

Chemical Analysis Report

SO-DIST-2016-05-27-03

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

Event Description: **SMP: Lee County Streams**

Request ID: **RQ-2016-05-23-07**

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
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Date Certified: 20-JUN-2016 11:10



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: Manuel Branch Upstream of Weir

Collection Date/Time: 05/26/2016 09:00

Field ID: G3SD52616-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802733	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P305301	
	EPA 300.0 Rev. 2.1	Chloride	120		mg Cl/L	P305621	
		Sulfate	28		mg SO4/L	P305624	
	SM 2120 B	Color (true)	64	A	PCU	P305214	
	SM 2320 B-97	Total Alkalinity	192		mg CaCO3/L	P305750	
	SM 2540 C-97	TDS	466		mg/L	P305709	
	SM 2540 D-97	TSS	2	U	mg/L	P305637	
	SM 4500 F-C-97	Fluoride	0.20		mg F/L	P305753	
1802739	EPA 350.1 Rev. 2.0	Ammonia-N	0.042		mg N/L	P305664	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.64		mg N/L	P305557	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.098		mg N/L	P305441	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P305790	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P306094	
1802745	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.12		mg P/L	P305207	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Carrell Canal Below FMCC Weir

Collection Date/Time: 05/26/2016 09:15

Field ID: G3SD52616-2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802734	EPA 180.1 Rev. 2.0	Turbidity	5.8		NTU	P305301	
	EPA 300.0 Rev. 2.1	Chloride	41		mg Cl/L	P305621	
		Sulfate	26		mg SO4/L	P305624	
	SM 2120 B	Color (true)	61		PCU	P305214	
	SM 2320 B-97	Total Alkalinity	141		mg CaCO3/L	P305750	
	SM 2540 C-97	TDS	288		mg/L	P305709	
	SM 2540 D-97	TSS	7	I	mg/L	P305637	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P305753	
1802740	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P305664	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P305557	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P305441	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P305790	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P306094	
1802746	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.029		mg P/L	P305207	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Chapel Creek South of SR78

Collection Date/Time: 05/26/2016 08:30

Field ID: G3SD52616-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802735	EPA 180.1 Rev. 2.0	Turbidity	14		NTU	P305301	

Field ID: G3SD52616-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802735	EPA 300.0 Rev. 2.1	Chloride	110		mg Cl/L	P305621	
		Sulfate	8.1		mg SO4/L	P305624	
	SM 2120 B	Color (true)	81		PCU	P305215	
	SM 2320 B-97	Total Alkalinity	294		mg CaCO3/L	P305750	
	SM 2540 C-97	TDS	546		mg/L	P305709	
	SM 2540 D-97	TSS	6	I	mg/L	P305637	
	SM 4500 F-C-97	Fluoride	0.40		mg F/L	P305753	
1802741	EPA 350.1 Rev. 2.0	Ammonia-N	0.044		mg N/L	P305664	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.84		mg N/L	P305557	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.21		mg N/L	P305442	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P305790	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P306094	
1802747	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.039		mg P/L	P305207	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Winkler Canal @ Princeton St.

Collection Date/Time: 05/26/2016 09:30

Field ID: G3SD52616-4

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802736	EPA 180.1 Rev. 2.0	Turbidity	1.5	A	NTU	P305302	
	EPA 300.0 Rev. 2.1	Chloride	97		mg Cl/L	P305621	
		Sulfate	46		mg SO4/L	P305624	
	SM 2120 B	Color (true)	28		PCU	P305214	
	SM 2320 B-97	Total Alkalinity	206		mg CaCO3/L	P305750	
	SM 2540 C-97	TDS	466		mg/L	P305709	
	SM 2540 D-97	TSS	5	I	mg/L	P305637	
1802742	SM 4500 F-C-97	Fluoride	0.31		mg F/L	P305753	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.045		mg N/L	P305664	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P305557	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P305442	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P305790	
1802748	SM 5310 B-00	Organic Carbon	6.1		mg C/L	P306094	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.066		mg P/L	P305207	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Oak Creek @ Oak Creek Preserve

