	Bromide	3.33	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369533

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111865	Chloride	0.933	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369536

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111865	Sulfate	0.712	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369692

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111839	Ammonia-N	1.27	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369694

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111948	Ammonia-N	0.628	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369426

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111900	Kjeldahl Nitrogen	2.30	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369327

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111867	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369328

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111948	NO2NO3-N	0.290	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369303

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111876	Total-P	2.79	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369131

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111903	O-Phosphate-P	0.545	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369133

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112041	O-Phosphate-P	2.06	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P369149

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111760	Color (true)	7.69	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P369151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111834	Color (true)	2.87	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P369587

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112156	Total Alkalinity	0.0854	Sample	P	0 - 2.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P369423

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111935	TDS	0.939	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P369590

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112156	Fluoride	1.47	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P369285

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112038	Organic Carbon	0.0744	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A93540

Included Lab Sample IDs: 2111897, 2111898, 2111899, 2111906

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A93541

Included Lab Sample IDs: 2111903, 2111904, 2111905, 2111908

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.2	98.5	P/P	90 - 110
O-Phosphate-P	99.2	99.2	P/P	90 - 110
O-Phosphate-P	99.3	99.3	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A93551

Included Lab Sample IDs: 2111897, 2111898, 2111899, 2111906

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115
Color (true)	99.9	101	P/P	90 - 115

Reference Method: SM 5310 B-00

Run ID: A93620

Included Lab Sample IDs: 2111900, 2111901, 2111902, 2111907

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	102	99.3	P/P	90 - 110
Organic Carbon	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A93635

Included Lab Sample IDs: 2111900, 2111901, 2111902, 2111907

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A93679

Included Lab Sample IDs: 2111900, 2111901, 2111902, 2111907

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	98.2	P/P	90 - 110

Reference Method: EPA 300.0

Run ID: A93690

Included Lab Sample IDs: 2111897, 2111898, 2111899

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	104	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A93717

Included Lab Sample IDs: 2111897, 2111898, 2111899, 2111906

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.2	97.5	P/P	90 - 110
Sulfate	102	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93722

Included Lab Sample IDs: 2111900, 2111901, 2111902, 2111907

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.3	102	P/P	90 - 110
Kjeldahl Nitrogen	99.9	99.3	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A93749

Included Lab Sample IDs: 2111897, 2111898, 2111899, 2111906

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

Reference Method: SM 4500 F-C-97

Run ID: A93749

Included Lab Sample IDs: 2111897, 2111898, 2111899, 2111906

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.1	99.5	P/P	90 - 110
Fluoride	99.5	98.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A93798

Included Lab Sample IDs: 2111900, 2111901, 2111902, 2111907

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	103	P/P	90 - 110
Ammonia-N	105	105	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					4.54	
	Turbidity					1.94	
EPA 300.0	Bromide	100	96.9	100	97.9		3.33
EPA 300.0 Rev. 2.1	Chloride	96.7	95.6	96.0		0.933	
	Sulfate	100	99.2	100		0.712	
EPA 350.1 Rev. 2.0	Ammonia-N	99.8	97.8	99.8			1.27
	Ammonia-N	102	102	103			0.628
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.0	101	98.0			2.30
EPA 353.2 Rev. 2.0	NO2NO3-N	102	95.0	95.0			0.0
	NO2NO3-N	102	103	102			0.290
EPA 365.1 Rev. 2.0	Total-P	105	109	106			2.79
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.5	96.5	97.1			0.545
	O-Phosphate-P	97.8	94.3	96.4			2.06
SM 2120 B	Color (true)	98.7				7.69	
	Color (true)	99.9				2.87	
SM 2320 B-97	Total Alkalinity	103				0.0854	
SM 2540 C-97	TDS					0.939	
SM 4500 F-C-97	Fluoride	95.3	94.9	96.5			1.47
SM 5310 B-00	Organic Carbon	101	103				0.0744

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2111897, 2111898, 2111899, 2111906
EPA 300.0 / E31780	Bromide in aqueous matrices	2111897, 2111898, 2111899
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2111897, 2111898, 2111899, 2111906
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2111897, 2111898, 2111899, 2111906
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2111900, 2111901, 2111902, 2111907
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2111900, 2111901, 2111902, 2111907
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2111900, 2111901, 2111902, 2111907
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2111900, 2111901, 2111902, 2111907
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2111903, 2111904, 2111905, 2111908
SM 2120 B / E31780	True Color measured at 450 nm	2111897, 2111898, 2111899, 2111906
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2111897, 2111898, 2111899, 2111906
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2111897, 2111898, 2111899, 2111906
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2111897, 2111898, 2111899, 2111906
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2111897, 2111898, 2111899, 2111906
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2111900, 2111901, 2111902, 2111907

