Chemical Analysis Report

NW-DIST-2016-10-27-02

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

Event Description: **WBID 959H 881 959G 959B**
Request ID: **RQ-2016-10-24-20**
Customer: **NW-DIST**
Project ID: **SMP**

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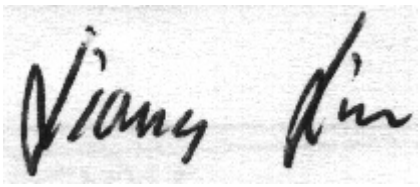
Certified by: Liang Lin, Environmental Administrator

Date Certified: 23-NOV-2016 13:17



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: Fuller Lake Middle **Collection Date/Time: 10/26/2016 11:15**

Field ID: G3NW0084 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1845289	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P314067	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P314989	
		Sulfate	4.5		mg SO4/L	P314992	
	SM 2120 B	Color (true)	200		PCU	P314100	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P314254	
	SM 2540 C-97	TDS	66		mg/L	P314713	
	SM 2540 D-97	TSS	2	I	mg/L	P314674	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P314256	
1845292	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P314907	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.55		mg N/L	P315172	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P314342	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P314883	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P314167	
1845295	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P314069	

Ref. Method and Comment:
SM 2120 B: 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: Stallworth Lake Center **Collection Date/Time: 10/26/2016 12:00**

Field ID: G3NW0083 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1845298	EPA 180.1 Rev. 2.0	Turbidity	0.70		NTU	P314068	
	SM 2320 B-97	Total Alkalinity	15		mg CaCO3/L	P314175	
	SM 2540 D-97	TSS	3	I	mg/L	P314677	
	SM 4500 F-C-97	Fluoride	0.088	I	mg F/L	P314256	
1845299	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P314907	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39	I	mg N/L	P315255	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P314522	
	EPA 365.1 Rev. 2.0	Total-P	0.007		mg P/L	P315084	
	SM 5310 B-00	Organic Carbon	6.6		mg C/L	P314247	
1845300	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P314070	

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: Allen Lake Middle **Collection Date/Time: 10/26/2016 12:20**

Field ID: G3NW0085 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1845290	EPA 180.1 Rev. 2.0	Turbidity	1.8	A	NTU	P314068	
	EPA 300.0 Rev. 2.1	Chloride	16	A	mg Cl/L	P314989	
		Sulfate	3.3	A	mg SO4/L	P314992	
	SM 2120 B	Color (true)	210		PCU	P314100	
	SM 2320 B-97	Total Alkalinity	0.87	I	mg CaCO3/L	P314254	
	SM 2540 C-97	TDS	64		mg/L	P314713	

Field ID: G3NW0085 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1845290	SM 2540 D-97	TSS	3	I	mg/L	P314674	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P314256	
1845293	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P314907	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P315172	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P314342	
	EPA 365.1 Rev. 2.0	Total-P	0.01		mg P/L	P314883	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P314167	
1845296	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P314070	

Ref. Method and Comment:
SM 2120 B: 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: Allen Lake Middle **Collection Date/Time: 10/26/2016 12:20**

Field ID: G3NW0085DUPLICATE Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1845291	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P314068	
	EPA 300.0 Rev. 2.1	Chloride	16		mg Cl/L	P314989	
		Sulfate	3.3		mg SO4/L	P314992	
	SM 2120 B	Color (true)	220		PCU	P314100	
	SM 2320 B-97	Total Alkalinity	0.85	I	mg CaCO3/L	P314254	
	SM 2540 C-97	TDS	60		mg/L	P314713	
	SM 2540 D-97	TSS	2	I	mg/L	P314674	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P314256	
1845294	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P314907	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56		mg N/L	P315203	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P314342	
	EPA 365.1 Rev. 2.0	Total-P	0.01		mg P/L	P314883	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P314167	
1845297	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P314070	

Ref. Method and Comment:
SM 2120 B: 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.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P314067

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P314068

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: P314989

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314992

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314907

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315172

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315203

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315255

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314342

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314522

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314883

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: P315084

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314069

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314070

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

Reference Method: SM 2120 B
Batch ID: P314100

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P314175

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

Reference Method: SM 2320 B-97
Batch ID: P314254

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

Reference Method: SM 2540 C-97
Batch ID: P314713

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P314674

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P314677

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P314256

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P314167

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

Reference Method: SM 5310 B-00
Batch ID: P314247

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: P314989

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: P314992

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314907

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315172

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315203

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: P315255

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: P315255

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314342

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314522

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314883

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315084

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314069

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314070

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

Reference Method: SM 2320 B-97
Batch ID: P314175

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

Reference Method: SM 2320 B-97
Batch ID: P314254

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	95 - 108

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P314256

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P314167

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.1		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P314247

