

Chemical Analysis Report

SW-DIST-2016-06-29-01

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

Event Description: **Pinellas Lakes**
Request ID: **RQ-2016-06-27-16**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Stephen Clingerman

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Certified by: Colin Wright, Environmental Administrator

Date Certified: 20-JUL-2016 09:11

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light-colored rectangular 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: PASADENA LAKE

Collection Date/Time: 06/28/2016 10:45

Field ID: G5SW0119

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1812007	EPA 180.1 Rev. 2.0	Turbidity	12		NTU	P307121	
	EPA 300.0 Rev. 2.1	Chloride	71		mg Cl/L	P307644	
		Sulfate	11		mg SO4/L	P307643	
	SM 2120 B	Color (true)	58		PCU	P307365	
	SM 2320 B-97	Total Alkalinity	50		mg CaCO3/L	P307615	
	SM 2540 C-97	TDS	200		mg/L	P307693	
	SM 2540 D-97	TSS	21		mg/L	P307685	
	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P307619	
1812011	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P307417	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.2		mg N/L	P307184	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P307248	
	EPA 365.1 Rev. 2.0	Total-P	0.19		mg P/L	P307203	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P307475	
1812015	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P307097	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: PINELLAS PARK DITCH #5

Collection Date/Time: 06/28/2016 11:30

Field ID: G5SW0118

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1812008	EPA 180.1 Rev. 2.0	Turbidity	8.6		NTU	P307121	
	EPA 300.0 Rev. 2.1	Chloride	75		mg Cl/L	P307644	
		Sulfate	27		mg SO4/L	P307643	
	SM 2120 B	Color (true)	36		PCU	P307365	
	SM 2320 B-97	Total Alkalinity	143		mg CaCO3/L	P307615	
	SM 2540 C-97	TDS	328		mg/L	P307694	
	SM 2540 D-97	TSS	30		mg/L	P307686	
	SM 4500 F-C-97	Fluoride	0.20		mg F/L	P307619	
1812012	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P307417	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P307184	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.015		mg N/L	P307248	
	EPA 365.1 Rev. 2.0	Total-P	0.063		mg P/L	P307203	
	SM 5310 B-00	Organic Carbon	9.4		mg C/L	P307475	
1812016	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.011		mg P/L	P307097	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: TAYLOR LAKE

Collection Date/Time: 06/28/2016 12:20

Field ID: G5SW0047

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1812009	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P307121	

Field ID: G5SW0047

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1812009	EPA 300.0 Rev. 2.1	Chloride	68		mg Cl/L	P307644	
		Sulfate	19		mg SO4/L	P307643	
	SM 2120 B	Color (true)	34		PCU	P307365	
	SM 2320 B-97	Total Alkalinity	86		mg CaCO3/L	P307615	
	SM 2540 C-97	TDS	244		mg/L	P307694	
	SM 2540 D-97	TSS	2	U	mg/L	P307686	
	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P307619	
1812013	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P307417	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P307195	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P307248	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P307203	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P307475	
1812017	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P307097	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: ALLEN CREEK

Collection Date/Time: 06/28/2016 13:05

Field ID: G1SW0068

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1812010	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P307121	
	EPA 300.0 Rev. 2.1	Chloride	51		mg Cl/L	P307886	
		Sulfate	17		mg SO4/L	P307888	
	SM 2120 B	Color (true)	33		PCU	P307365	
	SM 2320 B-97	Total Alkalinity	83		mg CaCO3/L	P307615	
	SM 2540 C-97	TDS	216	A	mg/L	P307694	
	SM 2540 D-97	TSS	4	I	mg/L	P307686	
1812014	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P307619	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.10		mg N/L	P307417	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P307195	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P307248	
	EPA 365.1 Rev. 2.0	Total-P	0.22		mg P/L	P307203	
1812018	SM 5310 B-00	Organic Carbon	7.9		mg C/L	P307475	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.18		mg P/L	P307098	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: 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: P307121

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307643

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307644

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307886

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307888

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307417

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307184

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307195

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307248

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307203

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307097

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307098

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

Reference Method: SM 2120 B
Batch ID: P307365

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P307615

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

Reference Method: SM 2540 C-97
Batch ID: P307693

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P307694

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P307685

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P307686

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P307619

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P307475

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: P307643

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307644

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	107		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307886

