

Chemical Analysis Report

SO-DIST-2016-12-22-01

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

Event Description: **SMP: Phillipi and Walker**
Request ID: **RQ-2016-12-19-06**
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

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
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Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 17-JAN-2017 09:49



NON-CONFORMANCE REPORT INCLUDED

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 @ Pinecraft Park

Collection Date/Time: 12/20/2016 09:10

Field ID: G3SD122016-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1859778	EPA 180.1 Rev. 2.0	Turbidity	4.8	Q	NTU	P317255	
	EPA 300.0 Rev. 2.1	Chloride	61		mg Cl/L	P317776	
		Sulfate	110		mg SO4/L	P317773	
	SM 2120 B	Color (true)	40	Q	PCU	P317258	
	SM 2320 B-97	Total Alkalinity	187		mg CaCO3/L	P317402	
	SM 2540 C-97	TDS	502	A	mg/L	P317862	
	SM 2540 D-97	TSS	5	I	mg/L	P317476	
	SM 4500 F-C-97	Fluoride	0.60		mg F/L	P317411	
1859781	EPA 350.1 Rev. 2.0	Ammonia-N	0.11		mg N/L	P317682	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.96		mg N/L	P317302	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.39		mg N/L	P317437	
	EPA 365.1 Rev. 2.0	Total-P	0.32		mg P/L	P317466	MS
	SM 5310 B-00	Organic Carbon	12		mg C/L	P317307	
1859784	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.19	Q	mg P/L	P317293	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. The sample expired prior to receipt.

SM 2120 B: The sample expired prior to receipt.

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

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired prior to receipt.

Sample Location: Walker Creek @ 32nd Street

Collection Date/Time: 12/20/2016 10:05

Field ID: G3SD122016-2

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1859779	EPA 180.1 Rev. 2.0	Turbidity	1.5	Q	NTU	P317255	
	EPA 300.0 Rev. 2.1	Chloride	1.8E+03		mg Cl/L	P317776	
		Sulfate	340		mg SO4/L	P317773	
	SM 2120 B	Color (true)	48	Q	PCU	P317258	
	SM 2320 B-97	Total Alkalinity	197		mg CaCO3/L	P317403	
	SM 2540 C-97	TDS	3.64E+03		mg/L	P317862	
	SM 2540 D-97	TSS	3	U	mg/L	P317477	
	SM 4500 F-C-97	Fluoride	0.75		mg F/L	P317486	
1859782	EPA 350.1 Rev. 2.0	Ammonia-N	0.031		mg N/L	P317678	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P317388	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.057		mg N/L	P317535	
	EPA 365.1 Rev. 2.0	Total-P	0.28		mg P/L	P317465	MS
	SM 5310 B-00	Organic Carbon	14		mg C/L	P317308	
1859785	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.22	Q	mg P/L	P317295	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. The sample expired prior to receipt.

SM 2120 B: The sample expired prior to receipt.

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

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired prior to receipt.

Sample Location: Field Blank

Collection Date/Time: 12/20/2016 09:20

Field ID: G3SD122016-3

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1859780	EPA 180.1 Rev. 2.0	Turbidity	0.10	UQ	NTU	P317255	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P317776	
		Sulfate	0.20	U	mg SO4/L	P317773	
	SM 2120 B	Color (true)	2.5	UQ	PCU	P317258	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P317402	
	SM 2540 C-97	TDS	15	U	mg/L	P317862	
	SM 2540 D-97	TSS	2	U	mg/L	P317476	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P317411	
1859783	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	P317302	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P317437	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P317859	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P317307	
1859786	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	UQ	mg P/L	P317293	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. The sample expired prior to receipt.

SM 2120 B: The sample expired prior to receipt.

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

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired prior to receipt.

Non-Conformance Report

NCR ID: 6186

Event(s)

SO-DIST-2016-12-22-01

Job(s)

Sample(s)

Test(s)

NCR Type: SHIPPING/RECEIVING

NCR Category: Receiving

Observation: Samples were received more than 48 hours after collection so short-holds will be Q qualified.

Resolution: Customers (Corey Anderson/Ben Paswater) were notified on 12/22/2016.

