

Chemical Analysis Report

SO-DIST-2016-12-28-01

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

Event Description: **SCI Kit As Needed**
Request ID: **RQ-2016-12-26-04**
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 33901-3381
Attn: Corey Anderson

For additional information please contact
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 18-JAN-2017 11:43

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored 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: JACKSON CREEK NORTH ABOVE WEIR

Collection Date/Time: 12/27/2016 12:15

Field ID: G4SD12272016-4

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1860194	EPA 180.1 Rev. 2.0	Turbidity	1.5	A	NTU	P317504	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P317850	
		Sulfate	12		mg SO4/L	P317847	
	SM 2120 B	Color (true)	120	A	PCU	P317508	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P317538	
	SM 2540 C-97	TDS	125		mg/L	P317970	
	SM 2540 D-97	TSS	2	I	mg/L	P317940	
	SM 4500 F-C-97	Fluoride	0.063	I	mg F/L	P317539	
1860198	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P317754	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P317515	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.036		mg N/L	P317609	
	EPA 365.1 Rev. 2.0	Total-P	0.18		mg P/L	P317520	MS
	SM 5310 B-00	Organic Carbon	18		mg C/L	P317612	
1860202	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.14		mg P/L	P317501	

Sample Location: WALKER CREEK AT 32ND STREET

Collection Date/Time: 12/27/2016 09:40

Field ID: G3SD122716-2

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1860195	EPA 180.1 Rev. 2.0	Turbidity	4.3		NTU	P317504	
	EPA 300.0 Rev. 2.1	Chloride	7.4E+03		mg Cl/L	P317850	
		Sulfate	1.1E+03		mg SO4/L	P317847	
	SM 2120 B	Color (true)	34		PCU	P317508	
	SM 2320 B-97	Total Alkalinity	177	A	mg CaCO3/L	P317580	
	SM 2540 C-97	TDS	1.22E+04		mg/L	P317970	
	SM 2540 D-97	TSS	4	I	mg/L	P317943	
	SM 4500 F-C-97	Fluoride	0.93		mg F/L	P317583	
1860199	EPA 350.1 Rev. 2.0	Ammonia-N	0.12		mg N/L	P317678	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P317517	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.031		mg N/L	P317660	
	EPA 365.1 Rev. 2.0	Total-P	0.32		mg P/L	P317664	MS
	SM 5310 B-00	Organic Carbon	11		mg C/L	P317614	
1860203	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.24		mg P/L	P317506	

Ref. Method and Comment:

SM 2540 C-97: Reported result is consistent with the conductivity measured in the laboratory, 22,300 umhos/cm.

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: FIELD BLANK

Collection Date/Time: 12/27/2016 10:00

Field ID: G3SD122716-3

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1860196	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P317504	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P317849	
		Sulfate	0.20	U	mg SO4/L	P317846	

Field ID: G3SD122716-3

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1860196	SM 2120 B	Color (true)	2.5	U	PCU	P317508	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P317538	
	SM 2540 C-97	TDS	15	U	mg/L	P317970	
	SM 2540 D-97	TSS	2	U	mg/L	P317940	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P317539	
1860200	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P317678	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P317515	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P317609	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P317520	MS
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P317612	
1860204	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P317501	

Sample Location: PHILLIPPI CREEK @ PINECRAFT PARK

Collection Date/Time: 12/27/2016 10:00

Field ID: g3sd122716-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1860197	EPA 180.1 Rev. 2.0	Turbidity	16		NTU	P317504	
	EPA 300.0 Rev. 2.1	Chloride	61		mg Cl/L	P317849	
		Sulfate	110		mg SO4/L	P317846	
	SM 2120 B	Color (true)	38		PCU	P317508	
	SM 2320 B-97	Total Alkalinity	191		mg CaCO3/L	P317538	
	SM 2540 C-97	TDS	462	A	mg/L	P317970	
	SM 2540 D-97	TSS	36	A	mg/L	P317940	
	SM 4500 F-C-97	Fluoride	0.61		mg F/L	P317539	
1860201	EPA 350.1 Rev. 2.0	Ammonia-N	0.062		mg N/L	P317751	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P317515	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.25		mg N/L	P317609	
	EPA 365.1 Rev. 2.0	Total-P	0.29		mg P/L	P317520	MS
	SM 5310 B-00	Organic Carbon	12		mg C/L	P317612	
1860205	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.18		mg P/L	P317501	

Ref. Method and Comment:

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: P317504

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P317846

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317847

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317849

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317850

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317678

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317751

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317754

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317515

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317517

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317609

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317660

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317520

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317664

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317501

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317506

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

Reference Method: SM 2120 B
Batch ID: P317508

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P317538

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

Reference Method: SM 2320 B-97
Batch ID: P317580

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

Reference Method: SM 2540 C-97
Batch ID: P317970

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P317940

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P317943

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P317539

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P317583

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P317612

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

Reference Method: SM 5310 B-00
Batch ID: P317614

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: P317846

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317847

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317849

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317849

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317850

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317678

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317751

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317754

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317515

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: P317517

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317609

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	106		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317660

