

Chemical Analysis Report

TLH-ROC-2017-10-11-02

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

Event Description: **SMP 2016 Freshwater Kit A**
Request ID: **RQ-2017-07-17-36**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 06-NOV-2017 16:42



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: Little River @ Wacissa

Collection Date/Time: 10/11/2017 10:20

Field ID: G1TLHR0008-2017-04

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1936172	EPA 180.1 Rev. 2.0	Turbidity	0.30		NTU	P333196	
	EPA 300.0 Rev. 2.1	Chloride	5.8		mg Cl/L	P333258	
	SM 2120 B	Color (true)	2.8	I	PCU	P333202	
	SM 2320 B-97	Total Alkalinity	156	A	mg CaCO3/L	P333704	
	SM 2540 C-97	TDS	170	A	mg/L	P333565	
	SM 2540 D-97	TSS	2	UA	mg/L	P333547	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P333708	
1936176	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P333530	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.087	I	mg N/L	P333645	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.20		mg N/L	P333772	
	EPA 365.1 Rev. 2.0	Total-P	0.044		mg P/L	P333435	
	SM 5310 B-00	Organic Carbon	0.81	I	mg C/L	P333685	
1936180	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.039		mg P/L	P333314	

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: Middle of Lake Francis

Collection Date/Time: 10/11/2017 11:35

Field ID: G1TLHR0045-2017-03

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1936173	EPA 180.1 Rev. 2.0	Turbidity	16		NTU	P333196	
	EPA 300.0 Rev. 2.1	Chloride	2.7		mg Cl/L	P333258	
	SM 2120 B	Color (true)	9.2		PCU	P333203	
	SM 2320 B-97	Total Alkalinity	52		mg CaCO3/L	P333704	
	SM 2540 C-97	TDS	70		mg/L	P333565	
	SM 2540 D-97	TSS	10	I	mg/L	P333547	
	SM 4500 F-C-97	Fluoride	0.070	I	mg F/L	P333708	
1936177	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P333530	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P333645	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P333773	
	EPA 365.1 Rev. 2.0	Total-P	0.072		mg P/L	P333436	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P333685	
1936181	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P333315	

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: Ellaville Spring Vent

Collection Date/Time: 10/11/2017 12:40

Field ID: G1TLHR0027-2017-04

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1936174	EPA 180.1 Rev. 2.0	Turbidity	7.2		NTU	P333196	
	EPA 300.0 Rev. 2.1	Chloride	6.0		mg Cl/L	P333258	
	SM 2120 B	Color (true)	580		PCU	P333202	
	SM 2320 B-97	Total Alkalinity	96		mg CaCO3/L	P333704	
	SM 2540 C-97	TDS	188		mg/L	P333565	

Field ID: G1TLHR0027-2017-04

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1936174	SM 2540 D-97	TSS	2	U	mg/L	P333547	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P333708	
1936178	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P333532	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P333646	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.21		mg N/L	P333773	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P333436	
	SM 5310 B-00	Organic Carbon	38		mg C/L	P333685	
1936182	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.089		mg P/L	P333314	

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: Alligator Creek @ CR NW 86th

Collection Date/Time: 10/11/2017 13:20

Field ID: G1TLHR0017-2017-05

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1936175	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P333196	
	EPA 300.0 Rev. 2.1	Chloride	7.2		mg Cl/L	P333258	
	SM 2120 B	Color (true)	910		PCU	P333202	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P333704	
	SM 2540 C-97	TDS	162		mg/L	P333565	
	SM 2540 D-97	TSS	2	U	mg/L	P333547	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P333708	
1936179	EPA 350.1 Rev. 2.0	Ammonia-N	0.093		mg N/L	P333532	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.1		mg N/L	P334536	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.45		mg N/L	P333863	
	EPA 365.1 Rev. 2.0	Total-P	0.28		mg P/L	P333436	
	SM 5310 B-00	Organic Carbon	76		mg C/L	P333685	
1936183	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.23		mg P/L	P333314	

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: P333196

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P333258

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P333530

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P333532

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P333645

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P333646

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P334536

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333772

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: P333773

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: P333863

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: P333435

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
Batch ID: P333436

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333314

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333315

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

Reference Method: SM 2120 B
Batch ID: P333202

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P333203

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P333704

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

Reference Method: SM 2540 C-97
Batch ID: P333565

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P333547

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P333708

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: P333685

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: P333258

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P333530

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P333532

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P333645

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P333646

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P334536

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333772

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	104		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333773

