

Chemical Analysis Report

WQAP-2016-12-07-01

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

Event Description: **Killearn Lakes Chain of Lakes**

Request ID: **RQ-2016-12-05-59**

Customer: **WQAP**

Project ID: **SMP**

Send Reports to:
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2600 Blair Stone Rd
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 30-DEC-2016 14:03



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 Monkey Business Middle

Collection Date/Time: 12/07/2016 09:30

Field ID: G1WA0036-12072016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1855813	EPA 180.1 Rev. 2.0	Turbidity	11	A	NTU	P316356	
	EPA 300.0 Rev. 2.1	Chloride	6.4		mg Cl/L	P316907	
	SM 2120 B	Color (true)	26		PCU	P316390	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P316894	
	SM 2540 C-97	TDS	52		mg/L	P316920	
	SM 2540 D-97	TSS	19		mg/L	P316838	
	SM 4500 F-C-97	Fluoride	0.063	I	mg F/L	P316898	
1855819	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P316783	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P316665	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P316596	
	EPA 365.1 Rev. 2.0	Total-P	0.086		mg P/L	P316503	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P316490	
1855825	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P316352	

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: Upper Dianne Lake Middle

Collection Date/Time: 12/07/2016 10:20

Field ID: G1WA0041-12072016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1855814	EPA 180.1 Rev. 2.0	Turbidity	19		NTU	P316356	
	EPA 300.0 Rev. 2.1	Chloride	6.4		mg Cl/L	P316907	
	SM 2120 B	Color (true)	22		PCU	P316392	
	SM 2320 B-97	Total Alkalinity	17		mg CaCO3/L	P316894	
	SM 2540 C-97	TDS	39		mg/L	P316921	
	SM 2540 D-97	TSS	16	I	mg/L	P316839	
	SM 4500 F-C-97	Fluoride	0.067	I	mg F/L	P316898	
1855820	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P316783	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.0		mg N/L	P316665	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P316596	
	EPA 365.1 Rev. 2.0	Total-P	0.096		mg P/L	P316503	
	SM 5310 B-00	Organic Carbon	8.8		mg C/L	P316490	
1855826	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P316352	

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: Lower Dianne Lake Middle

Collection Date/Time: 12/07/2016 11:15

Field ID: G1WA0040-12072016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1855815	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P316356	
	EPA 300.0 Rev. 2.1	Chloride	7.8	A	mg Cl/L	P316907	
	SM 2120 B	Color (true)	9.7		PCU	P316390	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P316894	
	SM 2540 C-97	TDS	58		mg/L	P316921	

Field ID: G1WA0040-12072016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1855815	SM 2540 D-97	TSS	6	I	mg/L	P316839	
	SM 4500 F-C-97	Fluoride	0.062	I	mg F/L	P316898	
1855821	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P316783	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P316665	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P316596	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P316503	
	SM 5310 B-00	Organic Carbon	7.9		mg C/L	P316490	
1855827	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P316352	

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: Pine Hill Lake Middle

Collection Date/Time: 12/07/2016 12:00

Field ID: G1WA0054-12072016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1855816	EPA 180.1 Rev. 2.0	Turbidity	5.0		NTU	P316356	
	EPA 300.0 Rev. 2.1	Chloride	6.1		mg Cl/L	P316907	
	SM 2120 B	Color (true)	15		PCU	P316390	
	SM 2320 B-97	Total Alkalinity	8.8		mg CaCO3/L	P316894	
	SM 2540 C-97	TDS	28		mg/L	P316921	
	SM 2540 D-97	TSS	4	I	mg/L	P316839	
	SM 4500 F-C-97	Fluoride	0.046	I	mg F/L	P316898	
1855822	EPA 350.1 Rev. 2.0	Ammonia-N	0.12		mg N/L	P316783	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.62		mg N/L	P316665	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P316596	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P316551	
	SM 5310 B-00	Organic Carbon	5.5		mg C/L	P316490	
1855828	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P316352	

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 Tom John Middle

Collection Date/Time: 12/07/2016 13:10

Field ID: G1WA0043-12072016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1855817	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P316356	
	EPA 300.0 Rev. 2.1	Chloride	8.6		mg Cl/L	P316907	
	SM 2120 B	Color (true)	14		PCU	P316390	
	SM 2320 B-97	Total Alkalinity	16		mg CaCO3/L	P316894	
	SM 2540 C-97	TDS	50		mg/L	P316921	
	SM 2540 D-97	TSS	4	I	mg/L	P316839	
	SM 4500 F-C-97	Fluoride	0.052	I	mg F/L	P316898	
1855823	EPA 350.1 Rev. 2.0	Ammonia-N	0.028		mg N/L	P316783	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56		mg N/L	P316667	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P316596	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P316551	

Field ID: G1WA0043-12072016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1855823	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P316490	
1855829	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P316352	

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: Killearn Chain of Lakes Outlet at Velda Dairy Rd across from Mint Hill Ct Collection Date/Time: 12/07/2016 13:45

