Chemical Analysis Report

NW-DIST-2016-07-19-03

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

Event Description: **WBID 742 49A 789 722**
Request ID: **RQ-2016-07-18-16**
Customer: **NW-DIST**
Project ID: **SMP**

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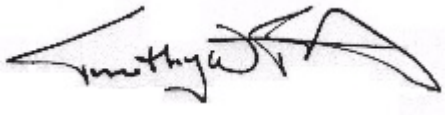
Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 09-AUG-2016 11:03



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: Basin Bayou @ Inlet **Collection Date/Time: 07/18/2016 11:40**

Field ID: G3NW0101 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1816979	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P308229	
	EPA 300.0 Rev. 2.1	Chloride	510		mg Cl/L	P309110	
		Sulfate	71		mg SO4/L	P309113	
	SM 2120 B	Color (true)	38	A	PCU	P308222	
	SM 2320 B-97	Total Alkalinity	5.6		mg CaCO3/L	P308751	
	SM 2540 C-97	TDS	909		mg/L	P308643	
	SM 2540 D-97	TSS	2	I	mg/L	P308619	
	SM 4500 F-C-97	Fluoride	0.051	I	mg F/L	P308755	
1816982	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P308437	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25		mg N/L	P308340	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P308818	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P308268	
	SM 5310 B-00	Organic Carbon	3.8		mg C/L	P308646	
1816985	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P308218	

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: Basin Bayou North End **Collection Date/Time: 07/18/2016 12:00**

Field ID: G3NW0102 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1816980	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P308229	
	EPA 300.0 Rev. 2.1	Chloride	270		mg Cl/L	P309110	
		Sulfate	36		mg SO4/L	P309113	
	SM 2120 B	Color (true)	44		PCU	P308222	
	SM 2320 B-97	Total Alkalinity	2.9		mg CaCO3/L	P308751	
	SM 2540 C-97	TDS	478	A	mg/L	P308644	
	SM 2540 D-97	TSS	3	I	mg/L	P308620	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P308755	
1816983	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P308437	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20		mg N/L	P308340	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P308818	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P308268	
	SM 5310 B-00	Organic Carbon	4.1		mg C/L	P308646	
1816986	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P308218	

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: La Grange Bayou, ,Middle **Collection Date/Time: 07/18/2016 12:45**

Field ID: G3NW0036 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1816981	EPA 180.1 Rev. 2.0	Turbidity	4.0		NTU	P308229	
	EPA 300.0 Rev. 2.1	Chloride	4.0E+03		mg Cl/L	P309110	
		Sulfate	560		mg SO4/L	P309113	

Field ID: G3NW0036 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1816981	SM 2120 B	Color (true)	23		PCU	P308222	
	SM 2320 B-97	Total Alkalinity	37		mg CaCO3/L	P308527	
	SM 2540 C-97	TDS	6.55E+03		mg/L	P308644	
	SM 2540 D-97	TSS	9	I	mg/L	P308620	
	SM 4500 F-C-97	Fluoride	0.27		mg F/L	P308530	
1816984	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P308431	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P308337	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.01	I	mg N/L	P308726	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P308262	
	SM 5310 B-00	Organic Carbon	3.9		mg C/L	P308646	
1816987	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P308219	

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Choctawhatchee River abv Smokehouse Lake Collection Date/Time: 07/18/2016 14:00

Field ID: G3NW0073 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1816988	EPA 180.1 Rev. 2.0	Turbidity	10		NTU	P308230	
	SM 2320 B-97	Total Alkalinity	43		mg CaCO3/L	P308751	
	SM 2540 D-97	TSS	10	I	mg/L	P308620	
	SM 4500 F-C-97	Fluoride	0.049	I	mg F/L	P308755	
1816989	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P308437	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27		mg N/L	P308340	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.41		mg N/L	P308818	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P308268	
	SM 5310 B-00	Organic Carbon	3.3		mg C/L	P308646	
1816990	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P308218	

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: P308229

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P308230

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report
Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309110

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309113

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308431

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308437

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308337

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308340

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308726

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308818

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308262

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
Batch ID: P308268

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308218

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308219

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

Reference Method: SM 2120 B
Batch ID: P308222

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P308527

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

Reference Method: SM 2320 B-97
Batch ID: P308751

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

Reference Method: SM 2540 C-97
Batch ID: P308643

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P308644

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P308619

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P308620

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P308530

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P308755

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P308646

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: P309110

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309113

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	95.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308431

