

Chemical Analysis Report

NW-DIST-2019-01-10-01

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

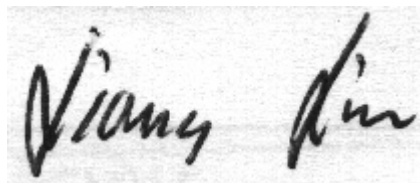
Event Description: **NW RUN**
Request ID: **RQ-2019-01-07-34**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 308
Pensacola, FL 32502-5794
Attn: Cheryl Bunch

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 30-JAN-2019 14:25

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited 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: Wiggins Branch below Hwy 29

Collection Date/Time: 01/09/2019 10:25

Field ID: G4NW0163

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2053071	EPA 180.1 Rev. 2.0	Turbidity	6.4		NTU	P357109	
	EPA 300.0 Rev. 2.1	Chloride	2.8		mg Cl/L	P357205	
		Sulfate	1.5		mg SO4/L	P357207	
	SM 2120 B	Color (true)	42	A	PCU	P357096	
	SM 2320 B-97	Total Alkalinity	5.8		mg CaCO3/L	P357544	
	SM 2540 C-97	TDS	15	U	mg/L	P357354	
	SM 2540 D-97	TSS	4	I	mg/L	P357332	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P357518	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.11		mg N/L	P357316	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P357223	
2053076	EPA 353.2 Rev. 2.0	NO2NO3-N	0.032		mg N/L	P357136	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P357227	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P357252	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P357092	
	dissolved						

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: 01/09/2019 10:45

Field ID: G4NW0421

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2053072	EPA 180.1 Rev. 2.0	Turbidity	8.2	A	NTU	P357109	
	EPA 300.0 Rev. 2.1	Chloride	3.9		mg Cl/L	P357205	
		Sulfate	1.4		mg SO4/L	P357207	
	SM 2120 B	Color (true)	48		PCU	P357096	
	SM 2320 B-97	Total Alkalinity	3.2		mg CaCO3/L	P357544	
	SM 2540 C-97	TDS	15	U	mg/L	P357354	
	SM 2540 D-97	TSS	7	I	mg/L	P357332	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P357518	
2053077	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P357316	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.24		mg N/L	P357223	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.42		mg N/L	P357136	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P357227	
	SM 5310 B-00	Organic Carbon	4.0		mg C/L	P357252	
2053082	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P357092	

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 CR 99

Collection Date/Time: 01/09/2019 11:40

Field ID: G4NW0420

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2053073	EPA 180.1 Rev. 2.0	Turbidity	3.5		NTU	P357109	
	EPA 300.0 Rev. 2.1	Chloride	6.2		mg Cl/L	P357205	
		Sulfate	0.70		mg SO4/L	P357207	
	SM 2120 B	Color (true)	39		PCU	P357096	
	SM 2320 B-97	Total Alkalinity	6.3		mg CaCO3/L	P357544	
	SM 2540 C-97	TDS	23	I	mg/L	P357420	
	SM 2540 D-97	TSS	2	I	mg/L	P357332	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P357518	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P357316	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27		mg N/L	P357433	
2053078	EPA 353.2 Rev. 2.0	NO2NO3-N	0.97		mg N/L	P357136	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P357227	
	SM 5310 B-00	Organic Carbon	2.0		mg C/L	P357252	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.005	I	mg P/L	P357092	
	dissolved						

Ref. Method and Comment:

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

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 CR 99

Collection Date/Time: 01/09/2019 11:45

Field ID: G4NW0420_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2053074	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P357109	
	EPA 300.0 Rev. 2.1	Chloride	6.4		mg Cl/L	P357205	
		Sulfate	0.69		mg SO4/L	P357207	
	SM 2120 B	Color (true)	38		PCU	P357096	
	SM 2320 B-97	Total Alkalinity	6.3		mg CaCO3/L	P357544	
	SM 2540 C-97	TDS	23	IA	mg/L	P357420	
	SM 2540 D-97	TSS	2	U	mg/L	P357332	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P357518	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P357316	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.24		mg N/L	P357433	
2053079	EPA 353.2 Rev. 2.0	NO2NO3-N	0.97		mg N/L	P357136	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P357227	
	SM 5310 B-00	Organic Carbon	2.0		mg C/L	P357252	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.005	I	mg P/L	P357092	
	dissolved						

Ref. Method and Comment:

