

Chemical Analysis Report

SO-DIST-2016-05-27-02

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

Event Description: **SMP: Highlands Lakes**

Request ID: **RQ-2016-05-02-36**

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: 20-JUN-2016 15:53

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: HILL LAKE @ NORTH

Collection Date/Time: 05/26/2016 11:12

Field ID: G4HL052016-11

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802646	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P305300	
	EPA 300.0 Rev. 2.1	Chloride	9.6		mg Cl/L	P305568	
		Sulfate	5.2		mg SO4/L	P305571	
	SM 2120 B	Color (true)	42		PCU	P305212	
	SM 2320 B-97	Total Alkalinity	3.9		mg CaCO3/L	P305749	
	SM 2540 C-97	TDS	48		mg/L	P305708	
	SM 2540 D-97	TSS	2	I	mg/L	P305636	
	SM 4500 F-C-97	Fluoride	0.036	I	mg F/L	P305752	
1802651	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P305663	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.48		mg N/L	P305533	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P305440	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P305789	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P305855	
1802656	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P305205	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: The precision data is unavailable due to low analyte concentration in the QC sample.

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 60 umhos/cm.

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

Sample Location: HILL LAKE @ CENTER

Collection Date/Time: 05/26/2016 11:20

Field ID: G4HL052016-12

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802647	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P305300	
	EPA 300.0 Rev. 2.1	Chloride	9.7		mg Cl/L	P305568	
		Sulfate	5.2		mg SO4/L	P305571	
	SM 2120 B	Color (true)	42		PCU	P305212	
	SM 2320 B-97	Total Alkalinity	3.7		mg CaCO3/L	P305749	
	SM 2540 C-97	TDS	60		mg/L	P305708	
	SM 2540 D-97	TSS	2	U	mg/L	P305636	
	SM 4500 F-C-97	Fluoride	0.036	I	mg F/L	P305752	
1802652	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P305663	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.42		mg N/L	P305533	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P305440	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P305789	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P305855	
1802657	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P305205	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: The precision data is unavailable due to low analyte concentration in the QC sample.

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 60 umhos/cm.

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

Sample Location: HILL LAKE @ WEST SIDE

Collection Date/Time: 05/26/2016 11:27

Field ID: G4HL052016-13

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Field ID: G4HL052016-13

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802648	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P305300	
	EPA 300.0 Rev. 2.1	Chloride	9.6		mg Cl/L	P305568	
		Sulfate	5.2		mg SO4/L	P305571	
		Color (true)	41		PCU	P305212	
	SM 2320 B-97	Total Alkalinity	3.7		mg CaCO3/L	P305749	
	SM 2540 C-97	TDS	49		mg/L	P305708	
	SM 2540 D-97	TSS	2	I	mg/L	P305636	
	SM 4500 F-C-97	Fluoride	0.036	I	mg F/L	P305752	
1802653	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P305663	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.45		mg N/L	P305533	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P305440	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P305789	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P305855	
1802658	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P305205	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: The precision data is unavailable due to low analyte concentration in the QC sample.

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 60 umhos/cm.

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

Sample Location: HILL LAKE @ SOUTH SIDE

Collection Date/Time: 05/26/2016 11:36

Field ID: G4HL052016-14

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802649	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P305300	
	EPA 300.0 Rev. 2.1	Chloride	9.6		mg Cl/L	P305568	
		Sulfate	5.1		mg SO4/L	P305571	
		Color (true)	42	A	PCU	P305213	
	SM 2320 B-97	Total Alkalinity	3.8		mg CaCO3/L	P305749	
	SM 2540 C-97	TDS	47		mg/L	P305708	
	SM 2540 D-97	TSS	3	I	mg/L	P305636	
	SM 4500 F-C-97	Fluoride	0.035	I	mg F/L	P305752	
1802654	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P305663	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39		mg N/L	P305533	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P305440	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P305789	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P305855	
1802659	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P305205	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: The precision data is unavailable due to low analyte concentration in the QC sample.

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 60 umhos/cm.