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314989

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1844798	Chloride	97.6		P	90 - 110
1845290	Chloride	96.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314992

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1844798	Sulfate	94.6		P	90 - 110
1845290	Sulfate	93.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314907

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845079	Ammonia-N	99.8	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315172

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845258	Kjeldahl Nitrogen	103	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315255

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845068	Kjeldahl Nitrogen	95.9	101	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314342

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845256	NO2NO3-N	98.5	97.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314522

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1841084	NO2NO3-N	110	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314883

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845312	Total-P	94.3	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846858	Total-P	101	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314069

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845081	O-Phosphate-P	97.4	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314070

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845315	O-Phosphate-P	100	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P314256

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845087	Fluoride	103	103	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P314167

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845247	Organic Carbon	94.6	94.4	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P314247

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845652	Organic Carbon	93.4	92.2	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P314067

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845232	Turbidity	2.48	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P314068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845290	Turbidity	2.26	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314989

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845290	Chloride	0.0504	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314992

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845290	Sulfate	1.85	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314907

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845079	Ammonia-N	0.114	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315172

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845258	Kjeldahl Nitrogen	0.591	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315203

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1843937	Kjeldahl Nitrogen	4.67	Sample	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315255

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845068	Kjeldahl Nitrogen	4.34	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845256	NO2NO3-N	0.905	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314522

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1841084	NO2NO3-N	1.38	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314883

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845312	Total-P	4.53	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846858	Total-P	2.75	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314069

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845081	O-Phosphate-P	0.920	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314070

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845315	O-Phosphate-P	0.630	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P314175

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1843962	Total Alkalinity	0.393	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P314254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845087	Total Alkalinity	0.846	Sample	P	0 - 4.8

Quality Assurance Report
Precision

Reference Method: SM 2540 C-97
Batch ID: P314713

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845077	TDS	3.16	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P314256

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845087	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P314167

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845247	Organic Carbon	0.123	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P314247

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845652	Organic Carbon	0.755	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A72478
Included Lab Sample IDs: 1845289, 1845290, 1845291, 1845298

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	100	P/P	95 - 105
Turbidity	102	102	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A72479
Included Lab Sample IDs: 1845295, 1845296, 1845297, 1845300

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	98.8	P/P	90 - 110
O-Phosphate-P	98.8	98.0	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A72485
Included Lab Sample IDs: 1845289, 1845290, 1845291

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2120 B
Run ID: A72485
Included Lab Sample IDs: 1845289, 1845290, 1845291

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	85 - 115

Reference Method: SM 5310 B-00
Run ID: A72513
Included Lab Sample IDs: 1845292, 1845293, 1845294

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.2	98.6	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A72515
Included Lab Sample IDs: 1845298

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	96.6	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A72535
Included Lab Sample IDs: 1845299

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.2	94.8	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A72536
Included Lab Sample IDs: 1845289, 1845290, 1845291

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

Reference Method: SM 4500 F-C-97
Run ID: A72536
Included Lab Sample IDs: 1845289, 1845290, 1845291, 1845298

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	99.5	P/P	90 - 110
Fluoride	99.5	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A72560
Included Lab Sample IDs: 1845292, 1845293, 1845294

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	95.0	92.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A72599
Included Lab Sample IDs: 1845299

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A72715
Included Lab Sample IDs: 1845289, 1845290, 1845291

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	103	P/P	90 - 110
Chloride	101	102	P/P	90 - 110
Chloride	102	102	P/P	90 - 110
Sulfate	96.9	99.1	P/P	90 - 110
Sulfate	98.8	100	P/P	90 - 110
Sulfate	99.1	97.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A72736
Included Lab Sample IDs: 1845292, 1845293, 1845294, 1845299

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.3	97.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A72784
Included Lab Sample IDs: 1845292, 1845293, 1845294

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A72836
Included Lab Sample IDs: 1845299

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A72852
Included Lab Sample IDs: 1845292, 1845293

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A72874
Included Lab Sample IDs: 1845294, 1845299

