

Chemical Analysis Report

SO-DIST-2016-11-16-02

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

Event Description: **SMP: Phillipi Cr, Walker, Phillipi Trib**
Request ID: **RQ-2016-11-07-14**
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: 13-DEC-2016 10:34

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: Phillippi Creek Trib @ Redbay

Collection Date/Time: 11/15/2016 11:10

Field ID: G3SD111516-4

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1850705	EPA 180.1 Rev. 2.0	Turbidity	12		NTU	P315325	
	EPA 300.0 Rev. 2.1	Chloride	68		mg Cl/L	P315991	
		Sulfate	200		mg SO4/L	P315993	
	SM 2120 B	Color (true)	45	A	PCU	P315365	
	SM 2320 B-97	Total Alkalinity	237		mg CaCO3/L	P315673	
	SM 2540 C-97	TDS	668	A	mg/L	P315619	
	SM 2540 D-97	TSS	3	I	mg/L	P315630	
	SM 4500 F-C-97	Fluoride	0.48		mg F/L	P315676	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.23		mg N/L	P315682	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P316068	
1850708	EPA 353.2 Rev. 2.0	NO2NO3-N	1.2		mg N/L	P315750	
	EPA 365.1 Rev. 2.0	Total-P	0.081		mg P/L	P315829	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P315384	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.025		mg P/L	P315297	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Walker Creek at 32nd St.

Collection Date/Time: 11/15/2016 13:55

Field ID: G3SD111516-5

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1850706	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P315325	
	EPA 300.0 Rev. 2.1	Chloride	1.0E+03		mg Cl/L	P316064	
		Sulfate	230		mg SO4/L	P316067	
	SM 2120 B	Color (true)	40	A	PCU	P315293	
	SM 2320 B-97	Total Alkalinity	190		mg CaCO3/L	P315425	
	SM 2540 C-97	TDS	2.05E+03		mg/L	P315619	
	SM 2540 D-97	TSS	4	I	mg/L	P315633	
	SM 4500 F-C-97	Fluoride	0.71		mg F/L	P315675	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.033		mg N/L	P315785	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.89		mg N/L	P315969	
1850709	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P315912	
	EPA 365.1 Rev. 2.0	Total-P	0.33		mg P/L	P315906	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P315410	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.17		mg P/L	P315300	

Ref. Method and Comment:

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

Sample Location: Phillippi Creek Trib @ Redbay DUP

Collection Date/Time: 11/15/2016 11:20

Field ID: G3SD111516-6

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1850707	EPA 180.1 Rev. 2.0	Turbidity	13		NTU	P315325	

Field ID: G3SD111516-6

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1850707	EPA 300.0 Rev. 2.1	Chloride	70		mg Cl/L	P315991	
		Sulfate	220		mg SO4/L	P316134	
	SM 2120 B	Color (true)	45		PCU	P315365	
	SM 2320 B-97	Total Alkalinity	237		mg CaCO3/L	P315673	
	SM 2540 C-97	TDS	626		mg/L	P315619	
	SM 2540 D-97	TSS	2	I	mg/L	P315630	
	SM 4500 F-C-97	Fluoride	0.48		mg F/L	P315676	
1850710	EPA 350.1 Rev. 2.0	Ammonia-N	0.24		mg N/L	P315682	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P316068	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.2		mg N/L	P315750	
	EPA 365.1 Rev. 2.0	Total-P	0.083		mg P/L	P315829	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P315384	
1850713	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.026		mg P/L	P315297	

Ref. Method and Comment:

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

SM 5310 B-00: 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: P315325

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P315991

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P315993

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P316064

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P316067

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: P316134

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315682

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315785

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315969

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316068

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P315750

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P315912

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315829

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315906

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 dissolved
Batch ID: P315297

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315300

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

Reference Method: SM 2120 B
Batch ID: P315293

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P315365

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P315425

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

Reference Method: SM 2320 B-97
Batch ID: P315673

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

Reference Method: SM 2540 C-97
Batch ID: P315619

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P315630

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P315633

Component	Result	Code	Units
TSS	3	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P315675

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P315676

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P315384

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

Reference Method: SM 5310 B-00
Batch ID: P315410

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: P315991

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315993

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	95.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316064

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316067

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316134

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: P316134

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315682

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: P315785

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315969

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316068

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P315750

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P315912

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315829

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315906

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.8		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315297