Collection Date/Time: 05/26/2016 10:45

Field ID: G3SD52616-5

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802737	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P305302	
	EPA 300.0 Rev. 2.1	Chloride	42		mg Cl/L	P305621	
		Sulfate	17		mg SO4/L	P305624	

Field ID: G3SD52616-5

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802737	SM 2120 B	Color (true)	21		PCU	P305214	
	SM 2320 B-97	Total Alkalinity	302		mg CaCO3/L	P305750	
	SM 2540 C-97	TDS	405	A	mg/L	P305710	
	SM 2540 D-97	TSS	5	I	mg/L	P305638	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P305753	
1802743	EPA 350.1 Rev. 2.0	Ammonia-N	0.034		mg N/L	P305664	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P305558	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.24		mg N/L	P305442	
	EPA 365.1 Rev. 2.0	Total-P	0.055		mg P/L	P305790	
	SM 5310 B-00	Organic Carbon	8.7		mg C/L	P306094	
1802749	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.024		mg P/L	P305207	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Oak Creek @ Kentucky St.

Collection Date/Time: 05/26/2016 11:00

Field ID: G3SD52616-6

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802738	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P305302	
	EPA 300.0 Rev. 2.1	Chloride	370		mg Cl/L	P305621	
		Sulfate	67		mg SO4/L	P305624	
	SM 2120 B	Color (true)	43		PCU	P305214	
	SM 2320 B-97	Total Alkalinity	290		mg CaCO3/L	P305750	
	SM 2540 C-97	TDS	1.00E+03		mg/L	P305710	
	SM 2540 D-97	TSS	6	I	mg/L	P305638	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P305753	
1802744	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P305664	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57		mg N/L	P305558	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P305442	
	EPA 365.1 Rev. 2.0	Total-P	0.086		mg P/L	P305791	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P306094	
1802750	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.032		mg P/L	P305207	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P305301

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P305302

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305621

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305624

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305664

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305557

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305558

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305441

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305442

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305790

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: P305791

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305207

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

Reference Method: SM 2120 B
Batch ID: P305214

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P305215

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P305750

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

Reference Method: SM 2540 C-97
Batch ID: P305709

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P305710

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P305637

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P305638

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P305753

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P306094

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: P305621

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305624

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305664

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305557

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305558

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305441

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305442

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305442

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305790

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305791

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305207

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

Reference Method: SM 2320 B-97
Batch ID: P305750

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

Reference Method: SM 4500 F-C-97
Batch ID: P305753

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.2		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P306094

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	105		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305621

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1803141	Chloride	99.1		P	90 - 110
1803326	Chloride	102		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305624

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1803141	Sulfate	99.8		P	90 - 110
1803326	Sulfate	99.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305664

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802739	Ammonia-N	99.6	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305557

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802714	Kjeldahl Nitrogen	96.6	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802743	Kjeldahl Nitrogen	105	96.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305441

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802739	NO2NO3-N	97.2	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305442

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802741	NO2NO3-N	96.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305790

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802742	Total-P	97.5	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305791

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802744	Total-P	95.8	99.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P305753

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1803462	Fluoride	98.3	97.6	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P306094

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802732	Organic Carbon	103		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P305301

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802671	Turbidity	3.46	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P305302

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802736	Turbidity	5.98	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1803141	Chloride	0.180	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1803141	Sulfate	1.94	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305664

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802739	Ammonia-N	0.486	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305557

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802714	Kjeldahl Nitrogen	5.15	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305558

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802743	Kjeldahl Nitrogen	5.66	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305441

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802739	NO2NO3-N	0.683	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305442

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802741	NO2NO3-N	0.990	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305790

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802742	Total-P	0.433	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305791

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802744	Total-P	3.35	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305207

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802745	O-Phosphate-P	1.69	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P305214

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802733	Color (true)	3.36	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P305215