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	104	P/P	90 - 110
Kjeldahl Nitrogen	103	103	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					2.48	
	Turbidity					2.26	
EPA 300.0 Rev. 2.1	Chloride	98.4	96.6	97.6		0.0504	
	Sulfate	94.3	93.8	94.6		1.85	
EPA 350.1 Rev. 2.0	Ammonia-N	102	99.8	100			0.114
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	103	104			0.591
	Kjeldahl Nitrogen	102				4.67	
	Kjeldahl Nitrogen	106	95.9	101			4.34
EPA 353.2 Rev. 2.0	NO2NO3-N	98.0	98.5	97.0			0.905
	NO2NO3-N	108	110	108			1.38
EPA 365.1 Rev. 2.0	Total-P	97.3	94.3	99.3			4.53
	Total-P	98.7	101	98.5			2.75
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.2	97.4	98.6			0.920
	O-Phosphate-P	102	100	101			0.630
SM 2320 B-97	Total Alkalinity	103				0.393	
	Total Alkalinity	100				0.846	
SM 2540 C-97	TDS					3.16	
SM 4500 F-C-97	Fluoride	98.4	103	103			0.0
SM 5310 B-00	Organic Carbon	95.1	94.6	94.4			0.123
	Organic Carbon	95.0	93.4	92.2			0.755

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1845289, 1845290, 1845291, 1845298
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1845289, 1845290, 1845291
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1845289, 1845290, 1845291
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1845292, 1845293, 1845294, 1845299
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1845292, 1845293, 1845294, 1845299
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1845292, 1845293, 1845294, 1845299
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1845292, 1845293, 1845294, 1845299
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1845295, 1845296, 1845297, 1845300
SM 2120 B / E31780	True Color measured at 450 nm	1845289, 1845290, 1845291
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1845289, 1845290, 1845291, 1845298
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1845289, 1845290, 1845291
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1845289, 1845290, 1845291, 1845298
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1845289, 1845290, 1845291, 1845298
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1845292, 1845293, 1845294, 1845299

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	10/27/2016			10/27/2016 15:34	Sima Feizi	1845289, 1845290, 1845291, 1845298
EPA 300.0 Rev. 2.1	10/27/2016			11/10/2016	Ping Hua	1845289, 1845290, 1845291
EPA 350.1 Rev. 2.0	10/27/2016			11/09/2016	Sofia Elnemr	1845292, 1845293, 1845294, 1845299
EPA 351.2 Rev. 2.0	10/27/2016	11/15/2016	Martin Acosta	11/17/2016	Joseph Suarez	1845292, 1845293
	10/27/2016	11/16/2016	Adrian Shelby	11/17/2016	Joseph Suarez	1845299
	10/27/2016	11/16/2016	Martin Acosta	11/17/2016	Joseph Suarez	1845294
EPA 353.2 Rev. 2.0	10/27/2016			11/01/2016	Beverly Y. Sanders	1845292, 1845293, 1845294
	10/27/2016			11/03/2016	Beverly Y. Sanders	1845299
EPA 365.1 Rev. 2.0	10/27/2016	11/09/2016	Adrian Shelby	11/14/2016	Lipi Saha	1845292, 1845293, 1845294
	10/27/2016	11/14/2016	Adrian Shelby	11/16/2016	Lipi Saha	1845299
EPA 365.1 Rev. 2.0 dissolved	10/27/2016			10/27/2016 15:49	Julia Storbeck	1845296
	10/27/2016			10/27/2016 15:50	Julia Storbeck	1845297
	10/27/2016			10/27/2016 16:01	Julia Storbeck	1845295
	10/27/2016			10/27/2016 16:02	Julia Storbeck	1845300
SM 2120 B	10/27/2016			10/27/2016 15:56	Julie Michelle Frank	1845289, 1845290
	10/27/2016			10/27/2016 15:57	Julie Michelle Frank	1845291
SM 2320 B-97	10/27/2016			10/29/2016	Dale L. Simmons	1845298
	10/27/2016			10/31/2016	Dale L. Simmons	1845289, 1845290, 1845291
SM 2540 C-97	10/27/2016			11/01/2016	Yijie Li	1845289, 1845290, 1845291
SM 2540 D-97	10/27/2016			11/01/2016	Yijie Li	1845289, 1845290, 1845291, 1845298
SM 4500 F-C-97	10/27/2016			10/31/2016	Dale L. Simmons	1845289, 1845290, 1845291, 1845298
SM 5310 B-00	10/27/2016			10/29/2016	Julie Michelle Frank	1845292, 1845293, 1845294
	10/27/2016			10/31/2016	Julie Michelle Frank	1845299