Chemical Analysis Report

NW-DIST-2016-08-16-02

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

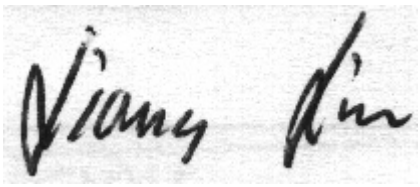
Event Description: **WBID 959G 1040A 881 959G 959B**
Request ID: **RQ-2016-07-11-30**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government St
Suite 208A
Pensacola, FL 32502-5794
Attn: Michael King

For additional information please contact
Timothy W. Fitzpatrick
Liang-Tsair Lin, Ph.D.
Colin Wright, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 09-SEP-2016 11:01



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: HOGTOWN DRAINAGE @ CHURCHHILL BAYOU RD. **Collection Date/Time: 08/15/2016 11:20**

Field ID: G3NW0038 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1823802	EPA 180.1 Rev. 2.0	Turbidity	7.1		NTU	P309831	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P310310	
		Sulfate	3.9		mg SO4/L	P310313	
	SM 2120 B	Color (true)	300		PCU	P310027	
	SM 2320 B-97	Total Alkalinity	34		mg CaCO3/L	P309932	
	SM 2540 C-97	TDS	126		mg/L	P310210	
	SM 2540 D-97	TSS	6	I	mg/L	P310203	
	SM 4500 F-C-97	Fluoride	0.040	I	mg F/L	P309933	
1823805	EPA 350.1 Rev. 2.0	Ammonia-N	0.042		mg N/L	P310052	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.84		mg N/L	P309949	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.027	J	mg N/L	P310022	MS
	EPA 365.1 Rev. 2.0	Total-P	0.039		mg P/L	P309882	
	SM 5310 B-00	Organic Carbon	25		mg C/L	P310263	
1823808	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P309836	

Ref. Method and Comment:
SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 146 umhos/cm.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 353.2 Rev. 2.0: Refer to the narrative for an explanation of QC Codes.

Sample Location: STALWORTH LAKE CENTER **Collection Date/Time: 08/15/2016 11:55**

Field ID: G3NW0083 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1823811	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P309832	
	SM 2320 B-97	Total Alkalinity	12		mg CaCO3/L	P309932	
	SM 2540 D-97	TSS	3	I	mg/L	P310204	
	SM 4500 F-C-97	Fluoride	0.042	I	mg F/L	P309933	
1823812	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P310052	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.42		mg N/L	P309945	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P310347	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P309887	
	SM 5310 B-00	Organic Carbon	9.9		mg C/L	P310367	
1823813	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P309837	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: ALLEN LAKE MIDDLE **Collection Date/Time: 08/15/2016 12:30**

Field ID: G3NW0085 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1823803	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P309831	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P310310	
		Sulfate	3.1		mg SO4/L	P310313	

Field ID: G3NW0085 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1823803	SM 2120 B	Color (true)	200		PCU	P310027	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P309932	
	SM 2540 C-97	TDS	55		mg/L	P310210	
	SM 2540 D-97	TSS	2	U	mg/L	P310203	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P309933	
1823806	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P310052	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P309949	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	U	mg N/L	P310022	MS
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P309882	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P310263	
1823809	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P309836	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 353.2 Rev. 2.0: NO2NO3-N: The MDL was elevated due to sample matrix interference.

Sample Location: FULLER LAKE MIDDLE **Collection Date/Time: 08/15/2016 13:15**

Field ID: G3NW0084 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1823804	EPA 180.1 Rev. 2.0	Turbidity	1.1	A	NTU	P309832	
	EPA 300.0 Rev. 2.1	Chloride	16	A	mg Cl/L	P310310	
		Sulfate	3.5	A	mg SO4/L	P310313	
	SM 2120 B	Color (true)	250		PCU	P310027	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P309932	
	SM 2540 C-97	TDS	66		mg/L	P310210	
	SM 2540 D-97	TSS	2	I	mg/L	P310203	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P309933	
1823807	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P310052	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P309945	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.034		mg N/L	P310022	MS
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P309887	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P310367	
1823810	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P309836	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 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: P309831