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

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 CR 99

Collection Date/Time: 01/09/2019 12:00

Field ID: FB_01092019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2053086	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P357109	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P357205	
		Sulfate	0.20	U	mg SO4/L	P357207	
		Color (true)	2.5	U	PCU	P357096	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P357544	
	SM 2540 C-97	TDS	15	U	mg/L	P357420	
	SM 2540 D-97	TSS	2	U	mg/L	P357332	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P357518	
2053087	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P357316	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P357223	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P357138	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P357227	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P357252	
2053088	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P357092	

Ref. Method and Comment:

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

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: 01/09/2019 12:25

Field ID: G5NW0150

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2053075	EPA 180.1 Rev. 2.0	Turbidity	3.8		NTU	P357109	
	EPA 300.0 Rev. 2.1	Chloride	3.5		mg Cl/L	P357205	
		Sulfate	0.80		mg SO4/L	P357207	
		Color (true)	48		PCU	P357096	
	SM 2320 B-97	Total Alkalinity	1.7	I	mg CaCO3/L	P357544	
	SM 2540 C-97	TDS	15	U	mg/L	P357354	
	SM 2540 D-97	TSS	3	I	mg/L	P357332	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P357518	
2053080	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P357316	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.18	I	mg N/L	P357223	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.20		mg N/L	P357136	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P357227	
	SM 5310 B-00	Organic Carbon	4.2		mg C/L	P357252	
2053085	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P357092	

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: P357109

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357205

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357207

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357316

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357223

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357433

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357136

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357138

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: P357227

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357092

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

Reference Method: SM 2120 B
Batch ID: P357096

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P357544

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

Reference Method: SM 2540 C-97
Batch ID: P357354

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P357420

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P357332

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P357518

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P357252

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: P357205

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357207

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357316

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357223

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357433

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357136

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: P357138

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: P357227

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357092

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2120 B
Batch ID: P357096

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	103		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P357544

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P357518

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.8		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P357252

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357205

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2052879	Chloride	96.0		P	90 - 110
2053054	Chloride	99.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357207

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2052879	Sulfate	93.5		P	90 - 110
2053054	Sulfate	95.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357316

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2053077	Ammonia-N	92.1	95.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357223

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2053078	Kjeldahl Nitrogen	100	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357433

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2054450	Kjeldahl Nitrogen	99.4	98.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357136

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2053057	NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357138

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2053108	NO2NO3-N	104	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357227

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2053078	Total-P	97.1	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357092

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2053085	O-Phosphate-P	93.6	95.2	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P357518

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2053262	Fluoride	99.2	100	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P357252

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2053058	Organic Carbon	97.6	97.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P357109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053072	Turbidity	1.46	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357205

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2052879	Chloride	0.00262	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357207

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2052879	Sulfate	0.136	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357316

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053077	Ammonia-N	2.30	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357223

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053078	Kjeldahl Nitrogen	4.07	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357433

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054450	Kjeldahl Nitrogen	0.385	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357136

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053057	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357138

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053108	NO2NO3-N	1.45	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P357227

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053078	Total-P	0.369	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P357092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053085	O-Phosphate-P	1.62	Spike	P	0 - 20

Reference Method: SM 2120 B
 Batch ID: P357096

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053071	Color (true)	1.03	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P357544

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053262	Total Alkalinity	0.438	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
 Batch ID: P357354

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053105	TDS	0.0	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P357518

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053262	Fluoride	0.509	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P357252

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2053058	Organic Carbon	0.0434	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: A88745

Included Lab Sample IDs: 2053081, 2053082, 2053083, 2053084, 2053085, 2053088

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.4	95.4	P/P	90 - 110
O-Phosphate-P	97.3	96.4	P/P	90 - 110
O-Phosphate-P	99.8	97.3	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A88746

Included Lab Sample IDs: 2053071, 2053072, 2053073, 2053074, 2053075, 2053086

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A88752

Included Lab Sample IDs: 2053071, 2053072, 2053073, 2053074, 2053075, 2053086

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	100	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A88763

Included Lab Sample IDs: 2053076, 2053077, 2053078, 2053079, 2053080, 2053087

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	102	P/P	90 - 110
NO2NO3-N	102	103	P/P	90 - 110
NO2NO3-N	104	103	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A88788

Included Lab Sample IDs: 2053071, 2053072, 2053073, 2053074, 2053075, 2053086

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

Reference Method: SM 5310 B-00

Run ID: A88804

Included Lab Sample IDs: 2053076, 2053077, 2053078, 2053079, 2053080, 2053087

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A88829

Included Lab Sample IDs: 2053076, 2053077, 2053080, 2053087

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	96.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A88830