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802542	Color (true)	0.0847	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P305750

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1803462	Total Alkalinity	0.570	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P305709

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802731	TDS	5.03	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P305710

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802737	TDS	2.96	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P305753

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1803462	Fluoride	0.480	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P306094

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802732	Organic Carbon	1.90	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: A69738
Included Lab Sample IDs: 1802745, 1802746, 1802747, 1802748, 1802749, 1802750

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	100	P/P	90 - 110
O-Phosphate-P	100	100	P/P	90 - 110
O-Phosphate-P	101	98.5	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A69740
Included Lab Sample IDs: 1802733, 1802734, 1802735, 1802736, 1802737, 1802738

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

Reference Method: SM 2120 B

Run ID: A69740

Included Lab Sample IDs: 1802733, 1802734, 1802735, 1802736, 1802737, 1802738

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.7	99.9	P/P	90 - 115
Color (true)	99.9	97.4	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A69767

Included Lab Sample IDs: 1802733, 1802734, 1802735, 1802736, 1802737, 1802738

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69804

Included Lab Sample IDs: 1802739, 1802740, 1802741, 1802742, 1802743, 1802744

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.0	98.0	P/P	90 - 110
NO2NO3-N	97.5	97.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A69814

Included Lab Sample IDs: 1802733, 1802734, 1802735, 1802736, 1802737, 1802738

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Chloride	102	101	P/P	90 - 110
Sulfate	99.4	99.8	P/P	90 - 110
Sulfate	99.8	98.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A69862

Included Lab Sample IDs: 1802739, 1802740, 1802741, 1802742, 1802743, 1802744

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69882

Included Lab Sample IDs: 1802739, 1802740, 1802741, 1802742, 1802743, 1802744

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	98.1	P/P	90 - 110
Kjeldahl Nitrogen	96.8	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A69906

Included Lab Sample IDs: 1802733, 1802734, 1802735, 1802736, 1802737, 1802738

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A69906

Included Lab Sample IDs: 1802733, 1802734, 1802735, 1802736, 1802737, 1802738

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.1	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A69906

Included Lab Sample IDs: 1802733, 1802734, 1802735, 1802736, 1802737, 1802738

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	99.5	P/P	90 - 110
Fluoride	99.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69962

Included Lab Sample IDs: 1802739, 1802740, 1802741, 1802742, 1802744

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69970

Included Lab Sample IDs: 1802743

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

Reference Method: SM 5310 B-00

Run ID: A70009

Included Lab Sample IDs: 1802739, 1802740, 1802741, 1802742, 1802743, 1802744

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	102	99.8	P/P	90 - 110

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

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery		Precision	
						SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					3.46	
	Turbidity					5.98	
EPA 300.0 Rev. 2.1	Chloride	101		102	99.1	0.180	
	Sulfate	99.9		99.8	99.7	1.94	
EPA 350.1 Rev. 2.0	Ammonia-N	99.5		99.6	100		0.486
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.9		96.6	103		5.15
	Kjeldahl Nitrogen	104		105	96.8		5.66
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5		97.2	98.2		0.683
	NO2NO3-N	98.5		96.2			0.990

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 365.1 Rev. 2.0	Total-P	102	97.5	98.0		0.433
	Total-P	102	95.8	99.8		3.35
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100				1.69
SM 2120 B	Color (true)				3.36	
	Color (true)				0.0847	
SM 2320 B-97	Total Alkalinity	102			0.570	
SM 2540 C-97	TDS				5.03	
	TDS				2.96	
SM 4500 F-C-97	Fluoride	97.2	98.3	97.6		0.480
SM 5310 B-00	Organic Carbon	105	103			1.90

