

Chemical Analysis Report

SO-DIST-2016-05-19-01

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

Event Description: **SMP: Highlands Canoe Lakes: Blue & Silver**
Request ID: **RQ-2016-05-09-15**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
Attn: Ben Paswater

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 14-JUN-2016 15:44

A handwritten signature in black ink, appearing to read "Liang Lin", is written over a light gray, textured background.

Case Narrative

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

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

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

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

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Silver Lake @ North

Collection Date/Time: 05/18/2016 10:37

Field ID: G4SD0125

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1800259	EPA 180.1 Rev. 2.0	Turbidity	0.90		NTU	P304673	
	EPA 300.0 Rev. 2.1	Chloride	7.3		mg Cl/L	P305101	
		Sulfate	5.9		mg SO4/L	P305104	
	SM 2120 B	Color (true)	7.5		PCU	P304609	
	SM 2320 B-97	Total Alkalinity	1.4	I	mg CaCO3/L	P304955	
	SM 2540 C-97	TDS	34		mg/L	P305597	
	SM 2540 D-97	TSS	2	I	mg/L	P305031	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P304958	
1800265	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P305257	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P305091	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.036		mg N/L	P304789	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P305350	
	SM 5310 B-00	Organic Carbon	5.5		mg C/L	P305286	
1800271	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P304630	

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: Silver Lake @ West

Collection Date/Time: 05/18/2016 10:45

Field ID: G4SD0126

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1800260	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P304673	
	EPA 300.0 Rev. 2.1	Chloride	7.4		mg Cl/L	P305101	
		Sulfate	6.1		mg SO4/L	P305104	
	SM 2120 B	Color (true)	9.0		PCU	P304609	
	SM 2320 B-97	Total Alkalinity	1.2	I	mg CaCO3/L	P304957	
	SM 2540 C-97	TDS	34		mg/L	P305597	
	SM 2540 D-97	TSS	2	U	mg/L	P305031	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P304959	
1800266	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P305257	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P305091	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.032		mg N/L	P304789	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P305350	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P305286	
1800272	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P304631	

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: Silver Lake @ South

Collection Date/Time: 05/18/2016 10:53

Field ID: G4SD0127

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1800261	EPA 180.1 Rev. 2.0	Turbidity	0.90		NTU	P304673	
	EPA 300.0 Rev. 2.1	Chloride	7.2		mg Cl/L	P305101	
		Sulfate	5.9		mg SO4/L	P305104	

Field ID: G4SD0127

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1800261	SM 2120 B	Color (true)	8.0		PCU	P304609	
	SM 2320 B-97	Total Alkalinity	1.3	I	mg CaCO3/L	P304957	
	SM 2540 C-97	TDS	37		mg/L	P305597	
	SM 2540 D-97	TSS	2	I	mg/L	P305031	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P304959	
1800267	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P305257	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36		mg N/L	P305091	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.032		mg N/L	P304789	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P305350	
	SM 5310 B-00	Organic Carbon	5.3		mg C/L	P305286	
1800273	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P304631	

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: Silver Lake @ East

Collection Date/Time: 05/18/2016 10:58

Field ID: G4SD0128

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1800262	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P304673	
	EPA 300.0 Rev. 2.1	Chloride	7.2		mg Cl/L	P305101	
		Sulfate	5.9		mg SO4/L	P305104	
	SM 2120 B	Color (true)	8.5		PCU	P304609	
	SM 2320 B-97	Total Alkalinity	1.2	I	mg CaCO3/L	P304957	
	SM 2540 C-97	TDS	30		mg/L	P305597	
	SM 2540 D-97	TSS	2	U	mg/L	P305031	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P304959	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P305258	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.38		mg N/L	P305091	
1800268	EPA 353.2 Rev. 2.0	NO2NO3-N	0.033		mg N/L	P304789	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P305350	
	SM 5310 B-00	Organic Carbon	5.3		mg C/L	P305286	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P304631	