Included Lab Sample IDs: 2053076, 2053077, 2053078, 2053079, 2053080, 2053087

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A88845

Included Lab Sample IDs: 2053076, 2053077, 2053078, 2053079, 2053080, 2053087

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

Reference Method: SM 4500 F-C-97

Run ID: A88901

Included Lab Sample IDs: 2053071, 2053072, 2053073, 2053074, 2053075, 2053086

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A88905

Included Lab Sample IDs: 2053078, 2053079

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

Reference Method: SM 2320 B-97

Run ID: A88906

Included Lab Sample IDs: 2053071, 2053072, 2053073, 2053074, 2053075, 2053086

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.5	101	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				1.46	
EPA 300.0 Rev. 2.1	Chloride	98.4	96.0	99.4	0.0026	
	Sulfate	96.8	93.5	95.4	0.136	
EPA 350.1 Rev. 2.0	Ammonia-N	101	92.1	95.2		2.30
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.0	100	106		4.07
	Kjeldahl Nitrogen	102	99.4	98.9		0.385
EPA 353.2 Rev. 2.0	NO2NO3-N	102	103	103		0.0
	NO2NO3-N	102	104	102		1.45
EPA 365.1 Rev. 2.0	Total-P	98.6	97.1	97.5		0.369
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.0	93.6	95.2		1.62
SM 2120 B	Color (true)	103			1.03	
SM 2320 B-97	Total Alkalinity	101			0.438	
SM 2540 C-97	TDS				0.0	
SM 4500 F-C-97	Fluoride	98.8	99.2	100		0.509
SM 5310 B-00	Organic Carbon	98.6	97.6	97.6		0.0434

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2053071, 2053072, 2053073, 2053074, 2053075, 2053086
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2053071, 2053072, 2053073, 2053074, 2053075, 2053086
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2053071, 2053072, 2053073, 2053074, 2053075, 2053086
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2053076, 2053077, 2053078, 2053079, 2053080, 2053087
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2053076, 2053077, 2053078, 2053079, 2053080, 2053087
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2053076, 2053077, 2053078, 2053079, 2053080, 2053087
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2053076, 2053077, 2053078, 2053079, 2053080, 2053087
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2053081, 2053082, 2053083, 2053084, 2053085, 2053088
SM 2120 B / E31780	True Color measured at 450 nm	2053071, 2053072, 2053073, 2053074, 2053075, 2053086
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2053071, 2053072, 2053073, 2053074, 2053075, 2053086
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2053071, 2053072, 2053073, 2053074, 2053075, 2053086
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2053071, 2053072, 2053073, 2053074, 2053075, 2053086
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2053071, 2053072, 2053073, 2053074, 2053075, 2053086
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2053076, 2053077, 2053078, 2053079, 2053080, 2053087