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	103		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317520

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	91.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317664

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	93.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317501

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: P317506

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

Reference Method: SM 2320 B-97
Batch ID: P317538

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.4		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P317580

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

Reference Method: SM 4500 F-C-97
Batch ID: P317539

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.0		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P317583

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P317612

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P317614

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317846

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860246	Sulfate	95.4		P	90 - 110
1860746	Sulfate	96.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317847

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859932	Sulfate	101		P	90 - 110
1860194	Sulfate	95.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317849

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860246	Chloride	99.3		P	90 - 110
1860746	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317850

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859932	Chloride	99.0		P	90 - 110
1860194	Chloride	98.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317678

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859638	Ammonia-N	102	98.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317754

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859418	Ammonia-N	102	98.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317515

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860217	Kjeldahl Nitrogen	105	104	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317517

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860199	Kjeldahl Nitrogen	101	98.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317609

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1858677	NO2NO3-N	106	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317660

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860509	NO2NO3-N	106	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317520

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860219	Total-P	91.3	88.5	P/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317664

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860509	Total-P	91.4	85.8	P/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317501

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860202	O-Phosphate-P	97.8	96.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317506

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860203	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P317539

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860214	Fluoride	98.9	99.5	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P317583

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860195	Fluoride	99.7	101	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P317612

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860198	Organic Carbon	95.7	94.8	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P317614

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860199	Organic Carbon	98.6	98.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P317504

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860194	Turbidity	10.7	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317846

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860746	Sulfate	0.248	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317847

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859932	Sulfate	0.697	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317849

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860746	Chloride	0.0155	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317850

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859932	Chloride	1.02	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317678

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317678

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859638	Ammonia-N	1.72	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317751

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860201	Ammonia-N	0.343	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859418	Ammonia-N	2.40	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317515

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860217	Kjeldahl Nitrogen	1.27	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317517

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860199	Kjeldahl Nitrogen	2.14	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317609

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858677	NO2NO3-N	0.862	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317660

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860509	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317520

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860219	Total-P	2.86	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P317664

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860509	Total-P	6.18	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P317501

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860202	O-Phosphate-P	0.383	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P317506

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860203	O-Phosphate-P	0.493	Spike	P	0 - 20

Reference Method: SM 2120 B

Batch ID: P317508

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860194	Color (true)	0.190	Sample	P	0 - 20

Reference Method: SM 2320 B-97

Batch ID: P317538

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860214	Total Alkalinity	0.140	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97

Batch ID: P317580

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860195	Total Alkalinity	0.655	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97

Batch ID: P317970

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860197	TDS	2.38	Sample	P	0 - 10

Reference Method: SM 2540 D-97

Batch ID: P317940

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860197	TSS	6.67	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P317539

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860214	Fluoride	0.509	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P317583

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860195	Fluoride	1.01	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P317612

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860198	Organic Carbon	0.473	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P317614

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860199	Organic Carbon	0.408	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A73617
Included Lab Sample IDs: 1860202, 1860204, 1860205

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.7	99.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A73621
Included Lab Sample IDs: 1860194, 1860195, 1860196, 1860197

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A73622
Included Lab Sample IDs: 1860203

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.6	99.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B

Run ID: A73623

Included Lab Sample IDs: 1860194, 1860195, 1860196, 1860197

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.7	99.2	P/P	85 - 115

Reference Method: SM 2320 B-97

Run ID: A73634

Included Lab Sample IDs: 1860194, 1860196, 1860197

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.9	99.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A73634

Included Lab Sample IDs: 1860194, 1860196, 1860197

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	97.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73657

Included Lab Sample IDs: 1860198, 1860201

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

Reference Method: SM 2320 B-97

Run ID: A73661

Included Lab Sample IDs: 1860195

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: A73661

Included Lab Sample IDs: 1860195

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A73662

Included Lab Sample IDs: 1860198, 1860199, 1860200, 1860201

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A73672

Included Lab Sample IDs: 1860198, 1860200, 1860201

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

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A73673

Included Lab Sample IDs: 1860198, 1860199, 1860200, 1860201

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.0	96.0	P/P	90 - 110
Organic Carbon	97.4	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73703

Included Lab Sample IDs: 1860200

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	95.8	96.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A73704

Included Lab Sample IDs: 1860199

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: A73714

Included Lab Sample IDs: 1860199, 1860200

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73724

Included Lab Sample IDs: 1860199

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	104	105	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A73745

Included Lab Sample IDs: 1860198, 1860201

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.9	P/P	90 - 110
Ammonia-N	99.7	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A73754

