

Chemical Analysis Report

WQAP-2017-08-30-01

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

Event Description: **Lakes-A-kits**
Request ID: **RQ-2017-08-28-14**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
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13051 N. Telecom Parkway
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Date Certified: 21-SEP-2017 11:50



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: Wood Lake

Collection Date/Time: 08/29/2017 10:55

Field ID: G1SW0080

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926414	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P331071	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P331240	
		Sulfate	13		mg SO4/L	P331236	
	SM 2120 B	Color (true)	36		PCU	P331085	
	SM 2320 B-97	Total Alkalinity	7.3		mg CaCO3/L	P331522	
	SM 2540 C-97	TDS	99		mg/L	P331344	
	SM 2540 D-97	TSS	2	I	mg/L	P331533	
	SM 4500 F-C-97	Fluoride	0.061	I	mg F/L	P331744	
1926420	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P331171	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P331159	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P331247	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P331131	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P331336	
1926426	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P331075	

Ref. Method and Comment:

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

Sample Location: Lake Virginia

Collection Date/Time: 08/29/2017 10:40

Field ID: G1SW0005

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926415	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P331071	
	EPA 300.0 Rev. 2.1	Chloride	28		mg Cl/L	P331240	
		Sulfate	6.1		mg SO4/L	P331236	
	SM 2120 B	Color (true)	81	A	PCU	P331086	
	SM 2320 B-97	Total Alkalinity	25		mg CaCO3/L	P331522	
	SM 2540 C-97	TDS	113		mg/L	P331344	
	SM 2540 D-97	TSS	3	I	mg/L	P331533	
	SM 4500 F-C-97	Fluoride	0.081	I	mg F/L	P331744	
1926421	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P331171	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.85		mg N/L	P331159	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P331247	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P331131	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P331336	
1926427	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P331075	

Ref. Method and Comment:

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

Sample Location: Round Lake

Collection Date/Time: 08/29/2017 14:15

Field ID: G1SW0081

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926416	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P331071	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P331240	
		Sulfate	1.4		mg SO4/L	P331236	

Field ID: G1SW0081

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926416	SM 2120 B	Color (true)	29		PCU	P331086	
	SM 2320 B-97	Total Alkalinity	107		mg CaCO3/L	P331522	
	SM 2540 C-97	TDS	164		mg/L	P331344	
	SM 2540 D-97	TSS	3	I	mg/L	P331533	
	SM 4500 F-C-97	Fluoride	0.063	I	mg F/L	P331744	
1926422	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P331171	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.63		mg N/L	P331159	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P331247	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P331131	
	SM 5310 B-00	Organic Carbon	7.9		mg C/L	P331339	
1926428	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P331077	

Ref. Method and Comment:

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

Sample Location: Lake Helen

Collection Date/Time: 08/29/2017 10:15

Field ID: G1SW0069

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926417	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P331071	
	EPA 300.0 Rev. 2.1	Chloride	53		mg Cl/L	P331243	
		Sulfate	6.9		mg SO4/L	P331237	
	SM 2120 B	Color (true)	37		PCU	P331086	
	SM 2320 B-97	Total Alkalinity	15		mg CaCO3/L	P331522	
	SM 2540 C-97	TDS	142		mg/L	P331344	
	SM 2540 D-97	TSS	3	I	mg/L	P331533	
	SM 4500 F-C-97	Fluoride	0.057	I	mg F/L	P331744	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P331171	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P331159	
1926423	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P331247	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P331132	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P331339	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P331077	

Ref. Method and Comment:

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

Sample Location: Dosson Lake

Collection Date/Time: 08/29/2017 13:30

Field ID: G1SW0073

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926418	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P331071	
	EPA 300.0 Rev. 2.1	Chloride	16	A	mg Cl/L	P331243	
		Sulfate	2.1	A	mg SO4/L	P331237	
	SM 2120 B	Color (true)	160		PCU	P331086	
	SM 2320 B-97	Total Alkalinity	17		mg CaCO3/L	P331522	
	SM 2540 C-97	TDS	91		mg/L	P331344	
	SM 2540 D-97	TSS	3	I	mg/L	P331533	

Field ID: G1SW0073

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926418	SM 4500 F-C-97	Fluoride	0.070	I	mg F/L	P331744	
1926424	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P331171	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.92		mg N/L	P331159	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P331247	
	EPA 365.1 Rev. 2.0	Total-P	0.042		mg P/L	P331132	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P331339	
1926430	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P331077	

Ref. Method and Comment:

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

Sample Location: Sunshine Lake

Collection Date/Time: 08/29/2017 14:00

Field ID: G1SW0072

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926419	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P331071	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P331243	
		Sulfate	3.6		mg SO4/L	P331237	
	SM 2120 B	Color (true)	76	A	PCU	P331087	
	SM 2320 B-97	Total Alkalinity	20		mg CaCO3/L	P331522	
	SM 2540 C-97	TDS	84		mg/L	P331344	
	SM 2540 D-97	TSS	2	U	mg/L	P331533	
	SM 4500 F-C-97	Fluoride	0.078	I	mg F/L	P331744	
1926425	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P331171	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.80		mg N/L	P331159	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P331247	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P331132	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P331339	
1926431	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P331077	