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: P333773

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333863

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: P333435

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: P333436

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333314

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: P333315

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

Reference Method: SM 2320 B-97
Batch ID: P333704

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

Reference Method: SM 4500 F-C-97
Batch ID: P333708

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P333685

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.9		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333258

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935913	Chloride	108		P	90 - 110
1936144	Chloride	106		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P333530

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935391	Ammonia-N	99.5	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P333532

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1936178	Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P333645

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1936133	Kjeldahl Nitrogen	99.7	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P333646

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1936198	Kjeldahl Nitrogen	93.8	99.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P334536

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1940458	Kjeldahl Nitrogen	97.9	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333772

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1936130	NO2NO3-N	106	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333773

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1936177	NO2NO3-N	105	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333863

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1936485	NO2NO3-N	102	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P333435

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1936176	Total-P	97.6	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P333436

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1936268	Total-P	98.8	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333314

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1936131	O-Phosphate-P	95.5	95.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333315

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1936181	O-Phosphate-P	94.6	96.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P333708

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1936172	Fluoride	97.0	98.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P333685

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1936177	Organic Carbon	96.5	97.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P333196

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936144	Turbidity	3.92	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333258

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936144	Chloride	0.247	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P333530

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935391	Ammonia-N	1.37	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P333532

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936178	Ammonia-N	0.538	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P333645

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936133	Kjeldahl Nitrogen	4.73	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P333646

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936198	Kjeldahl Nitrogen	4.82	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P334536

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1940458	Kjeldahl Nitrogen	0.321	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333772

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936130	NO2NO3-N	1.91	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333773

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936177	NO2NO3-N	0.477	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333863

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936485	NO2NO3-N	0.0	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P333435

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936176	Total-P	1.50	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P333436

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936268	Total-P	1.90	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333314

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936131	O-Phosphate-P	0.418	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333315

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936181	O-Phosphate-P	2.40	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P333202

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936173	Color (true)	18.1	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P333203

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935544	Color (true)	2.16	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P333704

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936172	Total Alkalinity	0.0763	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P333565

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936172	TDS	1.77	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
 Batch ID: P333708

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936172	Fluoride	0.979	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
 Batch ID: P333685

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936177	Organic Carbon	0.841	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: A79473
 Included Lab Sample IDs: 1936172, 1936173, 1936174, 1936175

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	107	108	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
 Run ID: A79495
 Included Lab Sample IDs: 1936172, 1936173, 1936174, 1936175

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

Reference Method: SM 2120 B
 Run ID: A79497
 Included Lab Sample IDs: 1936172, 1936173, 1936174, 1936175

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	104	P/P	85 - 115
Color (true)	104	104	P/P	85 - 115
Color (true)	99.6	103	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Run ID: A79529
 Included Lab Sample IDs: 1936180, 1936181, 1936182, 1936183

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.5	101	P/P	90 - 110
O-Phosphate-P	99.7	99.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A79623

Included Lab Sample IDs: 1936176, 1936177, 1936178, 1936179

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A79637

Included Lab Sample IDs: 1936176

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A79642

Included Lab Sample IDs: 1936177, 1936178, 1936179

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A79651

Included Lab Sample IDs: 1936176, 1936177, 1936178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	100	P/P	90 - 110
NO2NO3-N	101	102	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A79660

Included Lab Sample IDs: 1936176, 1936177, 1936178, 1936179

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.0	96.8	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A79666

Included Lab Sample IDs: 1936172, 1936173, 1936174, 1936175

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	100	P/P	90 - 110
Total Alkalinity	99.9	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A79666

Included Lab Sample IDs: 1936172, 1936173, 1936174, 1936175

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	110	100	P/P	90 - 110
Fluoride	99.0	110	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A79731

Included Lab Sample IDs: 1936179

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: A79737

Included Lab Sample IDs: 1936176, 1936177, 1936178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	103	P/P	90 - 110
Kjeldahl Nitrogen	103	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A80046

