

Chemical Analysis Report

SW-DIST-2016-09-27-01

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

Event Description: **RUN 1A**
Request ID: **RQ-2016-09-26-44**
Customer: **SW-DIST**
Project ID: **SMP**

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

For additional information please contact
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 24-OCT-2016 09:57

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Bellows/East Lake

Collection Date/Time: 09/26/2016 09:55

Field ID: G1SW0044

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834560	EPA 180.1 Rev. 2.0	Turbidity	12		NTU	P311922	
	EPA 300.0 Rev. 2.1	Chloride	6.0	A	mg Cl/L	P312255	
		Sulfate	6.3	A	mg SO4/L	P312254	
	SM 2120 B	Color (true)	45		PCU	P311930	
	SM 2320 B-97	Total Alkalinity	46		mg CaCO3/L	P312094	
	SM 2540 C-97	TDS	99		mg/L	P312417	
	SM 2540 D-97	TSS	18		mg/L	P312363	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P312095	
1834563	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P312116	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.1		mg N/L	P312494	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P312335	
	EPA 365.1 Rev. 2.0	Total-P	0.086		mg P/L	P312528	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P312195	
1834566	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311917	

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: Vceta Yard Drain

Collection Date/Time: 09/26/2016 10:30

Field ID: G1SW0045

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834561	EPA 180.1 Rev. 2.0	Turbidity	3.9		NTU	P311922	
	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P312302	
		Sulfate	21		mg SO4/L	P312304	
	SM 2120 B	Color (true)	55	A	PCU	P311930	
	SM 2320 B-97	Total Alkalinity	183	A	mg CaCO3/L	P312096	
	SM 2540 C-97	TDS	257		mg/L	P312417	
	SM 2540 D-97	TSS	3	I	mg/L	P312363	
	SM 4500 F-C-97	Fluoride	0.49		mg F/L	P312097	
1834564	EPA 350.1 Rev. 2.0	Ammonia-N	0.62		mg N/L	P312348	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P312494	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.21		mg N/L	P312335	
	EPA 365.1 Rev. 2.0	Total-P	0.57		mg P/L	P312528	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P312195	
1834567	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.47		mg P/L	P311916	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Sixmile Creek

Collection Date/Time: 09/26/2016 11:00

Field ID: G1SW0048

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834562	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P311922	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P312302	

Field ID: G1SW0048

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834562	EPA 300.0 Rev. 2.1	Sulfate	19		mg SO4/L	P312304	
	SM 2120 B	Color (true)	170		PCU	P311930	
	SM 2320 B-97	Total Alkalinity	81		mg CaCO3/L	P312096	
	SM 2540 C-97	TDS	160	A	mg/L	P312417	
	SM 2540 D-97	TSS	3	I	mg/L	P312363	
	SM 4500 F-C-97	Fluoride	0.19		mg F/L	P312097	
1834565	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P312619	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P312495	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P312335	
	EPA 365.1 Rev. 2.0	Total-P	0.25		mg P/L	P312528	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P312195	
1834568	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.18		mg P/L	P311916	

Ref. Method and Comment:
 SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
 SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P311922

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P312254

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P312255

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P312302

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P312304

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312116

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312348

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312619

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312494

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312495

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312335

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: P312528

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311916

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311917

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: P311930

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P312094

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

Reference Method: SM 2320 B-97
Batch ID: P312096

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

Reference Method: SM 2540 C-97
Batch ID: P312417

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P312363

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P312095

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P312097

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P312195

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: P312254

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312254

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312255

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312302

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312304

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312116

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	106		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312348

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312619

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312494

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312495

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312335

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312528

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311916

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311917

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

Reference Method: SM 2320 B-97
Batch ID: P312094

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

Reference Method: SM 2320 B-97
Batch ID: P312096

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P312095

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.1		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P312097

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.0		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P312195

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312254

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834560	Sulfate	95.6		P	90 - 110
1834647	Sulfate	96.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312255

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834560	Chloride	97.8		P	90 - 110
1834647	Chloride	98.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312302

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1835460	Chloride	101		P	90 - 110
1835461	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312304

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1835460	Sulfate	97.1		P	90 - 110
1835461	Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312116

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834306	Ammonia-N	104	107	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312348

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834093	Ammonia-N	92.2	94.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312619

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834074	Ammonia-N	105	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312494