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

Sample Location: HILL LAKE @ EAST SIDE

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

Field ID: G4HL052016-15

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802650	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P305300	

Field ID: G4HL052016-15

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802650	EPA 300.0 Rev. 2.1	Chloride	9.6		mg Cl/L	P305568	
		Sulfate	5.2		mg SO4/L	P305571	
	SM 2120 B	Color (true)	42		PCU	P305213	
	SM 2320 B-97	Total Alkalinity	4.0		mg CaCO3/L	P305749	
	SM 2540 C-97	TDS	58		mg/L	P305709	
	SM 2540 D-97	TSS	3	I	mg/L	P305637	
	SM 4500 F-C-97	Fluoride	0.035	I	mg F/L	P305752	
1802655	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P305663	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.48		mg N/L	P305533	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P305440	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P305789	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P306094	
1802660	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P305205	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: The precision data is unavailable due to low analyte concentration in the QC sample.

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 60 umhos/cm.

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P305300

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P305568

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P305571

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P305663

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P305533

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305440

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305789

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305205

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

Reference Method: SM 2120 B
Batch ID: P305212

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P305213

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P305749

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

Reference Method: SM 2540 C-97
Batch ID: P305708

Component	Result	Code	Units
TDS	15	U	mg/L

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

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P305636

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

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

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P305752

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P305855

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/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: P305568

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305571

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305663

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305533

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305440

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: P305440

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305789

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: P305205

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

Reference Method: SM 2320 B-97
Batch ID: P305749

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

Reference Method: SM 4500 F-C-97
Batch ID: P305752

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.7		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P305855

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

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: P305568

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802670	Chloride	98.8		P	90 - 110
1802713	Chloride	101		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305571

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802670	Sulfate	99.1		P	90 - 110
1802713	Sulfate	99.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802651	Ammonia-N	98.6	96.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305533

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802626	Kjeldahl Nitrogen	97.6	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305440

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802581	NO2NO3-N	97.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305789

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802654	Total-P	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305205

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802589	O-Phosphate-P	97.4	97.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P305752

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802567	Fluoride	97.4	97.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P305855

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802549	Organic Carbon	99.4	100	P/P	85 - 115

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: P305300

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802575	Turbidity	1.30	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305568

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802670	Chloride	0.312	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802651	Ammonia-N	1.77	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305533

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802626	Kjeldahl Nitrogen	2.27	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305440

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802581	NO2NO3-N	0.221	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305789

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802654	Total-P	1.44	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305205

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802589	O-Phosphate-P	0.410	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P305212

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802575	Color (true)	4.88	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P305213

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802649	Color (true)	1.21	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P305749

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802567	Total Alkalinity	0.672	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P305708

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802666	TDS	1.64	Sample	P	0 - 10

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 4500 F-C-97
Batch ID: P305752

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802567	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P305855

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802549	Organic Carbon	0.747	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A69738

Included Lab Sample IDs: 1802656, 1802657, 1802658, 1802659, 1802660

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

Reference Method: SM 2120 B

Run ID: A69740

Included Lab Sample IDs: 1802646, 1802647, 1802648, 1802649, 1802650

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.4	98.7	P/P	90 - 115
Color (true)	98.7	99.7	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A69767

Included Lab Sample IDs: 1802646, 1802647, 1802648, 1802649, 1802650

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69804

Included Lab Sample IDs: 1802651, 1802652, 1802653, 1802654, 1802655

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A69814

Included Lab Sample IDs: 1802646, 1802647, 1802648, 1802649, 1802650

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Sulfate	96.1	99.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A69862

Included Lab Sample IDs: 1802651, 1802652, 1802653, 1802654, 1802655

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69882

Included Lab Sample IDs: 1802651, 1802652, 1802653, 1802654, 1802655

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A69906

Included Lab Sample IDs: 1802646, 1802647, 1802648, 1802649, 1802650

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A69906

Included Lab Sample IDs: 1802646, 1802647, 1802648, 1802649, 1802650

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	99.5	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A69933

