

Chemical Analysis Report

NW-DIST-2019-07-19-02

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

Event Description: **NW RUN**
Request ID: **RQ-2019-07-15-27**
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: 07-AUG-2019 09:32

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: Little Pine Barren Creek above CR99

Collection Date/Time: 07/18/2019 10:45

Field ID: G4NW0420

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2104727	EPA 180.1 Rev. 2.0	Turbidity	3.1		NTU	P367645	
	EPA 300.0 Rev. 2.1	Chloride	6.8		mg Cl/L	P367916	
		Sulfate	0.61		mg SO4/L	P367918	
	SM 2120 B	Color (true)	35		PCU	P367648	
	SM 2320 B-97	Total Alkalinity	8.4		mg CaCO3/L	P367938	
	SM 2540 C-97	TDS	26		mg/L	P368117	
	SM 2540 D-97	TSS	5	I	mg/L	P367795	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P367941	
2104732	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P368305	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P368156	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.58		mg N/L	P367689	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P367808	
	SM 5310 B-00	Organic Carbon	2.9		mg C/L	P367964	
2104737	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P367641	

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: Big Escambia Creek downstream of Fannie Rd Collection Date/Time: 07/18/2019 10:05

Field ID: G4NW0421

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2104728	EPA 180.1 Rev. 2.0	Turbidity	6.5		NTU	P367645	
	EPA 300.0 Rev. 2.1	Chloride	4.5		mg Cl/L	P367916	
		Sulfate	1.2		mg SO4/L	P367918	
	SM 2120 B	Color (true)	27		PCU	P367648	
	SM 2320 B-97	Total Alkalinity	4.6		mg CaCO3/L	P367938	
	SM 2540 C-97	TDS	34		mg/L	P368117	
	SM 2540 D-97	TSS	11		mg/L	P367795	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P367941	
2104733	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P368305	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21		mg N/L	P367896	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.54		mg N/L	P367689	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P367808	
	SM 5310 B-00	Organic Carbon	2.4		mg C/L	P367964	
2104738	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P367641	

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: McDavid Creek 100 m upstream SR99

Collection Date/Time: 07/18/2019 11:35

Field ID: G5NW0150

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2104729	EPA 180.1 Rev. 2.0	Turbidity	4.1		NTU	P367645	
	EPA 300.0 Rev. 2.1	Chloride	3.9		mg Cl/L	P367916	
		Sulfate	0.58	I	mg SO4/L	P367918	
	SM 2120 B	Color (true)	41	A	PCU	P367648	
	SM 2320 B-97	Total Alkalinity	0.74	I	mg CaCO3/L	P367938	
	SM 2540 C-97	TDS	23	I	mg/L	P368117	
	SM 2540 D-97	TSS	6	I	mg/L	P367795	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P367941	
2104734	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P368305	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21		mg N/L	P367896	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.25		mg N/L	P367689	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P367808	
	SM 5310 B-00	Organic Carbon	3.5		mg C/L	P367964	
2104739	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P367641	

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: Wiggins Branch below Highway 29

Collection Date/Time: 07/18/2019 09:40

Field ID: G4NW0163

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2104730	EPA 180.1 Rev. 2.0	Turbidity	6.8		NTU	P367645	
	EPA 300.0 Rev. 2.1	Chloride	4.0		mg Cl/L	P367916	
		Sulfate	0.99		mg SO4/L	P367918	
	SM 2120 B	Color (true)	53		PCU	P367648	
	SM 2320 B-97	Total Alkalinity	6.1		mg CaCO3/L	P367938	
	SM 2540 C-97	TDS	28		mg/L	P368117	
	SM 2540 D-97	TSS	14		mg/L	P367795	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P367941	
2104735	EPA 350.1 Rev. 2.0	Ammonia-N	0.037		mg N/L	P368305	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.22		mg N/L	P367896	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.084		mg N/L	P367689	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P367808	
	SM 5310 B-00	Organic Carbon	3.6		mg C/L	P367964	
2104740	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P367641	

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: Little Pine Barren Creek above CR99

Collection Date/Time: 07/18/2019 10:50

Field ID: G4NW0420_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2104731	EPA 180.1 Rev. 2.0	Turbidity	3.0		NTU	P367645	
	EPA 300.0 Rev. 2.1	Chloride	6.7		mg Cl/L	P367916	
		Sulfate	0.60	I	mg SO4/L	P367918	
	SM 2120 B	Color (true)	35		PCU	P367648	
	SM 2320 B-97	Total Alkalinity	8.4		mg CaCO3/L	P367938	
	SM 2540 C-97	TDS	30		mg/L	P368117	
	SM 2540 D-97	TSS	5	I	mg/L	P367795	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P367941	
2104736	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P368305	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.30		mg N/L	P368156	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.58		mg N/L	P367689	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P367808	
	SM 5310 B-00	Organic Carbon	2.8		mg C/L	P367964	
2104741	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P367641	

