

Chemical Analysis Report

SW-DIST-2016-06-17-01

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

Event Description: **1329W, 1329L**
Request ID: **RQ-2016-06-13-32**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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13051 N. Telecom Parkway
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Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 12-JUL-2016 15:06

A handwritten signature in black ink, appearing to read "Timothy Fitzpatrick", with a stylized flourish at the end.

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: DOWLING LAKE N 1

Collection Date/Time: 06/16/2016 11:05

Field ID: G4SW0083

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1809377	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P306481	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P307109	
		Sulfate	4.2		mg SO4/L	P307110	
	SM 2120 B	Color (true)	47		PCU	P306732	
	SM 2320 B-97	Total Alkalinity	17		mg CaCO3/L	P306822	
	SM 2540 C-97	TDS	106		mg/L	P307011	
	SM 2540 D-97	TSS	3	I	mg/L	P306989	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P306902	
1809382	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P306893	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.76		mg N/L	P306501	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P306728	
	EPA 365.1 Rev. 2.0	Total-P	0.043		mg P/L	P306650	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P306809	
1809387	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P306408	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: DOWLING LAKE 2

Collection Date/Time: 06/16/2016 11:15

Field ID: G4SW0084

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1809378	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P306481	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P307109	
		Sulfate	4.2		mg SO4/L	P307110	
	SM 2120 B	Color (true)	47		PCU	P306732	
	SM 2320 B-97	Total Alkalinity	17		mg CaCO3/L	P306822	
	SM 2540 C-97	TDS	73		mg/L	P307011	
	SM 2540 D-97	TSS	2	I	mg/L	P306989	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P306902	
1809383	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P306893	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.76		mg N/L	P306501	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P306728	
	EPA 365.1 Rev. 2.0	Total-P	0.039		mg P/L	P306650	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P306809	
1809388	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P306410	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: DOWLING LAKE 3

Collection Date/Time: 06/16/2016 11:30

Field ID: G4SW0086

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1809379	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P306481	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P307109	
		Sulfate	4.1		mg SO4/L	P307110	

Field ID: G4SW0086

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1809379	SM 2120 B	Color (true)	47		PCU	P306732	
	SM 2320 B-97	Total Alkalinity	17	A	mg CaCO3/L	P306823	
	SM 2540 C-97	TDS	68		mg/L	P307011	
	SM 2540 D-97	TSS	3	I	mg/L	P306989	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P307272	MS
1809384	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P306893	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.77		mg N/L	P306501	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P306728	
	EPA 365.1 Rev. 2.0	Total-P	0.039		mg P/L	P306650	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P306809	
1809389	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P306410	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: DOWLING LAKE S 4

Collection Date/Time: 06/16/2016 11:40

Field ID: G4SW0085

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1809380	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P306481	
	EPA 300.0 Rev. 2.1	Chloride	15	A	mg Cl/L	P307114	
		Sulfate	4.2	A	mg SO4/L	P307112	
	SM 2120 B	Color (true)	47		PCU	P306732	
	SM 2320 B-97	Total Alkalinity	17		mg CaCO3/L	P306823	
	SM 2540 C-97	TDS	70		mg/L	P307011	
	SM 2540 D-97	TSS	2	U	mg/L	P306989	
1809385	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P307272	MS
	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P306893	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.84		mg N/L	P306501	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P306728	
	EPA 365.1 Rev. 2.0	Total-P	0.041		mg P/L	P306650	
1809390	SM 5310 B-00	Organic Carbon	11		mg C/L	P306809	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P306410	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: WITHLACOOCHIEE RIVER @ 33

Collection Date/Time: 06/16/2016 09:40

Field ID: G4SW0099

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1809381	EPA 180.1 Rev. 2.0	Turbidity	3.2	A	NTU	P306482	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P307114	
		Sulfate	0.20	U	mg SO4/L	P307112	
	SM 2120 B	Color (true)	650		PCU	P306732	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P306823	
	SM 2540 C-97	TDS	96		mg/L	P307011	
	SM 2540 D-97	TSS	7	I	mg/L	P306989	

Field ID: G4SW0099

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1809381	SM 4500 F-C-97	Fluoride	0.072	I	mg F/L	P307272	MS
1809386	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P306894	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P306501	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P306728	
	EPA 365.1 Rev. 2.0	Total-P	0.077		mg P/L	P306650	
	SM 5310 B-00	Organic Carbon	58		mg C/L	P306809	
1809391	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.053		mg P/L	P306410	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P306481