Authorised by/Date: Colin Wright 1/15/2017

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P317255

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P317773

Component	Result	Code	Units
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Quality Assurance Report

Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317773

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317776

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: P317682

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317302

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317388

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317437

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317535

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317465

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317466

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317859

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317293

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317295

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

Reference Method: SM 2120 B
Batch ID: P317258

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P317402

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

Reference Method: SM 2320 B-97
Batch ID: P317403

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

Reference Method: SM 2540 C-97
Batch ID: P317862

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P317476

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P317477

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P317411

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P317486

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P317307

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

Reference Method: SM 5310 B-00
Batch ID: P317308

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: P317773

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317776

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	101		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: P317682

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317682

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	93.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317302

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317388

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317437

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317535

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: P317465

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317466

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	92.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317859

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317293

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317295

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

Reference Method: SM 2320 B-97
Batch ID: P317402

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.2		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P317403

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.3		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P317411

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.1		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P317486

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

Reference Method: SM 5310 B-00
Batch ID: P317307

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P317308

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.9		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317773

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859695	Sulfate	98.8		P	90 - 110
1859752	Sulfate	98.5		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317776

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859695	Chloride	101		P	90 - 110
1859752	Chloride	101		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: P317682

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859760	Ammonia-N	99.8	95.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317302

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859760	Kjeldahl Nitrogen	98.0	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317388

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859966	Kjeldahl Nitrogen	96.5	94.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317437

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859781	NO2NO3-N	100		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317535

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1858361	NO2NO3-N	105	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317465

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859435	Total-P	85.6	89.6	F/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317466

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859763	Total-P	87.6	95.6	F/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317859

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861155	Total-P	93.6	94.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317293

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859764	O-Phosphate-P	97.5	98.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317295

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859643	O-Phosphate-P	97.6	98.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P317411

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859755	Fluoride	97.2	99.8	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P317486

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859946	Fluoride	98.0	98.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P317307

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859698	Organic Carbon	94.1	98.2	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P317308

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859638	Organic Carbon	95.4	93.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317773

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859752	Sulfate	0.425	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317776

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859752	Chloride	0.357	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
1859638	Ammonia-N	1.72	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317682

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859760	Ammonia-N	2.43	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317302

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859760	Kjeldahl Nitrogen	1.89	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317388

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859966	Kjeldahl Nitrogen	1.66	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317437

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859781	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317535

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858361	NO2NO3-N	4.54	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317465

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859435	Total-P	4.30	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317466

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859763	Total-P	7.93	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317859

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861155	Total-P	1.29	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317293

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859764	O-Phosphate-P	0.477	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317295

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859643	O-Phosphate-P	0.368	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P317258

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859747	Color (true)	0.650	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P317402

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859755	Total Alkalinity	0.0251	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P317403

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859442	Total Alkalinity	0.641	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P317862

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859778	TDS	0.598	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P317411

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859755	Fluoride	1.96	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P317486

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859946	Fluoride	0.470	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P317307

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859698	Organic Carbon	3.19	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P317308

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859638	Organic Carbon	2.08	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A73547
Included Lab Sample IDs: 1859778, 1859779, 1859780

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	97.5	100	P/P	95 - 105

Reference Method: SM 2120 B
Run ID: A73548
Included Lab Sample IDs: 1859778, 1859779, 1859780

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.2	98.2	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A73554
Included Lab Sample IDs: 1859784, 1859785, 1859786

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.8	97.5	P/P	90 - 110
O-Phosphate-P	98.2	97.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A73557

Included Lab Sample IDs: 1859781, 1859782, 1859783

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.8	97.0	P/P	90 - 110
Organic Carbon	98.7	96.8	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A73587

Included Lab Sample IDs: 1859778, 1859779, 1859780

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.3	97.8	P/P	90 - 110
Total Alkalinity	99.4	98.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A73587

Included Lab Sample IDs: 1859778, 1859780

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.5	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A73591

Included Lab Sample IDs: 1859781, 1859783

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.8	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A73594

Included Lab Sample IDs: 1859781, 1859783

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A73602

Included Lab Sample IDs: 1859782

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	97.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A73612

Included Lab Sample IDs: 1859779

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	96.9	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A73633

Included Lab Sample IDs: 1859782

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A73633

Included Lab Sample IDs: 1859782

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73639

Included Lab Sample IDs: 1859781, 1859782

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	104	P/P	90 - 110
Total-P	104	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A73714

Included Lab Sample IDs: 1859781, 1859782, 1859783

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.5	P/P	90 - 110
Ammonia-N	100	99.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A73754

Included Lab Sample IDs: 1859778, 1859779, 1859780

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	104	104	P/P	90 - 110
Sulfate	96.5	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73866