Ref. Method and Comment:

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P331071

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P331236

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331237

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331240

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331243

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331171

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331159

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P331247

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331131

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331132

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331075

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331077

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

Reference Method: SM 2120 B
Batch ID: P331085

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P331086

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P331087

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P331522

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

Reference Method: SM 2540 C-97
Batch ID: P331344

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P331533

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P331744

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P331336

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

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P331339

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: P331236

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331237

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331240

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331243

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331171

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331159

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P331247

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331131

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331131

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331132

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331075

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331077

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

Reference Method: SM 2320 B-97
Batch ID: P331522

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P331744

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.3		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P331336

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.9		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P331339

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331236

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331236

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926289	Sulfate	92.7		P	90 - 110
1926353	Sulfate	92.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331237

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926418	Sulfate	101		P	90 - 110
1926574	Sulfate	93.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926289	Chloride	95.9		P	90 - 110
1926353	Chloride	94.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331243

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926418	Chloride	105		P	90 - 110
1926574	Chloride	95.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331171

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926420	Ammonia-N	99.6	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331159

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926420	Kjeldahl Nitrogen	104	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P331247

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926421	NO2NO3-N	106	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331131

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926367	Total-P	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331132

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

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P331132

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926423	Total-P	99.2	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P331075

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926302	O-Phosphate-P	98.0	99.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P331077

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926428	O-Phosphate-P	94.7	98.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
 Batch ID: P331744

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926521	Fluoride	97.3	97.9	P/P	91 - 105

Reference Method: SM 5310 B-00
 Batch ID: P331336

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926239	Organic Carbon	103	102	P/P	85 - 115

Reference Method: SM 5310 B-00
 Batch ID: P331339

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926422	Organic Carbon	103	102	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P331071

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926359	Turbidity	1.94	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P331236

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926353	Sulfate	0.356	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331237

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926418	Sulfate	0.446	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926353	Chloride	4.10	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331243

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926418	Chloride	0.401	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331171

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926420	Ammonia-N	0.164	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331159

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926420	Kjeldahl Nitrogen	1.09	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P331247

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926421	NO2NO3-N	0.952	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331131

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926367	Total-P	0.507	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331132

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926423	Total-P	1.86	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331075

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926302	O-Phosphate-P	1.72	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331077

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926428	O-Phosphate-P	4.14	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P331085

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926292	Color (true)	3.57	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P331086

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926415	Color (true)	0.561	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P331087

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926419	Color (true)	2.13	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P331522

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926521	Total Alkalinity	0.463	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P331344

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926523	TDS	7.41	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P331744

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926521	Fluoride	0.480	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P331336

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926239	Organic Carbon	0.889	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P331339

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926422	Organic Carbon	0.914	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: A78711
Included Lab Sample IDs: 1926414, 1926415, 1926416, 1926417, 1926418, 1926419

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A78712
Included Lab Sample IDs: 1926426, 1926427, 1926428, 1926429, 1926430, 1926431

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

Reference Method: SM 2120 B
Run ID: A78715
Included Lab Sample IDs: 1926414, 1926415, 1926416, 1926417, 1926418, 1926419

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	85 - 115
Color (true)	101	101	P/P	85 - 115
Color (true)	101	100	P/P	85 - 115
Color (true)	102	101	P/P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A78741
Included Lab Sample IDs: 1926420, 1926421, 1926422, 1926423, 1926424, 1926425

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	98.8	P/P	90 - 110
Ammonia-N	98.8	98.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A78767

Included Lab Sample IDs: 1926414, 1926415, 1926416, 1926417, 1926418, 1926419

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A78775

Included Lab Sample IDs: 1926420, 1926421, 1926422, 1926423, 1926424, 1926425

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A78778

Included Lab Sample IDs: 1926420, 1926421, 1926422, 1926423, 1926424, 1926425

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A78804

Included Lab Sample IDs: 1926420, 1926421, 1926422, 1926423, 1926424, 1926425

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

Reference Method: SM 5310 B-00

Run ID: A78811

Included Lab Sample IDs: 1926420, 1926421, 1926422, 1926423, 1926424, 1926425

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	101	104	P/P	90 - 110
Organic Carbon	98.2	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A78870