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: Little Pine Barren Creek above CR99

Collection Date/Time: 07/18/2019 11:00

Field ID: FB_07182019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2104742	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P367645	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P367916	
		Sulfate	0.20	U	mg SO4/L	P367918	
		Color (true)	2.5	U	PCU	P367648	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P367938	
	SM 2540 C-97	TDS	15	U	mg/L	P368115	
	SM 2540 D-97	TSS	2	U	mg/L	P367793	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P367941	
2104743	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P368305	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P367896	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P367689	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P367808	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P367964	
2104744	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P367641	

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: P367645

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367916

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367918

Component	Result	Code	Units
Sulfate	0.20	U	mg SO ₄ /L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P368305

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367896

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368156

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367689

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P367808

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P367641

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: P367648

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P367938

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

Reference Method: SM 2540 C-97
Batch ID: P368115

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P368117

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P367793

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P367795

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P367941

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P367964

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: P367916

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367918

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P368305

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: P367896

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368156

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	93.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367689

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P367808

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P367641

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.7		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P367648

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.5		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P367938

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

Reference Method: SM 4500 F-C-97
Batch ID: P367941

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

Reference Method: SM 5310 B-00
Batch ID: P367964

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	105		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367916

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104714	Chloride	97.2		P	90 - 110
2104930	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367918

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104714	Sulfate	98.9		P	90 - 110
2104930	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P368305

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104732	Ammonia-N	97.9	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367896

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104732	Kjeldahl Nitrogen	106	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368156

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2106386	Kjeldahl Nitrogen	104	96.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104692	NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P367808

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104735	Total-P	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P367641

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104696	O-Phosphate-P	96.2	98.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P367941

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104549	Fluoride	104	104	P/P	89 - 106

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P367964

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104789	Organic Carbon	107	103	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P367645

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104781	Turbidity	7.87	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367916

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104714	Chloride	1.90	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367918

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104714	Sulfate	2.03	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P368305

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104732	Ammonia-N	3.02	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367896

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104732	Kjeldahl Nitrogen	1.63	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368156

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2106386	Kjeldahl Nitrogen	3.50	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104692	NO2NO3-N	0.480	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P367808

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104735	Total-P	0.0703	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P367641

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104696	O-Phosphate-P	1.85	Spike	P	0 - 20

Reference Method: SM 2120 B
 Batch ID: P367648

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104729	Color (true)	0.329	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P367938

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104549	Total Alkalinity	2.72	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
 Batch ID: P368115

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104549	TDS	3.33	Sample	P	0 - 10

Reference Method: SM 2540 C-97
 Batch ID: P368117

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104613	TDS	0.897	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P367941

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104549	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
 Batch ID: P367964

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104789	Organic Carbon	2.17	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 365.1 Rev. 2.0 dissolved

Run ID: A92908

Included Lab Sample IDs: 2104737, 2104738, 2104739, 2104740, 2104741, 2104744

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.5	96.9	P/P	90 - 110
O-Phosphate-P	98.8	97.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A92909

Included Lab Sample IDs: 2104727, 2104728, 2104729, 2104730, 2104731, 2104742

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

Reference Method: SM 2120 B

Run ID: A92910

Included Lab Sample IDs: 2104727, 2104728, 2104729, 2104730, 2104731, 2104742

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A92937

Included Lab Sample IDs: 2104732, 2104733, 2104734, 2104735, 2104736, 2104743

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A92954

Included Lab Sample IDs: 2104727, 2104728, 2104729, 2104730, 2104731, 2104742

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	99.5	P/P	90 - 110
Chloride	101	100	P/P	90 - 110
Sulfate	100	100	P/P	90 - 110
Sulfate	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A93020

Included Lab Sample IDs: 2104732, 2104733, 2104734, 2104735, 2104736, 2104743

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

Reference Method: SM 2320 B-97

Run ID: A93033

Included Lab Sample IDs: 2104727, 2104728, 2104729, 2104730, 2104731, 2104742

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	106	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A93033