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: Buck Lake @ North Side

Collection Date/Time: 05/18/2016 12:45

Field ID: G4SD0143

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1800263	EPA 180.1 Rev. 2.0	Turbidity	0.55		NTU	P304673	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P305101	
		Sulfate	70		mg SO4/L	P305104	
	SM 2120 B	Color (true)	5.6	I	PCU	P304609	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P304957	
	SM 2540 C-97	TDS	209		mg/L	P305597	
	SM 2540 D-97	TSS	2	U	mg/L	P305031	

Field ID: G4SD0143

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1800263	SM 4500 F-C-97	Fluoride	0.087	I	mg F/L	P304959	
1800269	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P305258	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.45		mg N/L	P305506	
	EPA 353.2 Rev. 2.0	NO2NO3-N	12		mg N/L	P304790	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P305350	
	SM 5310 B-00	Organic Carbon	4.0		mg C/L	P305286	
1800275	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P304631	

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: Buck Lake @ South Side

Collection Date/Time: 05/18/2016 12:55

Field ID: G4SD0144

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1800264	EPA 180.1 Rev. 2.0	Turbidity	0.50		NTU	P304673	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P305101	
		Sulfate	71		mg SO4/L	P305104	
	SM 2120 B	Color (true)	5.5	I	PCU	P304609	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P304957	
	SM 2540 C-97	TDS	222	A	mg/L	P305597	
	SM 2540 D-97	TSS	2	U	mg/L	P305031	
	SM 4500 F-C-97	Fluoride	0.087	I	mg F/L	P304959	
1800270	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P305258	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P305506	
	EPA 353.2 Rev. 2.0	NO2NO3-N	11		mg N/L	P304790	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P305350	
	SM 5310 B-00	Organic Carbon	3.9		mg C/L	P305286	
1800276	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P304631	

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: P304673

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P305101

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305104

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305257

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305258

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305091

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305506

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304789

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304790

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305350

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304630

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304631

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

Reference Method: SM 2120 B
Batch ID: P304609

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P304955

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

Reference Method: SM 2320 B-97
Batch ID: P304957

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

Reference Method: SM 2540 C-97
Batch ID: P305597

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P305031

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P304958

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P304959

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P305286

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: P305101

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305104

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305257

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: P305258

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305091

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305506

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304789

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: P304790

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305350

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304630

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304631

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

Reference Method: SM 2320 B-97
Batch ID: P304955

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 105

Reference Method: SM 2320 B-97
Batch ID: P304957

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P304958

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.1		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P304959

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P305286

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.3		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305101

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800293	Chloride	100		P	90 - 110
1800302	Chloride	96.1		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305104

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800293	Sulfate	97.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305257

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800204	Ammonia-N	100	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305258

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800268	Ammonia-N	99.7	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305091

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800255	Kjeldahl Nitrogen	98.9	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305506

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802546	Kjeldahl Nitrogen	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304789

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800206	NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304790

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800303	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305350

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800265	Total-P	101	95.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304630

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800212	O-Phosphate-P	97.1	97.1	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304631

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800272	O-Phosphate-P	96.8	98.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P304958

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800293	Fluoride	97.5	97.5	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P304959

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800300	Fluoride	98.8	98.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P305286

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800266	Organic Carbon	95.5	96.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P304673

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800254	Turbidity	2.35	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305101

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800293	Chloride	0.0152	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305104

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800293	Sulfate	2.61	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305257

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800204	Ammonia-N	0.551	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305258

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800268	Ammonia-N	1.68	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305091

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800255	Kjeldahl Nitrogen	1.60	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305506

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802546	Kjeldahl Nitrogen	0.280	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304789

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800206	NO2NO3-N	0.203	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304790

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800303	NO2NO3-N	0.905	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305350

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800265	Total-P	5.74	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304630

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800212	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304631

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800272	O-Phosphate-P	1.84	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P304609

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800293	Color (true)	1.25	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P304955