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315300

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

Reference Method: SM 2320 B-97
Batch ID: P315425

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P315673

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P315675

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.8		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P315676

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.3		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P315384

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

Reference Method: SM 5310 B-00
Batch ID: P315410

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315991

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315991

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1848613	Chloride	102		P	90 - 110
1848614	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315993

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1848613	Sulfate	97.5		P	90 - 110
1848614	Sulfate	93.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316064

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1851195	Chloride	101		P	90 - 110
1851196	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316067

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1851195	Sulfate	97.1		P	90 - 110
1851196	Sulfate	96.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316134

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854429	Sulfate	107		P	90 - 110
1854432	Sulfate	104		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315682

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1850615	Ammonia-N	104	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315785

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1850538	Ammonia-N	102	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315969

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1850685	Kjeldahl Nitrogen	104	98.4	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316068

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1850752	Kjeldahl Nitrogen	110	110	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P315750

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1850640	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P315912

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1850679	NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315829

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1850710	Total-P	101	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315906

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1850895	Total-P	93.5	93.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315297

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1850619	O-Phosphate-P	98.1	99.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315300

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1850548	O-Phosphate-P	99.2	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P315675

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1850839	Fluoride	101	103	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P315676

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1851136	Fluoride	100	101	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P315410

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1850709	Organic Carbon	98.0	99.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P315325

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850639	Turbidity	8.96	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315991

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1848613	Chloride	0.0503	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316064

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1851195	Chloride	0.112	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316067

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1851195	Sulfate	1.53	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316134

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854432	Sulfate	0.466	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315682

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850615	Ammonia-N	0.628	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315785

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850538	Ammonia-N	1.43	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315969

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850685	Kjeldahl Nitrogen	4.64	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850752	Kjeldahl Nitrogen	0.0783	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P315750

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850640	NO2NO3-N	0.355	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P315912

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850679	NO2NO3-N	1.23	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315829

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850710	Total-P	1.19	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315906

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850895	Total-P	0.0514	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315297

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850619	O-Phosphate-P	1.17	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315300

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850548	O-Phosphate-P	1.90	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P315293

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850706	Color (true)	1.00	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P315365

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850705	Color (true)	3.57	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P315425

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1849899	Total Alkalinity	0.102	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P315673

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1851136	Total Alkalinity	0.452	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P315619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850705	TDS	2.84	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P315675

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850839	Fluoride	1.48	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P315676

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1851136	Fluoride	0.494	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P315384

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850629	Organic Carbon	0.272	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P315410

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850709	Organic Carbon	0.832	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: SM 2120 B
Run ID: A72844
Included Lab Sample IDs: 1850706

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.6	97.1	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A72846
Included Lab Sample IDs: 1850711, 1850712, 1850713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.9	101	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A72856
Included Lab Sample IDs: 1850705, 1850706, 1850707

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

Reference Method: SM 2120 B
Run ID: A72861
Included Lab Sample IDs: 1850705, 1850707

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	104	P/P	85 - 115

Reference Method: SM 5310 B-00
Run ID: A72867
Included Lab Sample IDs: 1850708, 1850710

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

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A72882
Included Lab Sample IDs: 1850709

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

Reference Method: SM 2320 B-97
Run ID: A72887
Included Lab Sample IDs: 1850706

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

Reference Method: SM 2320 B-97
Run ID: A72982
Included Lab Sample IDs: 1850705, 1850707

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.9	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A72982
Included Lab Sample IDs: 1850705, 1850706, 1850707

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A72986
Included Lab Sample IDs: 1850708, 1850710

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A73015
Included Lab Sample IDs: 1850708, 1850710

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A73030
Included Lab Sample IDs: 1850709

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A73071
Included Lab Sample IDs: 1850708, 1850710

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	104	P/P	90 - 110
Total-P	102	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A73081

Included Lab Sample IDs: 1850709

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73099

Included Lab Sample IDs: 1850709

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A73105

Included Lab Sample IDs: 1850705, 1850707

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	101	P/P	90 - 110
Sulfate	99.0	98.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A73131

Included Lab Sample IDs: 1850706

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	100	P/P	90 - 110
Sulfate	105	108	P/P	90 - 110
Sulfate	98.3	95.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A73135

Included Lab Sample IDs: 1850709

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.3	94.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A73173