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P306482

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P307109

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P307110

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P307112

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P307114

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P306893

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306894

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306501

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306728

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306650

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306408

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306410

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

Reference Method: SM 2120 B
Batch ID: P306732

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P306822

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

Reference Method: SM 2320 B-97
Batch ID: P306823

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P307011

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P306989

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P306902

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P307272

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P306809

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: P307109

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307110

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307112

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307114

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307114

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306893

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306894

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306501

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306728

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306650

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306408

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306410

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

Reference Method: SM 2320 B-97
Batch ID: P306822

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P306823

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P306902

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

Reference Method: SM 4500 F-C-97
Batch ID: P307272

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.7		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P306809

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.1		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307109

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809378	Chloride	96.6	97.6	P/P	90 - 110
1809379	Chloride	98.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307110

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809378	Sulfate	98.2	98.4	P/P	90 - 110
1809379	Sulfate	99.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307112

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809380	Sulfate	101		P	90 - 110
1809401	Sulfate	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307114

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809380	Chloride	102		P	90 - 110
1809401	Chloride	102		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306893

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809382	Ammonia-N	95.8	96.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306894

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809402	Ammonia-N	96.3	95.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306501

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809363	Kjeldahl Nitrogen	102	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306728

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809366	NO2NO3-N	98.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306650

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809347	Total-P	99.1	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306408

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809300	O-Phosphate-P	98.7	99.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306410

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809388	O-Phosphate-P	99.0	97.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P306902

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809001	Fluoride	102	103	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P307272

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809401	Fluoride	105	106	F/F	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P306809

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1809296	Organic Carbon	100	99.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P306481

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809289	Turbidity	1.41	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P306482

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809381	Turbidity	1.24	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809378	Chloride	0.660	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307110

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809378	Sulfate	0.149	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307112

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809380	Sulfate	1.33	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307114

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809380	Chloride	0.0617	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306893

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809382	Ammonia-N	0.632	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306894

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809402	Ammonia-N	0.912	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306501

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809363	Kjeldahl Nitrogen	2.36	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306728

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809366	NO2NO3-N	0.447	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809347	Total-P	1.12	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306408

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809300	O-Phosphate-P	0.761	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306410

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809388	O-Phosphate-P	1.12	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P306732

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809400	Color (true)	1.37	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P306822

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809001	Total Alkalinity	0.130	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P306823

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809379	Total Alkalinity	0.217	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P307011

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809362	TDS	3.67	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P306902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809001	Fluoride	0.473	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P307272

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809401	Fluoride	0.484	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P306809

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1809296	Organic Carbon	0.345	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: A70107
Included Lab Sample IDs: 1809387, 1809388, 1809389, 1809390, 1809391

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	99.2	P/P	90 - 110
O-Phosphate-P	99.8	99.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A70125

Included Lab Sample IDs: 1809377, 1809378, 1809379, 1809380, 1809381

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	100	P/P	95 - 105
Turbidity	101	101	P/P	95 - 105

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A70175

Included Lab Sample IDs: 1809382, 1809383, 1809384, 1809385, 1809386

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	107	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A70181

Included Lab Sample IDs: 1809386

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.6	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A70185

Included Lab Sample IDs: 1809382, 1809383, 1809384, 1809385, 1809386

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

Reference Method: SM 2120 B

Run ID: A70187

Included Lab Sample IDs: 1809377, 1809378, 1809379, 1809380, 1809381

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.2	98.1	P/P	90 - 115
Color (true)	99.4	99.8	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A70200

Included Lab Sample IDs: 1809382, 1809383, 1809384, 1809385

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	99.2	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A70211

Included Lab Sample IDs: 1809382, 1809383, 1809384, 1809385, 1809386

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	105	106	P/P	90 - 110
Organic Carbon	106	105	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A70215

Included Lab Sample IDs: 1809377, 1809378, 1809379, 1809380, 1809381

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	105	P/P	90 - 110
Total Alkalinity	105	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A70215

Included Lab Sample IDs: 1809377, 1809378

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A70237

Included Lab Sample IDs: 1809382, 1809383, 1809384, 1809385, 1809386

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.5	96.9	P/P	90 - 110
Ammonia-N	96.6	96.5	P/P	90 - 110
Ammonia-N	96.9	96.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A70313

Included Lab Sample IDs: 1809377, 1809378, 1809379, 1809380, 1809381

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	100	P/P	90 - 110
Chloride	99.5	101	P/P	90 - 110
Chloride	99.6	100	P/P	90 - 110
Sulfate	101	96.3	P/P	90 - 110
Sulfate	96.3	101	P/P	90 - 110
Sulfate	99.0	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A70370

Included Lab Sample IDs: 1809379, 1809380, 1809381

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	99.5	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					1.41	
	Turbidity					1.24	
EPA 300.0 Rev. 2.1	Chloride	97.7	96.6	97.6	98.4		0.660