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307888

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307417

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307184

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	92.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307195

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: P307248

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: P307248

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307203

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307097

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307098

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

Reference Method: SM 2320 B-97
Batch ID: P307615

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

Reference Method: SM 4500 F-C-97
Batch ID: P307619

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.0		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P307475

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307643

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1811967	Sulfate	107		P	90 - 110
1811982	Sulfate	105		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307644

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1811967	Chloride	105		P	90 - 110
1811982	Chloride	106		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307886

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1812030	Chloride	96.8		P	90 - 110
1812200	Chloride	98.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307888

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1812030	Sulfate	99.4		P	90 - 110
1812200	Sulfate	99.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307184

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1811971	Kjeldahl Nitrogen	94.4	89.9	P/F	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307195

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1812013	Kjeldahl Nitrogen	94.2	94.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307248

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1811973	NO2NO3-N	104	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307203

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1811984	Total-P	98.0	96.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307097

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1812016	O-Phosphate-P	96.7	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307098

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1812052	O-Phosphate-P	96.8	97.7	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P307619

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1812200	Fluoride	97.4	96.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P307475

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1811949	Organic Carbon	104		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P307121

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1811965	Turbidity	2.91	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307643

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1811967	Sulfate	0.0666	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307644

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1811967	Chloride	0.193	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307886

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812030	Chloride	0.239	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307888

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812030	Sulfate	0.317	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307417

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307417

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812014	Ammonia-N	0.643	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307184

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1811971	Kjeldahl Nitrogen	3.53	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307195

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812013	Kjeldahl Nitrogen	0.324	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307248

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1811973	NO2NO3-N	1.43	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307203

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1811984	Total-P	1.45	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812016	O-Phosphate-P	0.741	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307098

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812052	O-Phosphate-P	0.925	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P307365

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1811965	Color (true)	0.852	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P307615

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812200	Total Alkalinity	0.775	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P307693

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1811981	TDS	4.29	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P307694

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812010	TDS	1.39	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P307619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812200	Fluoride	0.519	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P307475

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1811949	Organic Carbon	0.315	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: A70308
Included Lab Sample IDs: 1812015, 1812016, 1812017, 1812018

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	101	P/P	90 - 110
O-Phosphate-P	101	100	P/P	90 - 110
O-Phosphate-P	98.8	101	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A70310
Included Lab Sample IDs: 1812007, 1812008, 1812009, 1812010

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: A70310

Included Lab Sample IDs: 1812007, 1812008, 1812009, 1812010

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.3	97.1	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A70317

Included Lab Sample IDs: 1812007, 1812008, 1812009, 1812010

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: A70364

Included Lab Sample IDs: 1812011, 1812012, 1812013, 1812014

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A70377

Included Lab Sample IDs: 1812011, 1812012, 1812014

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A70409

Included Lab Sample IDs: 1812011, 1812012

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A70410

Included Lab Sample IDs: 1812013

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.0	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A70413

Included Lab Sample IDs: 1812013, 1812014

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.7	96.6	P/P	90 - 110
Kjeldahl Nitrogen	96.6	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A70419

Included Lab Sample IDs: 1812011, 1812012, 1812013, 1812014

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.3	99.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A70419

Included Lab Sample IDs: 1812011, 1812012, 1812013, 1812014

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

Reference Method: SM 5310 B-00

Run ID: A70435

Included Lab Sample IDs: 1812011, 1812012, 1812013, 1812014

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A70443

Included Lab Sample IDs: 1812007, 1812008, 1812009

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	108	106	P/P	90 - 110
Sulfate	106	99.6	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A70474