Included Lab Sample IDs: 1860194, 1860195, 1860196, 1860197

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Chloride	102	103	P/P	90 - 110
Chloride	102	102	P/P	90 - 110
Sulfate	95.9	99.1	P/P	90 - 110
Sulfate	97.1	98.7	P/P	90 - 110
Sulfate	99.1	96.1	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					10.7	
EPA 300.0 Rev. 2.1	Chloride	102	100	99.3		0.0155	
	Chloride	102	99.0	98.0		1.02	
	Sulfate	97.2	96.8	95.4		0.248	
	Sulfate	101	101	95.1		0.697	
EPA 350.1 Rev. 2.0	Ammonia-N	99.7	102	98.9			1.72
	Ammonia-N	102					0.343
	Ammonia-N	104	102	98.1			2.40
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	105	104			1.27
	Kjeldahl Nitrogen	108	101	98.4			2.14
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	106	106	105			0.862
	NO ₂ NO ₃ -N	103	106	106			0.0
EPA 365.1 Rev. 2.0	Total-P	91.4	91.3	88.5			2.86
	Total-P	93.4	91.4	85.8			6.18
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.7	97.8	96.9			0.383
	O-Phosphate-P	101	101	102			0.493
SM 2120 B	Color (true)					0.190	
SM 2320 B-97	Total Alkalinity	99.4				0.140	
	Total Alkalinity	103				0.655	
SM 2540 C-97	TDS					2.38	
SM 2540 D-97	TSS					6.67	
SM 4500 F-C-97	Fluoride	96.0	98.9	99.5			0.509
	Fluoride	98.9	99.7	101			1.01
SM 5310 B-00	Organic Carbon	101	95.7	94.8			0.473
	Organic Carbon	99.6	98.6	98.0			0.408

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1860194, 1860195, 1860196, 1860197
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1860194, 1860195, 1860196, 1860197
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1860194, 1860195, 1860196, 1860197
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1860198, 1860199, 1860200, 1860201
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1860198, 1860199, 1860200, 1860201
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1860198, 1860199, 1860200, 1860201
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1860198, 1860199, 1860200, 1860201
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1860202, 1860203, 1860204, 1860205
SM 2120 B / E31780	True Color measured at 450 nm	1860194, 1860195, 1860196, 1860197
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1860194, 1860195, 1860196, 1860197

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1860194, 1860195, 1860196, 1860197
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1860194, 1860195, 1860196, 1860197
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1860194, 1860195, 1860196, 1860197
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1860198, 1860199, 1860200, 1860201

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	12/28/2016			12/28/2016 14:58	Sima Feizi	1860194, 1860195, 1860196, 1860197
EPA 300.0 Rev. 2.1	12/28/2016			01/05/2017	Ping Hua	1860194, 1860195
	12/28/2016			01/06/2017	Ping Hua	1860196, 1860197
EPA 350.1 Rev. 2.0	12/28/2016			01/03/2017	Sofia Elnemr	1860199, 1860200
	12/28/2016			01/04/2017	Sofia Elnemr	1860198, 1860201
EPA 351.2 Rev. 2.0	12/28/2016	12/29/2016	Adrian Shelby	12/30/2016	Joseph Suarez	1860198, 1860199, 1860200, 1860201
EPA 353.2 Rev. 2.0	12/28/2016			01/03/2017	Beverly Y. Sanders	1860199
	12/28/2016			12/30/2016	Beverly Y. Sanders	1860198, 1860200, 1860201
EPA 365.1 Rev. 2.0	12/28/2016	01/03/2017	Vijayalakshmi Reddy	01/04/2017	Beverly Y. Sanders	1860199
	12/28/2016	12/29/2016	Adrian Shelby	01/03/2017	Lipi Saha	1860200
	12/28/2016	12/29/2016	Adrian Shelby	12/30/2016	Beverly Y. Sanders	1860198, 1860201
EPA 365.1 Rev. 2.0 dissolved	12/28/2016			12/28/2016 13:38	Lipi Saha	1860202
	12/28/2016			12/28/2016 13:41	Lipi Saha	1860204, 1860205
	12/28/2016			12/28/2016 15:21	Lipi Saha	1860203
SM 2120 B	12/28/2016			12/28/2016 15:18	Julie Michelle Frank	1860194
	12/28/2016			12/28/2016 15:19	Julie Michelle Frank	1860195
	12/28/2016			12/28/2016 15:20	Julie Michelle Frank	1860196, 1860197
SM 2320 B-97	12/28/2016			12/28/2016	Dale L. Simmons	1860194, 1860196, 1860197
	12/28/2016			12/30/2016	Dale L. Simmons	1860195
SM 2540 C-97	12/28/2016			12/30/2016	Yijie Li	1860194, 1860195, 1860196, 1860197
SM 2540 D-97	12/28/2016			12/30/2016	Yijie Li	1860194, 1860195, 1860196, 1860197
SM 4500 F-C-97	12/28/2016			12/28/2016	Dale L. Simmons	1860194, 1860196, 1860197
	12/28/2016			12/30/2016	Dale L. Simmons	1860195
SM 5310 B-00	12/28/2016			12/29/2016	Julie Michelle Frank	1860198, 1860200, 1860201
	12/28/2016			12/30/2016	Julie Michelle Frank	1860199