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 300.0 Rev. 2.1	Chloride	103	102	102		0.0617	
	Sulfate	98.0	98.2	98.4	99.6		0.149
	Sulfate	102	101	101		1.33	
EPA 350.1 Rev. 2.0	Ammonia-N	95.4	95.8	96.4			0.632
	Ammonia-N	95.5	96.3	95.3			0.912
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.0	102	106			2.36
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	98.0				0.447
EPA 365.1 Rev. 2.0	Total-P	101	99.1	101			1.12
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.4	98.7	99.6			0.761
	O-Phosphate-P	102	99.0	97.9			1.12
SM 2120 B	Color (true)					1.37	
SM 2320 B-97	Total Alkalinity	102				0.130	
	Total Alkalinity	103				0.217	
SM 2540 C-97	TDS					3.67	
SM 4500 F-C-97	Fluoride	103	102	103			0.473
	Fluoride	97.7	105	106			0.484
SM 5310 B-00	Organic Carbon	99.1	100	99.9			0.345

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1809377, 1809378, 1809379, 1809380, 1809381
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1809377, 1809378, 1809379, 1809380, 1809381
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1809377, 1809378, 1809379, 1809380, 1809381
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1809382, 1809383, 1809384, 1809385, 1809386
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1809382, 1809383, 1809384, 1809385, 1809386
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1809382, 1809383, 1809384, 1809385, 1809386
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1809382, 1809383, 1809384, 1809385, 1809386
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1809387, 1809388, 1809389, 1809390, 1809391
SM 2120 B / E31780	True Color measured at 450 nm	1809377, 1809378, 1809379, 1809380, 1809381
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1809377, 1809378, 1809379, 1809380, 1809381
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1809377, 1809378, 1809379, 1809380, 1809381
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1809377, 1809378, 1809379, 1809380, 1809381
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1809377, 1809378, 1809379, 1809380, 1809381
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1809382, 1809383, 1809384, 1809385, 1809386

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	06/17/2016			06/17/2016 15:32	Blanca Fach	1809377, 1809378, 1809379, 1809380, 1809381
EPA 300.0 Rev. 2.1	06/17/2016			06/28/2016	Ping Hua	1809377, 1809378, 1809379, 1809380, 1809381
EPA 350.1 Rev. 2.0	06/17/2016			06/24/2016	Diana M. Turner	1809382, 1809383, 1809384, 1809385, 1809386
EPA 351.2 Rev. 2.0	06/17/2016	06/21/2016	Sofia Elnemr	06/23/2016	Christopher Armour	1809382, 1809383, 1809384, 1809385, 1809386
EPA 353.2 Rev. 2.0	06/17/2016			06/23/2016	Beverly Y. Sanders	1809382, 1809383, 1809384, 1809385, 1809386
EPA 365.1 Rev. 2.0	06/17/2016	06/22/2016	Vijayalakshmi Reddy	06/23/2016	Lipi Saha	1809382, 1809383, 1809384, 1809385, 1809386
EPA 365.1 Rev. 2.0 dissolved	06/17/2016			06/17/2016 14:32	Virginia P. Brown	1809388
	06/17/2016			06/17/2016 14:54	Virginia P. Brown	1809387
	06/17/2016			06/17/2016 14:55	Virginia P. Brown	1809389
	06/17/2016			06/17/2016 14:56	Virginia P. Brown	1809390, 1809391
SM 2120 B	06/17/2016			06/17/2016 17:09	Chrisoulla Rakowski	1809377
	06/17/2016			06/17/2016 17:10	Chrisoulla Rakowski	1809378
	06/17/2016			06/17/2016 17:11	Chrisoulla Rakowski	1809379, 1809380
	06/17/2016			06/17/2016 17:50	Chrisoulla Rakowski	1809381
SM 2320 B-97	06/17/2016			06/23/2016	Rochelle Y Jackson	1809377, 1809378, 1809379, 1809380, 1809381
SM 2540 C-97	06/17/2016			06/22/2016	Yijie Li	1809377, 1809378, 1809379, 1809380, 1809381
SM 2540 D-97	06/17/2016			06/22/2016	Yijie Li	1809377, 1809378, 1809379, 1809380, 1809381
SM 4500 F-C-97	06/17/2016			06/23/2016	Rochelle Y Jackson	1809377, 1809378
	06/17/2016			07/01/2016	Dale L. Simmons	1809379, 1809380, 1809381
SM 5310 B-00	06/17/2016			06/24/2016	Diana M. Turner	1809382, 1809383, 1809384, 1809385, 1809386