Included Lab Sample IDs: 1850708, 1850710

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	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	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				8.96	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 300.0 Rev. 2.1	Chloride	101	102	100	0.0503	
	Chloride	101	101	101	0.112	
	Sulfate	95.9	97.5	93.6		
	Sulfate	96.4	97.1	96.7	1.53	
	Sulfate	101	104	107	0.466	
EPA 350.1 Rev. 2.0	Ammonia-N	102	104	104		0.628
	Ammonia-N	96.3	102	101		1.43
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.2	104	98.4		4.64
	Kjeldahl Nitrogen	105	110	110		0.0783
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104	104		0.355
	NO2NO3-N	103	102	103		1.23
EPA 365.1 Rev. 2.0	Total-P	99.2	101	99.8		1.19
	Total-P	99.8	93.5	93.4		0.0514
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	98.1	99.6		1.17
	O-Phosphate-P	103	99.2	101		1.90
SM 2120 B	Color (true)				1.00	
	Color (true)				3.57	
SM 2320 B-97	Total Alkalinity	101			0.102	
	Total Alkalinity	102			0.452	
SM 2540 C-97	TDS				2.84	
SM 4500 F-C-97	Fluoride	97.8	101	103		1.48
	Fluoride	97.3	100	101		0.494
SM 5310 B-00	Organic Carbon	101				0.272
	Organic Carbon	101	98.0	99.2		0.832

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1850705, 1850706, 1850707
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1850705, 1850706, 1850707
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1850705, 1850706, 1850707
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1850708, 1850709, 1850710
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1850708, 1850709, 1850710
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1850708, 1850709, 1850710
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1850708, 1850709, 1850710
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1850711, 1850712, 1850713
SM 2120 B / E31780	True Color measured at 450 nm	1850705, 1850706, 1850707
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1850705, 1850706, 1850707
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1850705, 1850706, 1850707
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1850705, 1850706, 1850707
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1850705, 1850706, 1850707
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1850708, 1850709, 1850710

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	11/16/2016			11/16/2016 16:20	Sima Feizi	1850705, 1850706, 1850707
EPA 300.0 Rev. 2.1	11/16/2016			12/01/2016	Ping Hua	1850705, 1850706, 1850707
	11/16/2016			12/03/2016	Ping Hua	1850707
EPA 350.1 Rev. 2.0	11/16/2016			11/22/2016	Sofia Elnemr	1850708, 1850710
	11/16/2016			11/28/2016	Sofia Elnemr	1850709
EPA 351.2 Rev. 2.0	11/16/2016	12/01/2016	Adrian Shelby	12/02/2016	Joseph Suarez	1850709
	11/16/2016	12/02/2016	Adrian Shelby	12/05/2016	Joseph Suarez	1850708, 1850710
EPA 353.2 Rev. 2.0	11/16/2016			11/28/2016	Beverly Y. Sanders	1850708, 1850710
	11/16/2016			11/30/2016	Beverly Y. Sanders	1850709
EPA 365.1 Rev. 2.0	11/16/2016	11/29/2016	Christopher Armour	11/29/2016	Lipi Saha	1850708, 1850710
	11/16/2016	11/30/2016	Adrian Shelby	11/30/2016	Lipi Saha	1850709
EPA 365.1 Rev. 2.0 dissolved	11/16/2016			11/16/2016 15:55	Julia Storbeck	1850711
	11/16/2016			11/16/2016 15:56	Julia Storbeck	1850713
	11/16/2016			11/16/2016 15:57	Julia Storbeck	1850712
SM 2120 B	11/16/2016			11/16/2016 15:26	Blanca Fach	1850706
	11/16/2016			11/16/2016 17:10	Blanca Fach	1850705
	11/16/2016			11/16/2016 17:11	Blanca Fach	1850707
SM 2320 B-97	11/16/2016			11/18/2016	Dale L. Simmons	1850706
	11/16/2016			11/23/2016	Dale L. Simmons	1850705, 1850707
SM 2540 C-97	11/16/2016			11/18/2016	Yijie Li	1850705, 1850706, 1850707
SM 2540 D-97	11/16/2016			11/18/2016	Yijie Li	1850705, 1850706, 1850707
SM 4500 F-C-97	11/16/2016			11/22/2016	Dale L. Simmons	1850706
	11/16/2016			11/23/2016	Dale L. Simmons	1850705, 1850707
SM 5310 B-00	11/16/2016			11/17/2016	Julie Michelle Frank	1850708, 1850710
	11/16/2016			11/18/2016	Julie Michelle Frank	1850709