Included Lab Sample IDs: 1926414, 1926415, 1926416, 1926417, 1926418, 1926419

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

Reference Method: SM 4500 F-C-97

Run ID: A78959

Included Lab Sample IDs: 1926414, 1926415, 1926416, 1926417, 1926418, 1926419

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

Quality Assurance Report Calibration Verification

* 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		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					1.94	
EPA 300.0 Rev. 2.1	Chloride	98.3	94.2	95.9		4.10	
	Chloride	101	105	95.5		0.401	
	Sulfate	101	92.8	92.7		0.356	
	Sulfate	97.7	101	93.4		0.446	
EPA 350.1 Rev. 2.0	Ammonia-N	103	99.6	99.8			0.164
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	104	105			1.09
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	104	106	104			0.952
EPA 365.1 Rev. 2.0	Total-P	99.0	101	101			0.507
	Total-P	105	99.2	101			1.86
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.4	98.0	99.7			1.72
	O-Phosphate-P	105	94.7	98.7			4.14
SM 2120 B	Color (true)					3.57	
	Color (true)					0.561	
	Color (true)					2.13	
SM 2320 B-97	Total Alkalinity	103				0.463	
SM 2540 C-97	TDS					7.41	
SM 4500 F-C-97	Fluoride	98.3	97.3	97.9			0.480
SM 5310 B-00	Organic Carbon	98.9	103	102			0.889
	Organic Carbon	102	103	102			0.914

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1926414, 1926415, 1926416, 1926417, 1926418, 1926419
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1926414, 1926415, 1926416, 1926417, 1926418, 1926419
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1926414, 1926415, 1926416, 1926417, 1926418, 1926419
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1926420, 1926421, 1926422, 1926423, 1926424, 1926425
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1926420, 1926421, 1926422, 1926423, 1926424, 1926425
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1926420, 1926421, 1926422, 1926423, 1926424, 1926425
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1926420, 1926421, 1926422, 1926423, 1926424, 1926425
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1926426, 1926427, 1926428, 1926429, 1926430, 1926431
SM 2120 B / E31780	True Color measured at 450 nm	1926414, 1926415, 1926416, 1926417, 1926418, 1926419
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1926414, 1926415, 1926416, 1926417, 1926418, 1926419
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1926414, 1926415, 1926416, 1926417, 1926418, 1926419
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1926414, 1926415, 1926416, 1926417, 1926418, 1926419

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1926414, 1926415, 1926416, 1926417, 1926418, 1926419
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1926420, 1926421, 1926422, 1926423, 1926424, 1926425

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	08/30/2017			08/30/2017 15:25	DeAsia Armster	1926414, 1926415, 1926416, 1926417, 1926418, 1926419
EPA 300.0 Rev. 2.1	08/30/2017			09/02/2017	Julia Storbeck	1926414, 1926415, 1926416, 1926417, 1926418, 1926419
EPA 350.1 Rev. 2.0	08/30/2017			08/31/2017	Sofia Elnemr	1926420, 1926421, 1926422, 1926423, 1926424, 1926425
EPA 351.2 Rev. 2.0	08/30/2017	09/01/2017	Adrian Shelby	09/05/2017	Joseph Suarez	1926420, 1926421, 1926422, 1926423, 1926424, 1926425
EPA 353.2 Rev. 2.0	08/30/2017			09/05/2017	Beverly Y. Sanders	1926420, 1926421, 1926422, 1926423, 1926424, 1926425
EPA 365.1 Rev. 2.0	08/30/2017	08/31/2017	Sima Feizi	09/01/2017	Lipi Saha	1926420, 1926421, 1926422, 1926423, 1926424, 1926425
EPA 365.1 Rev. 2.0 dissolved	08/30/2017			08/30/2017 14:28	Megan Treadwell	1926426, 1926427
	08/30/2017			08/30/2017 14:44	Megan Treadwell	1926428
	08/30/2017			08/30/2017 14:52	Megan Treadwell	1926429
	08/30/2017			08/30/2017 14:53	Megan Treadwell	1926430
	08/30/2017			08/30/2017 14:54	Megan Treadwell	1926431
SM 2120 B	08/30/2017			08/30/2017 16:32	Tanya Welborn	1926414
	08/30/2017			08/30/2017 16:36	Tanya Welborn	1926415
	08/30/2017			08/30/2017 16:37	Tanya Welborn	1926416, 1926417
	08/30/2017			08/30/2017 16:47	Tanya Welborn	1926419
	08/30/2017			08/30/2017 17:00	Tanya Welborn	1926418
SM 2320 B-97	08/30/2017			09/07/2017	Dale L. Simmons	1926414, 1926415, 1926416, 1926417, 1926418, 1926419
SM 2540 C-97	08/30/2017			09/01/2017	Yijie Li	1926414, 1926415, 1926416, 1926417, 1926418, 1926419
SM 2540 D-97	08/30/2017			09/01/2017	Yijie Li	1926414, 1926415, 1926416, 1926417, 1926418, 1926419
SM 4500 F-C-97	08/30/2017			09/16/2017	Dale L. Simmons	1926414, 1926415, 1926416, 1926417, 1926418, 1926419
SM 5310 B-00	08/30/2017			09/06/2017	Ping Hua	1926420, 1926421, 1926422, 1926423, 1926424, 1926425