Included Lab Sample IDs: 1812007, 1812008, 1812009, 1812010

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

Reference Method: SM 4500 F-C-97

Run ID: A70474

Included Lab Sample IDs: 1812007, 1812008, 1812009, 1812010

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A70540

Included Lab Sample IDs: 1812010

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.8	99.6	P/P	90 - 110
Sulfate	99.2	94.5	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				2.91	
EPA 300.0 Rev. 2.1	Chloride	107	105 106		0.193	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		LCS	Precision	MS
						SMP	
EPA 300.0 Rev. 2.1	Chloride	99.0	96.8	98.6		0.239	
	Sulfate	105	107	105		0.0666	
	Sulfate	99.8	99.4	99.7		0.317	
EPA 350.1 Rev. 2.0	Ammonia-N	97.6					0.643
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	92.2	94.4	89.9			3.53
	Kjeldahl Nitrogen	104	94.2	94.7			0.324
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	104	106			1.43
EPA 365.1 Rev. 2.0	Total-P	95.2	98.0	96.2			1.45
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104	96.7	97.5			0.741
	O-Phosphate-P	100	96.8	97.7			0.925
SM 2120 B	Color (true)					0.852	
SM 2320 B-97	Total Alkalinity	102				0.775	
SM 2540 C-97	TDS					4.29	
	TDS					1.39	
SM 4500 F-C-97	Fluoride	97.0	97.4	96.8			0.519
SM 5310 B-00	Organic Carbon	100	104				0.315

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1812007, 1812008, 1812009, 1812010
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1812007, 1812008, 1812009, 1812010
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1812007, 1812008, 1812009, 1812010
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1812011, 1812012, 1812013, 1812014
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1812011, 1812012, 1812013, 1812014
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1812011, 1812012, 1812013, 1812014
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1812011, 1812012, 1812013, 1812014
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1812015, 1812016, 1812017, 1812018
SM 2120 B / E31780	True Color measured at 450 nm	1812007, 1812008, 1812009, 1812010
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1812007, 1812008, 1812009, 1812010
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1812007, 1812008, 1812009, 1812010
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1812007, 1812008, 1812009, 1812010
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1812007, 1812008, 1812009, 1812010
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1812011, 1812012, 1812013, 1812014

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	06/29/2016			06/29/2016 15:59	Sima Feizi	1812007, 1812008, 1812009, 1812010
EPA 300.0 Rev. 2.1	06/29/2016			07/09/2016	Ping Hua	1812007, 1812008, 1812009
	06/29/2016			07/13/2016	Ping Hua	1812010
EPA 350.1 Rev. 2.0	06/29/2016			07/06/2016	Diana M. Turner	1812011, 1812012, 1812013, 1812014
EPA 351.2 Rev. 2.0	06/29/2016	07/01/2016	Martin Acosta	07/06/2016	Christopher Armour	1812013, 1812014
	06/29/2016	07/01/2016	Sofia Elnemr	07/06/2016	Christopher Armour	1812011, 1812012
EPA 353.2 Rev. 2.0	06/29/2016			07/01/2016	Beverly Y. Sanders	1812011, 1812012, 1812013, 1812014
EPA 365.1 Rev. 2.0	06/29/2016	07/01/2016	Vijayalakshmi Reddy	07/05/2016	Lipi Saha	1812011, 1812012, 1812013, 1812014
EPA 365.1 Rev. 2.0 dissolved	06/29/2016			06/29/2016 14:55	Julia Storbeck	1812016
	06/29/2016			06/29/2016 15:27	Julia Storbeck	1812018
	06/29/2016			06/29/2016 15:43	Julia Storbeck	1812015
	06/29/2016			06/29/2016 15:44	Julia Storbeck	1812017
SM 2120 B	06/29/2016			06/29/2016 16:16	Rochelle Y Jackson	1812007
	06/29/2016			06/29/2016 16:17	Rochelle Y Jackson	1812008
	06/29/2016			06/29/2016 16:18	Rochelle Y Jackson	1812009, 1812010
SM 2320 B-97	06/29/2016			07/07/2016	Dale L. Simmons	1812007, 1812008, 1812009, 1812010
SM 2540 C-97	06/29/2016			07/01/2016	Yijie Li	1812007, 1812008, 1812009, 1812010
SM 2540 D-97	06/29/2016			07/01/2016	Yijie Li	1812007, 1812008, 1812009, 1812010
SM 4500 F-C-97	06/29/2016			07/07/2016	Dale L. Simmons	1812007, 1812008, 1812009, 1812010
SM 5310 B-00	06/29/2016			07/07/2016	Sofia Elnemr	1812011, 1812012, 1812013, 1812014