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308437

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308337

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308337

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308340

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308726

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308818

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308262

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308268

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308218

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308219

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

Reference Method: SM 2320 B-97
Batch ID: P308527

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P308751

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

Reference Method: SM 4500 F-C-97
Batch ID: P308530

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.8		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P308755

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.3		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P308646

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309110

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816759	Chloride	98.5		P	90 - 110
1816762	Chloride	99.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309113

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816759	Sulfate	95.7		P	90 - 110
1816762	Sulfate	96.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308437

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1817123	Ammonia-N	93.6	94.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308337

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1817114	Kjeldahl Nitrogen	93.7	88.9	P/F	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308340

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816969	Kjeldahl Nitrogen	106	110	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308726

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816000	NO2NO3-N	107	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308818

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816982	NO2NO3-N	101	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308262

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816843	Total-P	99.5	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308268

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816971	Total-P	94.0	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308218

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816990	O-Phosphate-P	98.2	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308219

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816987	O-Phosphate-P	98.8	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P308530

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1817437	Fluoride	97.5	98.7	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P308755

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816782	Fluoride	98.3	99.4	P/P	91 - 105

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P308646

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816989	Organic Carbon	99.1	101	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P308229

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816944	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P308230

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816838	Turbidity	0.388	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309110

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816759	Chloride	0.677	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309113

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816759	Sulfate	0.328	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308431

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816843	Ammonia-N	0.733	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308437

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1817123	Ammonia-N	1.28	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308337

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1817114	Kjeldahl Nitrogen	4.46	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308340

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816969	Kjeldahl Nitrogen	3.33	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308726

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816000	NO2NO3-N	0.957	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308818

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816982	NO2NO3-N	1.50	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308262

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816843	Total-P	0.888	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308268

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816971	Total-P	4.59	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308218

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816990	O-Phosphate-P	0.895	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308219

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816987	O-Phosphate-P	1.21	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P308222

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816979	Color (true)	0.935	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P308527

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1817437	Total Alkalinity	0.243	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P308751

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816782	Total Alkalinity	0.368	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P308643

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816782	TDS	6.80	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P308644

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816980	TDS	6.91	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P308530

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1817437	Fluoride	0.947	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P308755

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816782	Fluoride	0.952	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P308646

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816989	Organic Carbon	1.29	Spike	P	0 - 20

Quality Assurance Report
Precision

* 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: A70627
Included Lab Sample IDs: 1816985, 1816986, 1816987, 1816990

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	99.3	P/P	90 - 110
O-Phosphate-P	99.5	99.8	P/P	90 - 110
O-Phosphate-P	99.8	99.1	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A70631
Included Lab Sample IDs: 1816979, 1816980, 1816981

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	92.5	95.5	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A70633
Included Lab Sample IDs: 1816979, 1816980, 1816981, 1816988

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.0	P/P	95 - 105
Turbidity	99.0	99.5	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A70676
Included Lab Sample IDs: 1816982, 1816983, 1816984, 1816989

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.2	98.2	P/P	90 - 110
Total-P	98.2	97.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A70695
Included Lab Sample IDs: 1816982, 1816983, 1816984, 1816989

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.6	P/P	90 - 110
Ammonia-N	96.0	96.4	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A70728
Included Lab Sample IDs: 1816981

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A70728
Included Lab Sample IDs: 1816981

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A70734
Included Lab Sample IDs: 1816982, 1816983, 1816984, 1816989

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	105	P/P	90 - 110
Kjeldahl Nitrogen	108	102	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A70768
Included Lab Sample IDs: 1816982, 1816983, 1816984, 1816989

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A70792
Included Lab Sample IDs: 1816984

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

Reference Method: SM 2320 B-97
Run ID: A70797
Included Lab Sample IDs: 1816979, 1816980, 1816988

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110
Total Alkalinity	103	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A70797
Included Lab Sample IDs: 1816979, 1816980, 1816988

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A70814
Included Lab Sample IDs: 1816982, 1816983, 1816989

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110
NO2NO3-N	102	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A70885
Included Lab Sample IDs: 1816979, 1816980, 1816981