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800293	Total Alkalinity	0.615	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P304957

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800300	Total Alkalinity	0.0676	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P305597

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800264	TDS	0.451	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P304958

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800293	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P304959

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800300	Fluoride	0.483	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P305286

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800266	Organic Carbon	0.529	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: SM 2120 B

Run ID: A69579

Included Lab Sample IDs: 1800259, 1800260, 1800261, 1800262, 1800263, 1800264

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.9	99.5	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A69583

Included Lab Sample IDs: 1800271, 1800272, 1800273, 1800274, 1800275, 1800276

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	99.3	P/P	90 - 110
O-Phosphate-P	101	99.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A69592

Included Lab Sample IDs: 1800259, 1800260, 1800261, 1800262, 1800263, 1800264

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69625

Included Lab Sample IDs: 1800265, 1800266, 1800267, 1800268, 1800269, 1800270

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

Reference Method: SM 2320 B-97

Run ID: A69675

Included Lab Sample IDs: 1800259, 1800260, 1800261, 1800262, 1800263, 1800264

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.6	P/P	90 - 110
Total Alkalinity	102	99.5	P/P	90 - 110
Total Alkalinity	99.5	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A69675

Included Lab Sample IDs: 1800259, 1800260, 1800261, 1800262, 1800263, 1800264

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	101	P/P	90 - 110
Fluoride	102	100	P/P	90 - 110
Fluoride	99.0	102	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A69676

Included Lab Sample IDs: 1800259, 1800260, 1800261, 1800262, 1800263, 1800264

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Sulfate	100	94.2	P/P	90 - 110
Sulfate	96.7	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A69676

Included Lab Sample IDs: 1800259, 1800260, 1800261, 1800262, 1800263, 1800264

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	97.5	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A69751

Included Lab Sample IDs: 1800265, 1800266, 1800267, 1800268, 1800269, 1800270

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.2	99.4	P/P	90 - 110
Ammonia-N	99.4	99.6	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A69764

Included Lab Sample IDs: 1800265, 1800266, 1800267, 1800268, 1800269, 1800270

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.0	98.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69772

Included Lab Sample IDs: 1800265, 1800266, 1800267, 1800268

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.7	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69793

Included Lab Sample IDs: 1800265, 1800266, 1800267, 1800268, 1800269, 1800270

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	98.5	P/P	90 - 110
Total-P	99.2	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69882

Included Lab Sample IDs: 1800269, 1800270

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	97.7	P/P	90 - 110
Kjeldahl Nitrogen	102	101	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
 Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity			2.35	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 300.0 Rev. 2.1	Chloride	101	100	96.1	0.0152	
	Sulfate	98.2	97.5		2.61	
EPA 350.1 Rev. 2.0	Ammonia-N	100	100	101		0.551
	Ammonia-N	98.1	99.7	101		1.68
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	98.9	102		1.60
	Kjeldahl Nitrogen	102	104	104		0.280
EPA 353.2 Rev. 2.0	NO2NO3-N	102	98.5			0.203
	NO2NO3-N	102	100	102		0.905
EPA 365.1 Rev. 2.0	Total-P	98.6	101	95.2		5.74
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.5	97.1	97.1		0.0
	O-Phosphate-P	102	96.8	98.6		1.84
SM 2120 B	Color (true)				1.25	
SM 2320 B-97	Total Alkalinity	102			0.615	
	Total Alkalinity	101			0.0676	
SM 2540 C-97	TDS				0.451	
SM 4500 F-C-97	Fluoride	97.1	97.5	97.5		0.0
	Fluoride	98.5	98.8	98.2		0.483
SM 5310 B-00	Organic Carbon	97.3	95.5	96.1		0.529