Included Lab Sample IDs: 1802651, 1802652, 1802653, 1802654

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69970

Included Lab Sample IDs: 1802651, 1802652, 1802653, 1802654, 1802655

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

Reference Method: SM 5310 B-00

Run ID: A70009

Included Lab Sample IDs: 1802655

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	102	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				1.30	
EPA 300.0 Rev. 2.1	Chloride	99.7	98.8	101	0.312	
	Sulfate	98.4	99.1	99.4		
EPA 350.1 Rev. 2.0	Ammonia-N	98.8	98.6	96.8		1.77
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.8	97.6	100		2.27
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	97.5			0.221
EPA 365.1 Rev. 2.0	Total-P	102	100	102		1.44
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104	97.4	97.8		0.410
SM 2120 B	Color (true)				4.88	
	Color (true)				1.21	
SM 2320 B-97	Total Alkalinity	102			0.672	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		LCS	Precision	MS
						SMP	
SM 2540 C-97	TDS					1.64	
	TDS					5.03	
SM 4500 F-C-97	Fluoride	96.7	97.4	97.4			0.0
SM 5310 B-00	Organic Carbon	101	99.4	100			0.747
	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	1802646, 1802647, 1802648, 1802649, 1802650
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1802646, 1802647, 1802648, 1802649, 1802650
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1802646, 1802647, 1802648, 1802649, 1802650
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1802651, 1802652, 1802653, 1802654, 1802655
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1802651, 1802652, 1802653, 1802654, 1802655
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1802651, 1802652, 1802653, 1802654, 1802655
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1802651, 1802652, 1802653, 1802654, 1802655
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1802656, 1802657, 1802658, 1802659, 1802660
SM 2120 B / E31780	True Color measured at 450 nm	1802646, 1802647, 1802648, 1802649, 1802650
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1802646, 1802647, 1802648, 1802649, 1802650
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1802646, 1802647, 1802648, 1802649, 1802650
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1802646, 1802647, 1802648, 1802649, 1802650
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1802646, 1802647, 1802648, 1802649, 1802650
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1802651, 1802652, 1802653, 1802654, 1802655

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	1802646, 1802647, 1802648, 1802649, 1802650
EPA 300.0 Rev. 2.1	05/27/2016			06/03/2016	Elisa J Lutz	1802646, 1802647, 1802648, 1802649, 1802650
EPA 350.1 Rev. 2.0	05/27/2016			06/06/2016	Diana M. Turner	1802651, 1802652, 1802653, 1802654, 1802655
EPA 351.2 Rev. 2.0	05/27/2016	06/03/2016	Sofia Elnemr	06/07/2016	Christopher Armour	1802651, 1802652, 1802653, 1802654, 1802655
EPA 353.2 Rev. 2.0	05/27/2016			06/02/2016	Peter D. Kaus	1802651, 1802652, 1802653, 1802654, 1802655
EPA 365.1 Rev. 2.0	05/27/2016	06/08/2016	Vijayalakshmi Reddy	06/10/2016	Virginia P. Brown	1802651, 1802652, 1802653, 1802654, 1802655
EPA 365.1 Rev. 2.0 dissolved	05/27/2016			05/27/2016 15:03	Julia Storbeck	1802656
	05/27/2016			05/27/2016 15:04	Julia Storbeck	1802657
	05/27/2016			05/27/2016 15:05	Julia Storbeck	1802658, 1802659
	05/27/2016			05/27/2016 15:06	Julia Storbeck	1802660
SM 2120 B	05/27/2016			05/27/2016 16:44	Chrisoulla Rakowski	1802646, 1802647
	05/27/2016			05/27/2016 16:45	Chrisoulla Rakowski	1802648
	05/27/2016			05/27/2016 16:49	Chrisoulla Rakowski	1802649
	05/27/2016			05/27/2016 16:50	Chrisoulla Rakowski	1802650
SM 2320 B-97	05/27/2016			06/07/2016	Dale L. Simmons	1802646, 1802647, 1802648, 1802649, 1802650
SM 2540 C-97	05/27/2016			06/01/2016	Yijie Li	1802646, 1802647, 1802648, 1802649, 1802650
SM 2540 D-97	05/27/2016			06/01/2016	Yijie Li	1802646, 1802647, 1802648, 1802649, 1802650
SM 4500 F-C-97	05/27/2016			06/07/2016	Dale L. Simmons	1802646, 1802647, 1802648, 1802649, 1802650
SM 5310 B-00	05/27/2016			06/08/2016	Diana M. Turner	1802651, 1802652, 1802653, 1802654
	05/27/2016			06/10/2016	Diana M. Turner	1802655