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	98.9	P/P	90 - 110
Chloride	101	100	P/P	90 - 110
Sulfate	98.5	98.0	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	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					0.0	
	Turbidity					0.388	
EPA 300.0 Rev. 2.1	Chloride	98.5	98.5	99.2		0.677	
	Sulfate	95.2	95.7	96.1		0.328	
EPA 350.1 Rev. 2.0	Ammonia-N	100					0.733
	Ammonia-N	95.3	93.6	94.9			1.28
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	93.7	88.9			4.46
	Kjeldahl Nitrogen	100	106	110			3.33
EPA 353.2 Rev. 2.0	NO2NO3-N	106	107	108			0.957
	NO2NO3-N	103	101	99.5			1.50
EPA 365.1 Rev. 2.0	Total-P	97.0	99.5	98.6			0.888
	Total-P	95.4	94.0	99.4			4.59
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	98.2	99.2			0.895
	O-Phosphate-P	99.2	98.8	100			1.21
SM 2120 B	Color (true)					0.935	
SM 2320 B-97	Total Alkalinity	103				0.243	
	Total Alkalinity	103				0.368	
SM 2540 C-97	TDS					6.80	
	TDS					6.91	
SM 4500 F-C-97	Fluoride	99.8	97.5	98.7			0.947
	Fluoride	99.3	98.3	99.4			0.952
SM 5310 B-00	Organic Carbon	100	99.1	101			1.29

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1816979, 1816980, 1816981, 1816988
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1816979, 1816980, 1816981
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1816979, 1816980, 1816981
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1816982, 1816983, 1816984, 1816989
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1816982, 1816983, 1816984, 1816989
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1816982, 1816983, 1816984, 1816989

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1816982, 1816983, 1816984, 1816989
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1816985, 1816986, 1816987, 1816990
SM 2120 B / E31780	True Color measured at 450 nm	1816979, 1816980, 1816981
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1816979, 1816980, 1816981, 1816988
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1816979, 1816980, 1816981
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1816979, 1816980, 1816981, 1816988
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1816979, 1816980, 1816981, 1816988
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1816982, 1816983, 1816984, 1816989

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	07/19/2016			07/19/2016 15:19	Rochelle Y Jackson	1816979, 1816980, 1816981, 1816988
EPA 300.0 Rev. 2.1	07/19/2016			08/03/2016	Ping Hua	1816979, 1816980, 1816981
EPA 350.1 Rev. 2.0	07/19/2016			07/21/2016	Diana M. Turner	1816982, 1816983, 1816984, 1816989
EPA 351.2 Rev. 2.0	07/19/2016	07/21/2016	Sofia Elnemr	07/22/2016	Christopher Armour	1816982, 1816983, 1816984, 1816989
EPA 353.2 Rev. 2.0	07/19/2016			07/27/2016	Peter D. Kaus	1816984
	07/19/2016			07/28/2016	Peter D. Kaus	1816982, 1816983, 1816989
EPA 365.1 Rev. 2.0	07/19/2016	07/20/2016	Vijayalakshmi Reddy	07/21/2016	Lipi Saha	1816982, 1816983, 1816984, 1816989
EPA 365.1 Rev. 2.0 dissolved	07/19/2016			07/19/2016 14:28	Julia Storbeck	1816990
	07/19/2016			07/19/2016 14:36	Julia Storbeck	1816987
	07/19/2016			07/19/2016 14:52	Julia Storbeck	1816985
	07/19/2016			07/19/2016 14:53	Julia Storbeck	1816986
SM 2120 B	07/19/2016			07/19/2016 16:24	Rochelle Y Jackson	1816979
	07/19/2016			07/19/2016 16:25	Rochelle Y Jackson	1816980
	07/19/2016			07/19/2016 16:26	Rochelle Y Jackson	1816981
SM 2320 B-97	07/19/2016			07/23/2016	Dale L. Simmons	1816981
	07/19/2016			07/27/2016	Dale L. Simmons	1816979, 1816980, 1816988
SM 2540 C-97	07/19/2016			07/21/2016	Yijie Li	1816979, 1816980, 1816981
SM 2540 D-97	07/19/2016			07/21/2016	Yijie Li	1816979, 1816980, 1816981, 1816988
SM 4500 F-C-97	07/19/2016			07/23/2016	Dale L. Simmons	1816981
	07/19/2016			07/27/2016	Dale L. Simmons	1816979, 1816980, 1816988
SM 5310 B-00	07/19/2016			07/26/2016	Sofia Elnemr	1816982, 1816983, 1816984, 1816989