Included Lab Sample IDs: 2104727, 2104728, 2104729, 2104730, 2104731, 2104742

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

Reference Method: SM 5310 B-00

Run ID: A93041

Included Lab Sample IDs: 2104732, 2104733, 2104734, 2104735, 2104736, 2104743

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	104	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93073

Included Lab Sample IDs: 2104733, 2104734, 2104735, 2104743

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	97.5	P/P	90 - 110
Kjeldahl Nitrogen	97.5	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93156

Included Lab Sample IDs: 2104732, 2104736

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.3	95.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A93196

Included Lab Sample IDs: 2104732, 2104733, 2104734, 2104735, 2104736, 2104743

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	99.8	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				7.87	
EPA 300.0 Rev. 2.1	Chloride	99.6	97.2	102	1.90	
	Sulfate	99.7	98.9	102	2.03	
EPA 350.1 Rev. 2.0	Ammonia-N	102	97.9	102		3.02
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	106	103		1.63
	Kjeldahl Nitrogen	93.2	104	96.8		3.50
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	100	101		0.480
EPA 365.1 Rev. 2.0	Total-P	99.3	103	103		0.0703
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.7	96.2	98.0		1.85
SM 2120 B	Color (true)	99.5			0.329	
SM 2320 B-97	Total Alkalinity	103			2.72	
SM 2540 C-97	TDS				3.33	
	TDS				0.897	
SM 4500 F-C-97	Fluoride	97.2	104	104		0.0
SM 5310 B-00	Organic Carbon	105	107	103		2.17

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2104727, 2104728, 2104729, 2104730, 2104731, 2104742
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2104727, 2104728, 2104729, 2104730, 2104731, 2104742
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2104727, 2104728, 2104729, 2104730, 2104731, 2104742
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2104732, 2104733, 2104734, 2104735, 2104736, 2104743
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2104732, 2104733, 2104734, 2104735, 2104736, 2104743
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2104732, 2104733, 2104734, 2104735, 2104736, 2104743
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2104732, 2104733, 2104734, 2104735, 2104736, 2104743
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2104737, 2104738, 2104739, 2104740, 2104741, 2104744
SM 2120 B / E31780	True Color measured at 450 nm	2104727, 2104728, 2104729, 2104730, 2104731, 2104742
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2104727, 2104728, 2104729, 2104730, 2104731, 2104742
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2104727, 2104728, 2104729, 2104730, 2104731, 2104742
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2104727, 2104728, 2104729, 2104730, 2104731, 2104742
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2104727, 2104728, 2104729, 2104730, 2104731, 2104742
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2104732, 2104733, 2104734, 2104735, 2104736, 2104743

