

Chemical Analysis Report

WQAP-2016-02-09-02

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

Event Description: **Lake Arrowhead, Lake Kanturk, Petty Gulf Lake and Alford Arm Tributary**
Request ID: **RQ-2016-02-08-09**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
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2600 Blair Stone Rd
MS #3560
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Date Certified: 26-FEB-2016 17:22



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: Lake Arrowhead @ boat dock @ Turtle Ck Ln near Outlet

Collection Date/Time: 02/09/2016 09:30

Field ID: G1WA0004

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1770042	EPA 180.1 Rev. 2.0	Turbidity	9.8		NTU	P298354	
	EPA 300.0 Rev. 2.1	Chloride	3.7		mg Cl/L	P298491	
	EPA 353.2 Rev. 2.0	Nitrite-N	0.003	U	mg N/L	P298395	
	SM 2120 B	Color (true)	16		PCU	P298348	
	SM 2320 B-97	Total Alkalinity	24		mg CaCO3/L	P298964	
	SM 2540 C-97	TDS	46	A	mg/L	P298990	
	SM 2540 D-97	TSS	10	I	mg/L	P298984	
	SM 4500 F-C-97	Fluoride	0.040	I	mg F/L	P298775	
1770046	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P298735	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57		mg N/L	P298645	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P298655	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P298575	
	SM 5310 B-00	Organic Carbon	4.3		mg C/L	P298465	
1770050	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298332	

Ref. Method and Comment:

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 65 umhos/cm.

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

Sample Location: Lake Petty Gulf @ Deerlake Rd East

Collection Date/Time: 02/09/2016 10:15

Field ID: G1WA0016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1770043	EPA 180.1 Rev. 2.0	Turbidity	7.2		NTU	P298354	
	EPA 300.0 Rev. 2.1	Chloride	5.6		mg Cl/L	P298491	
	EPA 353.2 Rev. 2.0	Nitrite-N	0.003	U	mg N/L	P298395	
	SM 2120 B	Color (true)	13		PCU	P298348	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P298964	
	SM 2540 C-97	TDS	30		mg/L	P298990	
	SM 2540 D-97	TSS	13		mg/L	P298984	
	SM 4500 F-C-97	Fluoride	0.038	I	mg F/L	P298775	
1770047	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P298736	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.61		mg N/L	P298645	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P298655	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P298575	
	SM 5310 B-00	Organic Carbon	5.8		mg C/L	P298465	
1770051	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298332	

Ref. Method and Comment:

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 55 umhos/cm.

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

Sample Location: Killearn Chain of Lake, Outlet @ Velda Dairy Rd by Mint Hill Ct

Collection Date/Time: 02/09/2016 11:00

Field ID: G1WA0015

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Field ID: G1WA0015

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1770044	EPA 180.1 Rev. 2.0	Turbidity	5.7		NTU	P298354	
	EPA 300.0 Rev. 2.1	Chloride	4.1		mg Cl/L	P298491	
	EPA 353.2 Rev. 2.0	Nitrite-N	0.003	U	mg N/L	P298395	
	SM 2120 B	Color (true)	45		PCU	P298348	
	SM 2320 B-97	Total Alkalinity	16		mg CaCO3/L	P298964	
	SM 2540 C-97	TDS	34		mg/L	P298990	
	SM 2540 D-97	TSS	2	U	mg/L	P298984	
	SM 4500 F-C-97	Fluoride	0.041	I	mg F/L	P298775	
1770048	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P298736	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28		mg N/L	P298645	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.010		mg N/L	P298655	
	EPA 365.1 Rev. 2.0	Total-P	0.056		mg P/L	P298575	
	SM 5310 B-00	Organic Carbon	3.8		mg C/L	P298465	
1770052	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.017		mg P/L	P298332	

Ref. Method and Comment:

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 52 umhos/cm.