Field ID: G1WA0015-12072016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1855818	EPA 180.1 Rev. 2.0	Turbidity	3.0		NTU	P316356	
	EPA 300.0 Rev. 2.1	Chloride	4.0		mg Cl/L	P316907	
	SM 2120 B	Color (true)	52	A	PCU	P316391	
	SM 2320 B-97	Total Alkalinity	29		mg CaCO3/L	P316894	
	SM 2540 C-97	TDS	51		mg/L	P316921	
	SM 2540 D-97	TSS	3	I	mg/L	P316839	
	SM 4500 F-C-97	Fluoride	0.066	I	mg F/L	P316898	
1855824	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P316783	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.34		mg N/L	P316667	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P316596	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P316551	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P316490	
1855830	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.069		mg P/L	P316352	

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: P316356

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P316907

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P316783

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P316665

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316665

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316667

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316596

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316503

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316551

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316352

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

Reference Method: SM 2120 B
Batch ID: P316390

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P316391

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P316392

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P316894

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

Reference Method: SM 2540 C-97
Batch ID: P316920

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P316921

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P316838

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P316839

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P316898

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P316490

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: P316907

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316783

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: P316783

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316665

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316667

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316596

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: P316503

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316551

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316352

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

Reference Method: SM 2320 B-97
Batch ID: P316894

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.2		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P316898

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.4		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P316490

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316907

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855815	Chloride	102		P	90 - 110
1855818	Chloride	98.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316783

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855819	Ammonia-N	101	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316665

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855794	Kjeldahl Nitrogen	108	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316667

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855897	Kjeldahl Nitrogen	101	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316596

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855819	NO2NO3-N	97.0	95.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316503

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855820	Total-P	100	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316551

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855822	Total-P	106	98.8	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316352

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855635	O-Phosphate-P	99.5	99.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P316898

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856443	Fluoride	98.8	100	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P316490

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855819	Organic Carbon	95.6	95.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316356

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855813	Turbidity	0.939	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316907

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855815	Chloride	0.0887	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316783

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855819	Ammonia-N	0.982	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316665

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855794	Kjeldahl Nitrogen	1.92	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316667

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855897	Kjeldahl Nitrogen	2.45	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316596

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855819	NO2NO3-N	2.08	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316503

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855820	Total-P	5.53	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316551

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855822	Total-P	6.18	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316352

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855635	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P316390

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855759	Color (true)	16.2	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P316391

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855818	Color (true)	2.39	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P316392

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855661	Color (true)	6.05	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P316894

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856443	Total Alkalinity	0.354	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P316920

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855238	TDS	1.25	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P316921

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855887	TDS	4.39	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P316898

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856443	Fluoride	0.986	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P316490

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855819	Organic Carbon	0.172	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: A73232
Included Lab Sample IDs: 1855825, 1855826, 1855827, 1855828, 1855829, 1855830

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	95.4	95.5	P/P	90 - 110
O-Phosphate-P	96.2	95.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A73233
Included Lab Sample IDs: 1855813, 1855814, 1855815, 1855816, 1855817, 1855818

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

Reference Method: SM 2120 B
Run ID: A73245
Included Lab Sample IDs: 1855813, 1855814, 1855815, 1855816, 1855817, 1855818

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B

Run ID: A73245

Included Lab Sample IDs: 1855813, 1855814, 1855815, 1855816, 1855817, 1855818

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	101	P/P	85 - 115
Color (true)	98.8	101	P/P	85 - 115

Reference Method: SM 5310 B-00

Run ID: A73268

Included Lab Sample IDs: 1855819, 1855820, 1855821, 1855822, 1855823, 1855824

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.2	97.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A73307

Included Lab Sample IDs: 1855819, 1855820, 1855821, 1855822, 1855823, 1855824

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.5	94.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73338

Included Lab Sample IDs: 1855821

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73342

Included Lab Sample IDs: 1855824

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73345

Included Lab Sample IDs: 1855819, 1855820

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73350

Included Lab Sample IDs: 1855822, 1855823

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.2	98.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A73371

Included Lab Sample IDs: 1855819, 1855820, 1855821, 1855822, 1855823, 1855824

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A73375

Included Lab Sample IDs: 1855813, 1855814, 1855815, 1855816, 1855817, 1855818

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A73380

Included Lab Sample IDs: 1855819, 1855820, 1855821, 1855822

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A73388

Included Lab Sample IDs: 1855823, 1855824

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

Reference Method: SM 2320 B-97

Run ID: A73415

Included Lab Sample IDs: 1855813, 1855814, 1855815, 1855816, 1855817, 1855818

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.3	98.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A73415