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1802733, 1802734, 1802735, 1802736, 1802737, 1802738
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1802733, 1802734, 1802735, 1802736, 1802737, 1802738
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1802733, 1802734, 1802735, 1802736, 1802737, 1802738
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1802739, 1802740, 1802741, 1802742, 1802743, 1802744
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1802739, 1802740, 1802741, 1802742, 1802743, 1802744
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1802739, 1802740, 1802741, 1802742, 1802743, 1802744
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1802739, 1802740, 1802741, 1802742, 1802743, 1802744
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1802745, 1802746, 1802747, 1802748, 1802749, 1802750
SM 2120 B / E31780	True Color measured at 450 nm	1802733, 1802734, 1802735, 1802736, 1802737, 1802738
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1802733, 1802734, 1802735, 1802736, 1802737, 1802738
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1802733, 1802734, 1802735, 1802736, 1802737, 1802738
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1802733, 1802734, 1802735, 1802736, 1802737, 1802738
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1802733, 1802734, 1802735, 1802736, 1802737, 1802738
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1802739, 1802740, 1802741, 1802742, 1802743, 1802744

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	05/27/2016			05/27/2016 16:00	Blanca Fach	1802733, 1802734, 1802735, 1802736, 1802737, 1802738
EPA 300.0 Rev. 2.1	05/27/2016			06/03/2016	Elisa J Lutz	1802733, 1802734, 1802735, 1802736, 1802737, 1802738
EPA 350.1 Rev. 2.0	05/27/2016			06/06/2016	Diana M. Turner	1802739, 1802740, 1802741, 1802742, 1802743, 1802744
EPA 351.2 Rev. 2.0	05/27/2016	06/03/2016	Sofia Elnemr	06/07/2016	Christopher Armour	1802739, 1802740, 1802741, 1802742, 1802743, 1802744
EPA 353.2 Rev. 2.0	05/27/2016			06/02/2016	Peter D. Kaus	1802739, 1802740, 1802741, 1802742, 1802743, 1802744
EPA 365.1 Rev. 2.0	05/27/2016	06/08/2016	Vijayalakshmi Reddy	06/09/2016	Peter D. Kaus	1802739, 1802740, 1802741, 1802742, 1802744
EPA 365.1 Rev. 2.0 dissolved	05/27/2016	06/08/2016	Vijayalakshmi Reddy	06/10/2016	Virginia P. Brown	1802743
	05/27/2016			05/27/2016 14:39	Julia Storbeck	1802745
	05/27/2016			05/27/2016 15:08	Julia Storbeck	1802746
	05/27/2016			05/27/2016 15:09	Julia Storbeck	1802747
	05/27/2016			05/27/2016 15:10	Julia Storbeck	1802748
	05/27/2016			05/27/2016 15:11	Julia Storbeck	1802749
SM 2120 B	05/27/2016			05/27/2016 15:28	Julia Storbeck	1802750
	05/27/2016			05/27/2016 17:00	Chrisoulla Rakowski	1802733
	05/27/2016			05/27/2016 17:01	Chrisoulla Rakowski	1802734
	05/27/2016			05/27/2016 17:02	Chrisoulla Rakowski	1802736
	05/27/2016			05/27/2016 17:03	Chrisoulla Rakowski	1802737
	05/27/2016			05/27/2016 17:04	Chrisoulla Rakowski	1802738
SM 2320 B-97	05/27/2016			05/27/2016 17:13	Chrisoulla Rakowski	1802735
	05/27/2016			06/07/2016	Dale L. Simmons	1802733, 1802734, 1802735, 1802736, 1802737, 1802738
SM 2540 C-97	05/27/2016			06/01/2016	Yijie Li	1802733, 1802734, 1802735, 1802736, 1802737, 1802738
SM 2540 D-97	05/27/2016			06/01/2016	Yijie Li	1802733, 1802734, 1802735, 1802736, 1802737, 1802738
SM 4500 F-C-97	05/27/2016			06/07/2016	Dale L. Simmons	1802733, 1802734, 1802735, 1802736, 1802737, 1802738
SM 5310 B-00	05/27/2016			06/10/2016	Diana M. Turner	1802739, 1802740, 1802741, 1802742, 1802743, 1802744