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

Sample Location: Alford Arm Tributary at Buck Lake Rd

Collection Date/Time: 02/09/2016 12:15

Field ID: G1WA0017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1770045	EPA 180.1 Rev. 2.0	Turbidity	4.7		NTU	P298354	
	EPA 300.0 Rev. 2.1	Chloride	2.5		mg Cl/L	P298491	
	EPA 353.2 Rev. 2.0	Nitrite-N	0.003	U	mg N/L	P298395	
	SM 2120 B	Color (true)	49		PCU	P298348	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P298964	
	SM 2540 C-97	TDS	28		mg/L	P298990	
	SM 2540 D-97	TSS	2	I	mg/L	P298984	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P298775	
1770049	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P298736	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P298645	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P298656	
	EPA 365.1 Rev. 2.0	Total-P	0.050		mg P/L	P298575	
	SM 5310 B-00	Organic Carbon	6.5		mg C/L	P298465	
1770053	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P298332	

Ref. Method and Comment:

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 43 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: P298354

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: P298491

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298735

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298736

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298645

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298395

Component	Result	Code	Units
Nitrite-N	0.003	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298655

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298656

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298575

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298332

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2120 B
Batch ID: P298348

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P298964

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

Reference Method: SM 2540 C-97
Batch ID: P298990

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P298984

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P298775

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P298465

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: P298491

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298735

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298736

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298736

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298645

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: P298395

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Nitrite-N	95.3		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298655

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298656

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298575

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298332

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

Reference Method: SM 2320 B-97
Batch ID: P298964

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

Reference Method: SM 4500 F-C-97
Batch ID: P298775

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.1		P	94 - 108

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P298465

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: P298491

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769895	Chloride	102		P	90 - 110
1769897	Chloride	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298735

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769995	Ammonia-N	96.9	96.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298736

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770048	Ammonia-N	96.8	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298645

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769999	Kjeldahl Nitrogen	102	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298395

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770042	Nitrite-N	99.2	98.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298655

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769996	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298656

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770049	NO2NO3-N	104	104	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298575

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770046	Total-P	102	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298332

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770053	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P298775

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770128	Fluoride	99.1	98.4	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P298465

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769805	Organic Carbon	99.6	100	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P298354

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769895	Turbidity	0.877	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298491

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769895	Chloride	0.00637	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298735

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769995	Ammonia-N	0.0343	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298736

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770048	Ammonia-N	0.930	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298645

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769999	Kjeldahl Nitrogen	0.665	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298395

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770042	Nitrite-N	0.505	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298655

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769996	NO2NO3-N	0.384	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298656

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770049	NO2NO3-N	0.962	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298575

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770046	Total-P	3.57	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298332

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770053	O-Phosphate-P	0.698	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P298348

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769896	Color (true)	0.613	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P298964

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770128	Total Alkalinity	0.135	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P298990

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770042	TDS	6.59	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P298775

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770128	Fluoride	0.473	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P298465

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769805	Organic Carbon	0.224	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 300.0 Rev. 2.1
Run ID: A67519
Included Lab Sample IDs: 1770042, 1770043, 1770044, 1770045

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.7	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A67530
Included Lab Sample IDs: 1770050, 1770051, 1770052, 1770053

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.1	97.7	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A67534
Included Lab Sample IDs: 1770042, 1770043, 1770044, 1770045

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.9	101	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A67535
Included Lab Sample IDs: 1770042, 1770043, 1770044, 1770045

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	99.5	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A67574

Included Lab Sample IDs: 1770046, 1770047, 1770048, 1770049

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A67618

Included Lab Sample IDs: 1770046, 1770047, 1770048, 1770049

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	104	P/P	90 - 110
NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67627

Included Lab Sample IDs: 1770048

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.9	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67628

Included Lab Sample IDs: 1770046, 1770047, 1770049

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.5	96.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A67633

Included Lab Sample IDs: 1770042, 1770043, 1770044, 1770045

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	99.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A67637

Included Lab Sample IDs: 1770042, 1770043, 1770044, 1770045

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Nitrite-N	99.5	108	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A67644

Included Lab Sample IDs: 1770046, 1770047, 1770048, 1770049

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.5	94.8	P/P	90 - 110
Kjeldahl Nitrogen	99.1	98.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A67650

Included Lab Sample IDs: 1770046, 1770047, 1770048, 1770049

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A67650

Included Lab Sample IDs: 1770046, 1770047, 1770048, 1770049

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.7	98.9	P/P	90 - 110
Ammonia-N	98.9	99.2	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A67716