Included Lab Sample IDs: 1855813, 1855814, 1855815, 1855816, 1855817, 1855818

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	100	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				0.939	
EPA 300.0 Rev. 2.1	Chloride	101	102 98.8		0.0887	
EPA 350.1 Rev. 2.0	Ammonia-N	102	101 99.5			0.982
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	108 106			1.92
	Kjeldahl Nitrogen	110	101 104			2.45
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	97.0 95.0			2.08
EPA 365.1 Rev. 2.0	Total-P	103	100 107			5.53
	Total-P	103	106 98.8			6.18
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104	99.5 99.5			0.0
SM 2120 B	Color (true)				16.2	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
SM 2120 B	Color (true)	98.2			2.39	
	Color (true)				6.05	
SM 2320 B-97	Total Alkalinity				0.354	
SM 2540 C-97	TDS				1.25	
	TDS				4.39	
SM 4500 F-C-97	Fluoride	97.4	98.8	100		0.986
SM 5310 B-00	Organic Carbon	95.8	95.6	95.4		0.172

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1855813, 1855814, 1855815, 1855816, 1855817, 1855818
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1855813, 1855814, 1855815, 1855816, 1855817, 1855818
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1855819, 1855820, 1855821, 1855822, 1855823, 1855824
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1855819, 1855820, 1855821, 1855822, 1855823, 1855824
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1855819, 1855820, 1855821, 1855822, 1855823, 1855824
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1855819, 1855820, 1855821, 1855822, 1855823, 1855824
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1855825, 1855826, 1855827, 1855828, 1855829, 1855830
SM 2120 B / E31780	True Color measured at 450 nm	1855813, 1855814, 1855815, 1855816, 1855817, 1855818
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1855813, 1855814, 1855815, 1855816, 1855817, 1855818
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1855813, 1855814, 1855815, 1855816, 1855817, 1855818
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1855813, 1855814, 1855815, 1855816, 1855817, 1855818
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1855813, 1855814, 1855815, 1855816, 1855817, 1855818
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1855819, 1855820, 1855821, 1855822, 1855823, 1855824

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	12/07/2016			12/07/2016 16:26	Sima Feizi	1855813, 1855814, 1855815, 1855816, 1855817, 1855818
EPA 300.0 Rev. 2.1	12/07/2016			12/16/2016	Ping Hua	1855813, 1855814, 1855815, 1855816, 1855817, 1855818
EPA 350.1 Rev. 2.0	12/07/2016			12/13/2016	Sofia Elnemr	1855819, 1855820, 1855821, 1855822, 1855823, 1855824
EPA 351.2 Rev. 2.0	12/07/2016	12/13/2016	Adrian Shelby	12/14/2016	Joseph Suarez	1855819, 1855820, 1855821, 1855822
	12/07/2016	12/13/2016	Adrian Shelby	12/15/2016	Joseph Suarez	1855823, 1855824
EPA 353.2 Rev. 2.0	12/07/2016			12/12/2016	Beverly Y. Sanders	1855819, 1855820, 1855821, 1855822, 1855823, 1855824
EPA 365.1 Rev. 2.0	12/07/2016	12/09/2016	Vijayalakshmi Reddy	12/12/2016	Lipi Saha	1855821
	12/07/2016	12/09/2016	Vijayalakshmi Reddy	12/13/2016	Lipi Saha	1855819, 1855820
	12/07/2016	12/12/2016	Vijayalakshmi Reddy	12/13/2016	Lipi Saha	1855822, 1855823, 1855824
EPA 365.1 Rev. 2.0 dissolved	12/07/2016			12/07/2016 16:06	Julia Storbeck	1855825
	12/07/2016			12/07/2016 16:07	Julia Storbeck	1855826
	12/07/2016			12/07/2016 16:08	Julia Storbeck	1855827, 1855828
	12/07/2016			12/07/2016 16:09	Julia Storbeck	1855829
	12/07/2016			12/07/2016 16:15	Julia Storbeck	1855830
SM 2120 B	12/07/2016			12/07/2016 16:34	Jared I. Manley	1855813
	12/07/2016			12/07/2016 16:35	Jared I. Manley	1855815
	12/07/2016			12/07/2016 16:36	Jared I. Manley	1855816
	12/07/2016			12/07/2016 16:37	Jared I. Manley	1855817
	12/07/2016			12/07/2016 16:41	Jared I. Manley	1855818
	12/07/2016			12/07/2016 16:48	Jared I. Manley	1855814
SM 2320 B-97	12/07/2016			12/14/2016	Dale L. Simmons	1855813, 1855814, 1855815, 1855816, 1855817, 1855818
SM 2540 C-97	12/07/2016			12/09/2016	Yijie Li	1855813, 1855814, 1855815, 1855816, 1855817, 1855818
SM 2540 D-97	12/07/2016			12/09/2016	Yijie Li	1855813, 1855814, 1855815, 1855816, 1855817, 1855818
SM 4500 F-C-97	12/07/2016			12/14/2016	Dale L. Simmons	1855813, 1855814, 1855815, 1855816, 1855817, 1855818
SM 5310 B-00	12/07/2016			12/08/2016	Julie Michelle Frank	1855819, 1855820, 1855821, 1855822, 1855823, 1855824