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	07/19/2019			07/19/2019 17:01	Samantha Davila	2104727, 2104728, 2104729, 2104730, 2104731, 2104742
EPA 300.0 Rev. 2.1	07/19/2019			07/24/2019 12:40	Jhamieka S. Greenwood	2104727
	07/19/2019			07/24/2019 12:52	Jhamieka S. Greenwood	2104728
	07/19/2019			07/24/2019 13:04	Jhamieka S. Greenwood	2104729
	07/19/2019			07/24/2019 13:40	Jhamieka S. Greenwood	2104730
	07/19/2019			07/24/2019 13:52	Jhamieka S. Greenwood	2104731
EPA 350.1 Rev. 2.0	07/19/2019			07/24/2019 14:05	Jhamieka S. Greenwood	2104742
	07/19/2019			07/31/2019 14:02	Virginia P. Brown	2104732
	07/19/2019			07/31/2019 14:04	Virginia P. Brown	2104733
	07/19/2019			07/31/2019 14:05	Virginia P. Brown	2104734
	07/19/2019			07/31/2019 14:07	Virginia P. Brown	2104735
EPA 351.2 Rev. 2.0	07/19/2019			07/31/2019 14:08	Virginia P. Brown	2104736
	07/19/2019			07/31/2019 14:10	Virginia P. Brown	2104743
	07/19/2019	07/25/2019 12:00	Adrian Shelby	07/26/2019 14:17	Joseph Suarez	2104733
	07/19/2019	07/25/2019 12:00	Adrian Shelby	07/26/2019 14:19	Joseph Suarez	2104734
	07/19/2019	07/25/2019 12:00	Adrian Shelby	07/26/2019 14:24	Joseph Suarez	2104735
EPA 353.2 Rev. 2.0	07/19/2019	07/25/2019 12:00	Adrian Shelby	07/26/2019 14:27	Joseph Suarez	2104743
	07/19/2019	07/30/2019 11:45	Adrian Shelby	07/31/2019 10:38	Joseph Suarez	2104732
	07/19/2019	07/30/2019 11:45	Adrian Shelby	07/31/2019 10:41	Joseph Suarez	2104736
	07/19/2019			07/22/2019 11:36	Beverly Y. Sanders	2104736
	07/19/2019			07/22/2019 11:37	Beverly Y. Sanders	2104733
EPA 365.1 Rev. 2.0	07/19/2019			07/22/2019 11:38	Beverly Y. Sanders	2104734
	07/19/2019			07/22/2019 11:40	Beverly Y. Sanders	2104735
	07/19/2019			07/22/2019 11:41	Beverly Y. Sanders	2104743
	07/19/2019			07/22/2019 12:12	Beverly Y. Sanders	2104732
	07/19/2019	07/24/2019 11:15	Vijayalakshmi Reddy	07/25/2019 12:32	Lipi Saha	2104735
EPA 365.1 Rev. 2.0 dissolved	07/19/2019	07/24/2019 11:15	Vijayalakshmi Reddy	07/25/2019 12:33	Lipi Saha	2104732
	07/19/2019	07/24/2019 11:15	Vijayalakshmi Reddy	07/25/2019 12:34	Lipi Saha	2104733
	07/19/2019	07/24/2019 11:15	Vijayalakshmi Reddy	07/25/2019 12:35	Lipi Saha	2104734
	07/19/2019	07/24/2019 11:15	Vijayalakshmi Reddy	07/25/2019 12:43	Lipi Saha	2104736
	07/19/2019	07/24/2019 11:15	Vijayalakshmi Reddy	07/25/2019 12:44	Lipi Saha	2104743
SM 2120 B	07/19/2019			07/19/2019 16:18	Jhamieka S. Greenwood	2104737
	07/19/2019			07/19/2019 16:19	Jhamieka S. Greenwood	2104741
	07/19/2019			07/19/2019 16:20	Jhamieka S. Greenwood	2104738
	07/19/2019			07/19/2019 16:21	Jhamieka S. Greenwood	2104739
	07/19/2019			07/19/2019 16:26	Jhamieka S. Greenwood	2104744
	07/19/2019			07/19/2019 16:27	Jhamieka S. Greenwood	2104740
	07/19/2019			07/19/2019 16:51	Madeline Funaro	2104727
	07/19/2019			07/19/2019 16:52	Madeline Funaro	2104728

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2120 B	07/19/2019			07/19/2019 16:53	Madeline Funaro	2104729
	07/19/2019			07/19/2019 16:54	Madeline Funaro	2104730
	07/19/2019			07/19/2019 16:55	Madeline Funaro	2104731, 2104742
SM 2320 B-97	07/19/2019			07/25/2019 02:25	Dale L. Simmons	2104727
	07/19/2019			07/25/2019 02:38	Dale L. Simmons	2104728
	07/19/2019			07/25/2019 02:50	Dale L. Simmons	2104729
	07/19/2019			07/25/2019 03:02	Dale L. Simmons	2104730
	07/19/2019			07/25/2019 03:14	Dale L. Simmons	2104731
	07/19/2019			07/25/2019 03:28	Dale L. Simmons	2104742
	07/19/2019			07/22/2019 15:00	Sima Feizi	2104727, 2104728, 2104729, 2104730, 2104731, 2104742
SM 2540 C-97	07/19/2019					
SM 2540 D-97	07/19/2019			07/22/2019 15:00	Sima Feizi	2104727, 2104728, 2104729, 2104730, 2104731, 2104742
SM 4500 F-C-97	07/19/2019			07/25/2019 02:25	Dale L. Simmons	2104727
	07/19/2019			07/25/2019 02:38	Dale L. Simmons	2104728
	07/19/2019			07/25/2019 02:50	Dale L. Simmons	2104729
	07/19/2019			07/25/2019 03:02	Dale L. Simmons	2104730
	07/19/2019			07/25/2019 03:14	Dale L. Simmons	2104731
	07/19/2019			07/25/2019 03:28	Dale L. Simmons	2104742
	07/19/2019			07/24/2019 08:42	Madeline Funaro	2104732
SM 5310 B-00	07/19/2019			07/24/2019 08:55	Madeline Funaro	2104733
	07/19/2019			07/24/2019 09:13	Madeline Funaro	2104734
	07/19/2019			07/24/2019 09:26	Madeline Funaro	2104735
	07/19/2019			07/24/2019 09:39	Madeline Funaro	2104736
	07/19/2019			07/24/2019 09:54	Madeline Funaro	2104743
	07/19/2019					