Included Lab Sample IDs: 1770042, 1770043, 1770044, 1770045

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	104	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				0.877	
EPA 300.0 Rev. 2.1	Chloride	102	102 102		0.0063	
EPA 350.1 Rev. 2.0	Ammonia-N	97.3	96.9 96.9			0.0343
	Ammonia-N	98.1	96.8 98.0			0.930
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	102 103			0.665
EPA 353.2 Rev. 2.0	Nitrite-N	95.3	99.2 98.7			0.505
	NO2NO3-N	104	104 104			0.384
	NO2NO3-N	105	104 104			0.962
EPA 365.1 Rev. 2.0	Total-P	99.1	102 106			3.57
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	101 102			0.698
SM 2120 B	Color (true)				0.613	
SM 2320 B-97	Total Alkalinity	100			0.135	
SM 2540 C-97	TDS				6.59	
SM 4500 F-C-97	Fluoride	97.1	99.1 98.4			0.473
SM 5310 B-00	Organic Carbon	105	99.6 100			0.224

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1770042, 1770043, 1770044, 1770045
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1770042, 1770043, 1770044, 1770045
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1770046, 1770047, 1770048, 1770049
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1770046, 1770047, 1770048, 1770049
EPA 353.2 Rev. 2.0 / E31780	Nitrite in aqueous matrices as mg N/L	1770042, 1770043, 1770044, 1770045
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1770046, 1770047, 1770048, 1770049

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1770046, 1770047, 1770048, 1770049
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1770050, 1770051, 1770052, 1770053
SM 2120 B / E31780	True Color measured at 450 nm	1770042, 1770043, 1770044, 1770045
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1770042, 1770043, 1770044, 1770045
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1770042, 1770043, 1770044, 1770045
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1770042, 1770043, 1770044, 1770045
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1770042, 1770043, 1770044, 1770045
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1770046, 1770047, 1770048, 1770049

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	02/09/2016	02/16/2016	Sofia Elnemr	02/09/2016 14:17	Sima Feizi	1770042, 1770043, 1770044, 1770045
EPA 300.0 Rev. 2.1	02/09/2016			02/12/2016	Ping Hua	1770042, 1770043, 1770044, 1770045
EPA 350.1 Rev. 2.0	02/09/2016			02/17/2016	Diana M. Turner	1770046, 1770047, 1770048, 1770049
EPA 351.2 Rev. 2.0	02/09/2016			02/17/2016	Bryan A. Werth	1770046, 1770047, 1770048, 1770049
EPA 353.2 Rev. 2.0	02/09/2016			02/10/2016 10:15	Virginia P. Brown	1770042
	02/09/2016	02/15/2016	Christopher Armour	02/10/2016 10:18	Virginia P. Brown	1770043
	02/09/2016			02/10/2016 10:20	Virginia P. Brown	1770044
	02/09/2016			02/10/2016 10:21	Virginia P. Brown	1770045
	02/09/2016			02/16/2016	Peter D. Kaus	1770046, 1770047, 1770048, 1770049
EPA 365.1 Rev. 2.0	02/09/2016			02/16/2016	Lipi Saha	1770046, 1770047, 1770048, 1770049
EPA 365.1 Rev. 2.0 dissolved	02/09/2016			02/09/2016 15:08	Bryan A. Werth	1770053
	02/09/2016			02/09/2016 15:11	Bryan A. Werth	1770050
	02/09/2016			02/09/2016 15:12	Bryan A. Werth	1770051
	02/09/2016			02/09/2016 15:13	Bryan A. Werth	1770052
SM 2120 B	02/09/2016			02/09/2016 15:07	Blanca Fach	1770042
	02/09/2016			02/09/2016 15:08	Blanca Fach	1770043
	02/09/2016			02/09/2016 15:09	Blanca Fach	1770044
	02/09/2016			02/09/2016 15:10	Blanca Fach	1770045
SM 2320 B-97	02/09/2016			02/20/2016	Dale L. Simmons	1770042
	02/09/2016			02/21/2016	Dale L. Simmons	1770043, 1770044, 1770045
SM 2540 C-97	02/09/2016			02/12/2016	Yijie Li	1770042, 1770043, 1770044, 1770045
SM 2540 D-97	02/09/2016			02/12/2016	Yijie Li	1770042, 1770043, 1770044, 1770045
SM 4500 F-C-97	02/09/2016			02/12/2016	Dale L. Simmons	1770042, 1770043, 1770044, 1770045
SM 5310 B-00	02/09/2016			02/11/2016	Sofia Elnemr	1770046, 1770047, 1770048, 1770049