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P309832

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310310

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310313

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310052

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309945

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309949

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310022

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310347

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309882

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: P309887

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309836

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309837

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

Reference Method: SM 2120 B
Batch ID: P310027

Component	Result	Code	Units
Color (true)	2.5	U	

Reference Method: SM 2320 B-97
Batch ID: P309932

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

Reference Method: SM 2540 C-97
Batch ID: P310210

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P310203

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P310204

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P309933

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P310263

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

Reference Method: SM 5310 B-00
Batch ID: P310367

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: P310310

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310313

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310052

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309945

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309949

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310022

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310347

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310347

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	97.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309882

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309887

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309836

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309837

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

Reference Method: SM 2320 B-97
Batch ID: P309932

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

Reference Method: SM 4500 F-C-97
Batch ID: P309933

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P310263

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

Reference Method: SM 5310 B-00
Batch ID: P310367

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.5		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310310

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823804	Chloride	99.7		P	90 - 110
1823876	Chloride	98.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310313

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823804	Sulfate	101		P	90 - 110
1823876	Sulfate	100		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309945

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823908	Kjeldahl Nitrogen	97.0	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309949

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823446	Kjeldahl Nitrogen	96.1	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310022

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823805	NO2NO3-N	86.4	86.8	F/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310347

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823812	NO2NO3-N	92.2	93.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309882

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823664	Total-P	97.6	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309887

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823812	Total-P	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309836

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823594	O-Phosphate-P	98.1	99.4	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309837

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823948	O-Phosphate-P	101	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P309933

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823876	Fluoride	95.2	96.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P310263

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823410	Organic Carbon	99.0	103	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P310367

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1823807	Organic Carbon	97.9	97.6	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P309831

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823653	Turbidity	0.292	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P309832

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823804	Turbidity	4.41	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310310

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823804	Chloride	0.124	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310313

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823804	Sulfate	0.0762	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310052

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823661	Ammonia-N	1.18	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309945

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823908	Kjeldahl Nitrogen	1.29	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309949

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823446	Kjeldahl Nitrogen	2.84	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310022

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823805	NO2NO3-N	0.536	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310347

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823812	NO2NO3-N	1.49	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309882

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823664	Total-P	2.80	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309887

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823812	Total-P	1.40	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309836

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823594	O-Phosphate-P	1.10	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823948	O-Phosphate-P	0.0994	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P310027

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823889	Color (true)	0.718	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P309932

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823876	Total Alkalinity	0.131	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P310210

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823404	TDS	1.47	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P309933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823876	Fluoride	1.48	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P310263

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823410	Organic Carbon	1.89	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P310367

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823807	Organic Carbon	0.191	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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A71160
Included Lab Sample IDs: 1823802, 1823803, 1823804, 1823811

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A71161
Included Lab Sample IDs: 1823808, 1823809, 1823810, 1823813

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.6	99.8	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A71162
Included Lab Sample IDs: 1823802, 1823803, 1823804

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.1	99.0	P/P	90 - 115

Reference Method: SM 2320 B-97
Run ID: A71199
Included Lab Sample IDs: 1823802, 1823803, 1823804, 1823811

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

Reference Method: SM 4500 F-C-97
Run ID: A71199
Included Lab Sample IDs: 1823802, 1823803, 1823804, 1823811

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.1	97.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A71224
Included Lab Sample IDs: 1823805, 1823806, 1823807, 1823812

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.8	98.8	P/P	90 - 110
Kjeldahl Nitrogen	94.1	94.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A71229
Included Lab Sample IDs: 1823805, 1823806, 1823807

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A71238
Included Lab Sample IDs: 1823805, 1823806, 1823807, 1823812

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A71238
Included Lab Sample IDs: 1823805, 1823806, 1823807, 1823812

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A71244
Included Lab Sample IDs: 1823805, 1823806, 1823807, 1823812

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	98.0	P/P	90 - 110
Total-P	98.2	97.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A71280
Included Lab Sample IDs: 1823802, 1823803, 1823804

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	100	P/P	90 - 110
Chloride	100	101	P/P	90 - 110
Sulfate	97.4	99.1	P/P	90 - 110
Sulfate	99.1	96.7	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A71302
Included Lab Sample IDs: 1823805, 1823806

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.3	99.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A71323
Included Lab Sample IDs: 1823812

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.0	94.5	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A71332
Included Lab Sample IDs: 1823807, 1823812