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	01/10/2019			01/10/2019 15:52	Megan Treadwell	2053071, 2053072, 2053073, 2053074, 2053075, 2053086
EPA 300.0 Rev. 2.1	01/10/2019			01/12/2019 00:32	Lipi Saha	2053071
	01/10/2019			01/12/2019 00:44	Lipi Saha	2053072
	01/10/2019			01/12/2019 00:56	Lipi Saha	2053073
	01/10/2019			01/12/2019 01:08	Lipi Saha	2053074
	01/10/2019			01/12/2019 01:20	Lipi Saha	2053075
EPA 350.1 Rev. 2.0	01/10/2019			01/12/2019 01:56	Lipi Saha	2053086
	01/10/2019			01/15/2019 11:37	Ping Hua	2053077
	01/10/2019			01/15/2019 11:44	Ping Hua	2053078
	01/10/2019			01/15/2019 11:46	Ping Hua	2053079
	01/10/2019			01/15/2019 11:47	Ping Hua	2053080
EPA 351.2 Rev. 2.0	01/10/2019			01/15/2019 11:59	Ping Hua	2053087
	01/10/2019			01/15/2019 13:40	Ping Hua	2053076
	01/10/2019	01/14/2019 11:25	Adrian Shelby	01/15/2019 15:21	Joseph Suarez	2053076
	01/10/2019	01/14/2019 11:25	Adrian Shelby	01/15/2019 15:22	Joseph Suarez	2053077
	01/10/2019	01/14/2019 11:25	Adrian Shelby	01/15/2019 15:30	Joseph Suarez	2053080
EPA 353.2 Rev. 2.0	01/10/2019	01/14/2019 11:25	Adrian Shelby	01/15/2019 15:32	Joseph Suarez	2053087
	01/10/2019	01/17/2019 11:30	Adrian Shelby	01/18/2019 10:19	Joseph Suarez	2053078
	01/10/2019	01/17/2019 11:30	Adrian Shelby	01/18/2019 10:22	Joseph Suarez	2053079
	01/10/2019			01/11/2019 10:50	Beverly Y. Sanders	2053076
	01/10/2019			01/11/2019 10:51	Beverly Y. Sanders	2053077
EPA 365.1 Rev. 2.0	01/10/2019			01/11/2019 11:08	Beverly Y. Sanders	2053087
	01/10/2019			01/11/2019 12:05	Beverly Y. Sanders	2053078
	01/10/2019			01/11/2019 12:06	Beverly Y. Sanders	2053079
	01/10/2019			01/11/2019 12:07	Beverly Y. Sanders	2053080
	01/10/2019	01/14/2019 12:30	Sima Feizi	01/15/2019 18:45	Rosalyn Ballman	2053076
EPA 365.1 Rev. 2.0 dissolved	01/10/2019	01/14/2019 12:30	Sima Feizi	01/15/2019 18:46	Rosalyn Ballman	2053077
	01/10/2019	01/14/2019 12:30	Sima Feizi	01/15/2019 18:47	Rosalyn Ballman	2053079
	01/10/2019	01/14/2019 12:30	Sima Feizi	01/15/2019 18:48	Rosalyn Ballman	2053080
	01/10/2019	01/14/2019 12:30	Sima Feizi	01/15/2019 18:49	Rosalyn Ballman	2053087
	01/10/2019	01/14/2019 12:30	Sima Feizi	01/15/2019 19:16	Rosalyn Ballman	2053078
SM 2120 B	01/10/2019			01/10/2019 15:05	Jhamieka S. Greenwood	2053085
	01/10/2019			01/10/2019 15:20	Jhamieka S. Greenwood	2053088
	01/10/2019			01/10/2019 15:31	Jhamieka S. Greenwood	2053083
	01/10/2019			01/10/2019 15:32	Jhamieka S. Greenwood	2053084
	01/10/2019			01/10/2019 15:36	Jhamieka S. Greenwood	2053081
	01/10/2019			01/10/2019 15:37	Jhamieka S. Greenwood	2053082
	01/10/2019			01/10/2019 14:33	Chelsea Hernandez	2053071, 2053072
	01/10/2019			01/10/2019 14:34	Chelsea Hernandez	2053073

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2120 B	01/10/2019			01/10/2019 14:35	Chelsea Hernandez	2053074
	01/10/2019			01/10/2019 14:36	Chelsea Hernandez	2053075, 2053086
SM 2320 B-97	01/10/2019			01/18/2019 06:32	Dale L. Simmons	2053071
	01/10/2019			01/18/2019 06:42	Dale L. Simmons	2053072
	01/10/2019			01/18/2019 06:50	Dale L. Simmons	2053073
	01/10/2019			01/18/2019 06:58	Dale L. Simmons	2053074
	01/10/2019			01/18/2019 07:06	Dale L. Simmons	2053075
	01/10/2019			01/18/2019 07:13	Dale L. Simmons	2053086
	01/10/2019			01/11/2019 14:55	Mariam Hanna	2053071, 2053072, 2053075
SM 2540 C-97	01/10/2019			01/15/2019 16:10	Mariam Hanna	2053073, 2053074, 2053086
SM 2540 D-97	01/10/2019			01/11/2019 14:55	Mariam Hanna	2053071, 2053072, 2053073, 2053074, 2053075, 2053086
SM 4500 F-C-97	01/10/2019			01/17/2019 10:12	Dale L. Simmons	2053071
	01/10/2019			01/17/2019 10:24	Dale L. Simmons	2053072
	01/10/2019			01/17/2019 10:36	Dale L. Simmons	2053073
	01/10/2019			01/17/2019 10:47	Dale L. Simmons	2053074
	01/10/2019			01/17/2019 10:59	Dale L. Simmons	2053075
	01/10/2019			01/17/2019 11:12	Dale L. Simmons	2053086
SM 5310 B-00	01/10/2019			01/14/2019 15:52	Megan Treadwell	2053076
	01/10/2019			01/14/2019 16:19	Megan Treadwell	2053077
	01/10/2019			01/14/2019 16:31	Megan Treadwell	2053078
	01/10/2019			01/14/2019 17:08	Megan Treadwell	2053079
	01/10/2019			01/14/2019 17:20	Megan Treadwell	2053080
	01/10/2019			01/14/2019 17:32	Megan Treadwell	2053087