Included Lab Sample IDs: 1936179

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.4	97.0	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				3.92	
EPA 300.0 Rev. 2.1	Chloride	105	106 108		0.247	
EPA 350.1 Rev. 2.0	Ammonia-N	98.5	99.5 102			1.37
	Ammonia-N	97.9	102 102			0.538
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.8	99.7 105			4.73
	Kjeldahl Nitrogen	100	93.8 99.6			4.82
	Kjeldahl Nitrogen	103	97.9 98.2			0.321
EPA 353.2 Rev. 2.0	NO2NO3-N	104	106 104			1.91
	NO2NO3-N	105	105 104			0.477
	NO2NO3-N	104	102 102			0.0
EPA 365.1 Rev. 2.0	Total-P	103	97.6 99.2			1.50
	Total-P	102	98.8 101			1.90
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104	95.5 95.9			0.418
	O-Phosphate-P	98.0	94.6 96.9			2.40
SM 2120 B	Color (true)				18.1	
	Color (true)				2.16	
SM 2320 B-97	Total Alkalinity	102			0.0763	
SM 2540 C-97	TDS				1.77	
SM 4500 F-C-97	Fluoride	96.9	97.0 98.3			0.979
SM 5310 B-00	Organic Carbon	96.9	96.5 97.9			0.841

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1936172, 1936173, 1936174, 1936175
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1936172, 1936173, 1936174, 1936175
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1936176, 1936177, 1936178, 1936179
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1936176, 1936177, 1936178, 1936179
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1936176, 1936177, 1936178, 1936179
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1936176, 1936177, 1936178, 1936179
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1936180, 1936181, 1936182, 1936183
SM 2120 B / E31780	True Color measured at 450 nm	1936172, 1936173, 1936174, 1936175
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1936172, 1936173, 1936174, 1936175
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1936172, 1936173, 1936174, 1936175
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1936172, 1936173, 1936174, 1936175
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1936172, 1936173, 1936174, 1936175
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1936176, 1936177, 1936178, 1936179

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	10/11/2017			10/11/2017 16:38	DeAsia Armster	1936172, 1936173, 1936174, 1936175
EPA 300.0 Rev. 2.1	10/11/2017			10/12/2017	Julia Storbeck	1936172, 1936173, 1936174, 1936175
EPA 350.1 Rev. 2.0	10/11/2017			10/17/2017	Sofia Elnemr	1936176, 1936177, 1936178, 1936179
EPA 351.2 Rev. 2.0	10/11/2017	10/19/2017	Adrian Shelby	10/20/2017	Joseph Suarez	1936176, 1936177, 1936178
	10/11/2017	11/02/2017	Adrian Shelby	11/03/2017	Joseph Suarez	1936179
EPA 353.2 Rev. 2.0	10/11/2017			10/18/2017	Beverly Y. Sanders	1936176, 1936177, 1936178
	10/11/2017			10/23/2017	Beverly Y. Sanders	1936179
EPA 365.1 Rev. 2.0	10/11/2017	10/16/2017	Sima Feizi	10/18/2017	Lipi Saha	1936176, 1936177, 1936178, 1936179
EPA 365.1 Rev. 2.0 dissolved	10/11/2017			10/12/2017 14:42	Megan Treadwell	1936181
	10/11/2017			10/12/2017 15:59	Megan Treadwell	1936180
	10/11/2017			10/12/2017 16:00	Megan Treadwell	1936182
	10/11/2017			10/12/2017 16:01	Megan Treadwell	1936183
SM 2120 B	10/11/2017			10/11/2017 16:47	Julia Storbeck	1936172
	10/11/2017			10/11/2017 17:02	Julia Storbeck	1936174
	10/11/2017			10/11/2017 17:03	Julia Storbeck	1936175
	10/11/2017			10/11/2017 17:05	Julia Storbeck	1936173
SM 2320 B-97	10/11/2017			10/19/2017	Dale L. Simmons	1936172, 1936173, 1936174, 1936175
SM 2540 C-97	10/11/2017			10/13/2017	DeAsia Armster	1936172, 1936173, 1936174, 1936175
SM 2540 D-97	10/11/2017			10/13/2017	DeAsia Armster	1936172, 1936173, 1936174, 1936175
SM 4500 F-C-97	10/11/2017			10/19/2017	Dale L. Simmons	1936172, 1936173, 1936174, 1936175
SM 5310 B-00	10/11/2017			10/18/2017	Ping Hua	1936176, 1936177, 1936178, 1936179