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.2	97.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A71452
Included Lab Sample IDs: 1823802

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

Quality Assurance Report
Calibration Verification

* 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					0.292	
	Turbidity					4.41	
EPA 300.0 Rev. 2.1	Chloride	100	99.7	98.8		0.124	
	Sulfate	100	101	100		0.0762	
EPA 350.1 Rev. 2.0	Ammonia-N	97.1					1.18
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.1	97.0	99.4			1.29
	Kjeldahl Nitrogen	97.8	96.1	99.8			2.84
EPA 353.2 Rev. 2.0	NO2NO3-N	102	86.4	86.8			0.536
	NO2NO3-N	97.5	92.2	93.8			1.49
EPA 365.1 Rev. 2.0	Total-P	102	97.6	101			2.80
	Total-P	102	104	103			1.40
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.7	98.1	99.4			1.10
	O-Phosphate-P	103	101	101			0.0994
SM 2120 B	Color (true)					0.718	
SM 2320 B-97	Total Alkalinity	103				0.131	
SM 2540 C-97	TDS					1.47	
SM 4500 F-C-97	Fluoride	96.5	95.2	96.8			1.48
SM 5310 B-00	Organic Carbon	101	99.0	103			1.89
	Organic Carbon	95.5	97.9	97.6			0.191

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1823802, 1823803, 1823804, 1823811
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1823802, 1823803, 1823804
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1823802, 1823803, 1823804
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1823805, 1823806, 1823807, 1823812
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1823805, 1823806, 1823807, 1823812
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1823805, 1823806, 1823807, 1823812
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1823805, 1823806, 1823807, 1823812
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1823808, 1823809, 1823810, 1823813
SM 2120 B / E31780	True Color measured at 450 nm	1823802, 1823803, 1823804
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1823802, 1823803, 1823804, 1823811
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1823802, 1823803, 1823804
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1823802, 1823803, 1823804, 1823811
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1823802, 1823803, 1823804, 1823811
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1823805, 1823806, 1823807, 1823812

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	08/16/2016			08/16/2016 16:27	Sima Feizi	1823802, 1823803, 1823804, 1823811
EPA 300.0 Rev. 2.1	08/16/2016			08/24/2016	Ping Hua	1823802, 1823803, 1823804
	08/16/2016			08/31/2016	Ping Hua	1823802
EPA 350.1 Rev. 2.0	08/16/2016			08/21/2016	Julie Michelle Frank	1823805, 1823806, 1823807, 1823812
EPA 351.2 Rev. 2.0	08/16/2016	08/18/2016	Martin Acosta	08/19/2016	Christopher Armour	1823805, 1823806, 1823807, 1823812
EPA 353.2 Rev. 2.0	08/16/2016			08/19/2016	Beverly Y. Sanders	1823805, 1823806, 1823807
	08/16/2016			08/25/2016	Beverly Y. Sanders	1823812
EPA 365.1 Rev. 2.0	08/16/2016	08/17/2016	Vijayalakshmi Reddy	08/22/2016	Lipi Saha	1823805, 1823806, 1823807, 1823812
EPA 365.1 Rev. 2.0 dissolved	08/16/2016			08/16/2016 16:13	Julia Storbeck	1823808
	08/16/2016			08/16/2016 16:14	Julia Storbeck	1823809
	08/16/2016			08/16/2016 16:15	Julia Storbeck	1823810
	08/16/2016			08/16/2016 16:16	Julia Storbeck	1823813
SM 2120 B	08/16/2016			08/16/2016 18:10	Rochelle Y Jackson	1823802
	08/16/2016			08/16/2016 18:11	Rochelle Y Jackson	1823803, 1823804
SM 2320 B-97	08/16/2016			08/17/2016	Dale L. Simmons	1823802, 1823803, 1823804, 1823811
SM 2540 C-97	08/16/2016			08/17/2016	Yijie Li	1823802, 1823803, 1823804
SM 2540 D-97	08/16/2016			08/17/2016	Yijie Li	1823802, 1823803, 1823804, 1823811
SM 4500 F-C-97	08/16/2016			08/17/2016	Dale L. Simmons	1823802, 1823803, 1823804, 1823811
SM 5310 B-00	08/16/2016			08/24/2016	Sofia Elnemr	1823805, 1823806, 1823807, 1823812