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1800259, 1800260, 1800261, 1800262, 1800263, 1800264
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1800259, 1800260, 1800261, 1800262, 1800263, 1800264
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1800259, 1800260, 1800261, 1800262, 1800263, 1800264
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1800265, 1800266, 1800267, 1800268, 1800269, 1800270
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1800265, 1800266, 1800267, 1800268, 1800269, 1800270
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1800265, 1800266, 1800267, 1800268, 1800269, 1800270
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1800265, 1800266, 1800267, 1800268, 1800269, 1800270
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1800271, 1800272, 1800273, 1800274, 1800275, 1800276
SM 2120 B / E31780	True Color measured at 450 nm	1800259, 1800260, 1800261, 1800262, 1800263, 1800264
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1800259, 1800260, 1800261, 1800262, 1800263, 1800264
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1800259, 1800260, 1800261, 1800262, 1800263, 1800264
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1800259, 1800260, 1800261, 1800262, 1800263, 1800264
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1800259, 1800260, 1800261, 1800262, 1800263, 1800264
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1800265, 1800266, 1800267, 1800268, 1800269, 1800270

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	05/19/2016			05/19/2016 16:13	Sima Feizi	1800259, 1800260, 1800261, 1800262, 1800263, 1800264
EPA 300.0 Rev. 2.1	05/19/2016			05/26/2016	Ping Hua	1800259, 1800260, 1800261, 1800262
	05/19/2016			05/27/2016	Ping Hua	1800263, 1800264
EPA 350.1 Rev. 2.0	05/19/2016			05/27/2016	Diana M. Turner	1800265, 1800266, 1800267, 1800268, 1800269, 1800270
EPA 351.2 Rev. 2.0	05/19/2016	05/26/2016	Sofia Elnemr	05/31/2016	Christopher Armour	1800265, 1800266, 1800267, 1800268
	05/19/2016	06/03/2016	Sofia Elnemr	06/07/2016	Christopher Armour	1800269, 1800270
EPA 353.2 Rev. 2.0	05/19/2016			05/23/2016	Peter D. Kaus	1800265, 1800266, 1800267, 1800268, 1800269, 1800270
EPA 365.1 Rev. 2.0	05/19/2016	06/01/2016	Vijayalakshmi Reddy	06/01/2016	Rochelle Y Jackson	1800265, 1800266, 1800267, 1800268, 1800269, 1800270
EPA 365.1 Rev. 2.0 dissolved	05/19/2016			05/19/2016 13:32	Ping Hua	1800272
	05/19/2016			05/19/2016 14:07	Ping Hua	1800271
	05/19/2016			05/19/2016 14:08	Ping Hua	1800273
	05/19/2016			05/19/2016 14:09	Ping Hua	1800274
	05/19/2016			05/19/2016 14:10	Ping Hua	1800275
	05/19/2016			05/19/2016 14:11	Ping Hua	1800276
SM 2120 B	05/19/2016			05/19/2016 14:06	Rochelle Y Jackson	1800259, 1800260
	05/19/2016			05/19/2016 14:07	Rochelle Y Jackson	1800261
	05/19/2016			05/19/2016 14:08	Rochelle Y Jackson	1800262
	05/19/2016			05/19/2016 14:09	Rochelle Y Jackson	1800263, 1800264
SM 2320 B-97	05/19/2016			05/24/2016	Dale L. Simmons	1800259
	05/19/2016			05/25/2016	Dale L. Simmons	1800260, 1800261, 1800262, 1800263, 1800264
SM 2540 C-97	05/19/2016			05/23/2016	Sima Feizi	1800259, 1800260, 1800261, 1800262, 1800263, 1800264
SM 2540 D-97	05/19/2016			05/23/2016	Sima Feizi	1800259, 1800260, 1800261, 1800262, 1800263, 1800264
SM 4500 F-C-97	05/19/2016			05/24/2016	Dale L. Simmons	1800259
	05/19/2016			05/25/2016	Dale L. Simmons	1800260, 1800261, 1800262, 1800263, 1800264
SM 5310 B-00	05/19/2016			05/28/2016	Diana M. Turner	1800265, 1800266, 1800267, 1800268, 1800269, 1800270