Included Lab Sample IDs: 1859783

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.2	96.2	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
			LCS			
EPA 300.0 Rev. 2.1	Chloride	101	101	101	0.357	
	Sulfate	98.4	98.5	98.8	0.425	
EPA 350.1 Rev. 2.0	Ammonia-N	99.7	102	98.9		1.72
	Ammonia-N	93.3	99.8	95.1		2.43
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	98.0	101		1.89
	Kjeldahl Nitrogen	101	96.5	94.5		1.66
EPA 353.2 Rev. 2.0	NO2NO3-N	105	100			0.0
	NO2NO3-N	102	105	99.2		4.54

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 365.1 Rev. 2.0	Total-P	99.8	85.6	89.6		4.30
	Total-P	92.0	87.6	95.6		7.93
	Total-P	94.9	93.6	94.9		1.29
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	97.5	98.3		0.477
	O-Phosphate-P	101	97.6	98.0		0.368
	Color (true)				0.650	
SM 2120 B					0.0251	
SM 2320 B-97	Total Alkalinity	99.2			0.641	
	Total Alkalinity	99.3			0.598	
SM 2540 C-97	TDS					
SM 4500 F-C-97	Fluoride	96.1	97.2	99.8		1.96
	Fluoride	97.1	98.0	98.8		0.470
SM 5310 B-00	Organic Carbon	96.0	94.1	98.2		3.19
	Organic Carbon	96.9	93.2	95.4		2.08

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1859778, 1859779, 1859780
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1859778, 1859779, 1859780
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1859778, 1859779, 1859780
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1859781, 1859782, 1859783
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1859781, 1859782, 1859783
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1859781, 1859782, 1859783
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1859781, 1859782, 1859783
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1859784, 1859785, 1859786
SM 2120 B / E31780	True Color measured at 450 nm	1859778, 1859779, 1859780
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1859778, 1859779, 1859780
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1859778, 1859779, 1859780
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1859778, 1859779, 1859780
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1859778, 1859779, 1859780
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1859781, 1859782, 1859783

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	12/22/2016			12/22/2016 14:52	Julie Michelle Frank	1859778, 1859779, 1859780
EPA 300.0 Rev. 2.1	12/22/2016			01/05/2017	Ping Hua	1859778, 1859779, 1859780
EPA 350.1 Rev. 2.0	12/22/2016			01/03/2017	Sofia Elnemr	1859781, 1859782, 1859783
EPA 351.2 Rev. 2.0	12/22/2016	12/23/2016	Adrian Shelby	12/27/2016	Joseph Suarez	1859781, 1859783
	12/22/2016	12/27/2016	Adrian Shelby	12/27/2016	Joseph Suarez	1859782
EPA 353.2 Rev. 2.0	12/22/2016			12/27/2016	Beverly Y. Sanders	1859781, 1859783
	12/22/2016			12/28/2016	Beverly Y. Sanders	1859782
EPA 365.1 Rev. 2.0	12/22/2016	01/06/2017	Vijayalakshmi Reddy	01/11/2017	Lipi Saha	1859783
	12/22/2016	12/28/2016	Adrian Shelby	12/29/2016	Beverly Y. Sanders	1859781, 1859782
EPA 365.1 Rev. 2.0 dissolved	12/22/2016			12/22/2016 18:17	Ping Hua	1859784
	12/22/2016			12/22/2016 18:18	Ping Hua	1859786
	12/22/2016			12/22/2016 18:24	Ping Hua	1859785
SM 2120 B	12/22/2016			12/22/2016 15:32	Jared I. Manley	1859778
	12/22/2016			12/22/2016 15:33	Jared I. Manley	1859779, 1859780
SM 2320 B-97	12/22/2016			12/23/2016	Dale L. Simmons	1859778, 1859780
	12/22/2016			12/24/2016	Dale L. Simmons	1859779
SM 2540 C-97	12/22/2016			12/23/2016	Sima Feizi	1859778, 1859779, 1859780
SM 2540 D-97	12/22/2016			12/23/2016	Sima Feizi	1859778, 1859779, 1859780
SM 4500 F-C-97	12/22/2016			12/23/2016	Dale L. Simmons	1859778, 1859780
	12/22/2016			12/27/2016	Dale L. Simmons	1859779
SM 5310 B-00	12/22/2016			12/23/2016	Julie Michelle Frank	1859781, 1859782, 1859783