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	08/15/2019			08/15/2019 16:59	Rosalyn Ballman	2111897, 2111898, 2111899, 2111906
EPA 300.0	08/15/2019			08/20/2019 18:49	Jhamieka S. Greenwood	2111897
	08/15/2019			08/20/2019 19:06	Jhamieka S. Greenwood	2111898
	08/15/2019			08/20/2019 19:23	Jhamieka S. Greenwood	2111899
EPA 300.0 Rev. 2.1	08/15/2019			08/21/2019 22:20	Julia Storbeck	2111897
	08/15/2019			08/21/2019 22:32	Julia Storbeck	2111898
	08/15/2019			08/21/2019 22:44	Julia Storbeck	2111899
	08/15/2019			08/21/2019 22:56	Julia Storbeck	2111906
EPA 350.1 Rev. 2.0	08/15/2019			08/26/2019 11:55	Ping Hua	2111900
	08/15/2019			08/26/2019 11:57	Ping Hua	2111901
	08/15/2019			08/26/2019 11:58	Ping Hua	2111902
	08/15/2019			08/26/2019 12:47	Ping Hua	2111907
EPA 351.2 Rev. 2.0	08/15/2019	08/21/2019 13:20	Jhamieka S. Greenwood	08/22/2019 11:23	Joseph Suarez	2111900
	08/15/2019	08/21/2019 13:20	Jhamieka S. Greenwood	08/22/2019 11:28	Joseph Suarez	2111901
	08/15/2019	08/21/2019 13:20	Jhamieka S. Greenwood	08/22/2019 11:32	Joseph Suarez	2111902
	08/15/2019	08/21/2019 13:20	Jhamieka S. Greenwood	08/22/2019 11:34	Joseph Suarez	2111907
EPA 353.2 Rev. 2.0	08/15/2019			08/20/2019 11:30	Beverly Y. Sanders	2111900
	08/15/2019			08/20/2019 11:31	Beverly Y. Sanders	2111901
	08/15/2019			08/20/2019 11:32	Beverly Y. Sanders	2111902
	08/15/2019			08/20/2019 11:45	Beverly Y. Sanders	2111907
EPA 365.1 Rev. 2.0	08/15/2019	08/20/2019 12:45	Lipi Saha	08/21/2019 12:15	Lipi Saha	2111900
	08/15/2019	08/20/2019 12:45	Lipi Saha	08/21/2019 12:16	Lipi Saha	2111901
	08/15/2019	08/20/2019 12:45	Lipi Saha	08/21/2019 12:17	Lipi Saha	2111902, 2111907
EPA 365.1 Rev. 2.0 dissolved	08/15/2019			08/15/2019 14:16	Jhamieka S. Greenwood	2111903
	08/15/2019			08/15/2019 14:31	Jhamieka S. Greenwood	2111904
	08/15/2019			08/15/2019 14:32	Jhamieka S. Greenwood	2111905
	08/15/2019			08/15/2019 14:52	Jhamieka S. Greenwood	2111908
SM 2120 B	08/15/2019			08/15/2019 15:59	Madeline Funaro	2111898
	08/15/2019			08/15/2019 16:00	Madeline Funaro	2111899
	08/15/2019			08/15/2019 16:27	Madeline Funaro	2111897
	08/15/2019			08/15/2019 16:28	Madeline Funaro	2111906
SM 2320 B-97	08/15/2019			08/23/2019 00:20	Dale L. Simmons	2111897
	08/15/2019			08/23/2019 00:33	Dale L. Simmons	2111898
	08/15/2019			08/23/2019 00:46	Dale L. Simmons	2111899
	08/15/2019			08/23/2019 01:41	Dale L. Simmons	2111906
SM 2540 C-97	08/15/2019			08/16/2019 17:15	Rosalyn Ballman	2111897, 2111898, 2111899, 2111906
SM 2540 D-97	08/15/2019			08/16/2019 17:15	Rosalyn Ballman	2111897, 2111898, 2111899, 2111906
SM 4500 F-C-97	08/15/2019			08/23/2019 00:20	Dale L. Simmons	2111897
	08/15/2019			08/23/2019 00:33	Dale L. Simmons	2111898
	08/15/2019			08/23/2019 00:46	Dale L. Simmons	2111899

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	08/15/2019			08/23/2019 01:41	Dale L. Simmons	2111906
SM 5310 B-00	08/15/2019			08/19/2019 22:20	Madeline Funaro	2111900
	08/15/2019			08/19/2019 22:34	Madeline Funaro	2111901
	08/15/2019			08/19/2019 22:46	Madeline Funaro	2111902
	08/15/2019			08/19/2019 23:23	Madeline Funaro	2111907