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834539	Kjeldahl Nitrogen	95.4	113	P/F	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312495

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312495

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834585	Kjeldahl Nitrogen	107	99.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312335

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834287	NO2NO3-N	102	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312528

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834585	Total-P	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311916

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834491	O-Phosphate-P	97.8	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311917

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834566	O-Phosphate-P	102	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P312095

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834799	Fluoride	96.8	98.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P312195

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834521	Organic Carbon	99.4	96.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P311922

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834503	Turbidity	1.74	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834560	Sulfate	2.06	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312255

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834560	Chloride	0.171	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312302

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1835460	Chloride	0.107	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312304

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1835460	Sulfate	0.711	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312116

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834306	Ammonia-N	2.72	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312348

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834093	Ammonia-N	2.84	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834074	Ammonia-N	4.10	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312494

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834539	Kjeldahl Nitrogen	9.44	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312495

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834585	Kjeldahl Nitrogen	4.21	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312335

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834287	NO2NO3-N	1.94	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312528

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834585	Total-P	0.436	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311916

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834491	O-Phosphate-P	1.26	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311917

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834566	O-Phosphate-P	0.977	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P311930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834561	Color (true)	0.746	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P312094

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834799	Total Alkalinity	0.384	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P312096

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834561	Total Alkalinity	0.0286	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P312417

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834562	TDS	2.50	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P312095

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834799	Fluoride	1.47	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P312097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834561	Fluoride	0.473	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P312195

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834521	Organic Carbon	1.37	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: A71862
Included Lab Sample IDs: 1834566, 1834567, 1834568

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.9	96.8	P/P	90 - 110
O-Phosphate-P	98.2	99.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A71863
Included Lab Sample IDs: 1834560, 1834561, 1834562

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.0	P/P	95 - 105

Reference Method: SM 2120 B
Run ID: A71864
Included Lab Sample IDs: 1834560, 1834561, 1834562

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	98.1	P/P	85 - 115

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B

Run ID: A71864

Included Lab Sample IDs: 1834560, 1834561, 1834562

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A71882

Included Lab Sample IDs: 1834560, 1834561, 1834562

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	99.9	P/P	90 - 110
Chloride	98.4	100	P/P	90 - 110
Sulfate	102	98.7	P/P	90 - 110
Sulfate	96.7	99.0	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A71907

Included Lab Sample IDs: 1834560, 1834561, 1834562

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	101	P/P	90 - 110
Total Alkalinity	100	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A71907

Included Lab Sample IDs: 1834560, 1834561, 1834562

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A71914

Included Lab Sample IDs: 1834563

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

Reference Method: SM 5310 B-00

Run ID: A71942

Included Lab Sample IDs: 1834563, 1834564, 1834565

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71983

Included Lab Sample IDs: 1834563, 1834564, 1834565

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A71989

Included Lab Sample IDs: 1834564

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	93.2	93.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A72057

Included Lab Sample IDs: 1834565

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.3	97.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A72075

Included Lab Sample IDs: 1834563, 1834564, 1834565

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.6	99.1	P/P	90 - 110
Kjeldahl Nitrogen	99.1	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A72084

Included Lab Sample IDs: 1834563, 1834564, 1834565

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	104	P/P	90 - 110
Total-P	104	102	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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					1.74	
EPA 300.0 Rev. 2.1	Chloride	97.6	97.8	98.3		0.171	
	Chloride	101	101	103		0.107	
	Sulfate	94.9	95.6	96.3		2.06	
	Sulfate	99.0	97.1	98.2		0.711	
EPA 350.1 Rev. 2.0	Ammonia-N	106	104	107			2.72
	Ammonia-N	96.8	92.2	94.8			2.84
	Ammonia-N	101	105	99.7			4.10
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	95.4	113			9.44
	Kjeldahl Nitrogen	106	107	99.7			4.21
EPA 353.2 Rev. 2.0	NO2NO3-N	106	102	100			1.94
EPA 365.1 Rev. 2.0	Total-P	98.8	100	101			0.436
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	97.8	99.4			1.26
	O-Phosphate-P	98.4	102	103			0.977
SM 2120 B	Color (true)					0.746	
SM 2320 B-97	Total Alkalinity	103				0.384	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		LCS	Precision	MS
						SMP	
SM 2320 B-97	Total Alkalinity	104				0.0286	
SM 2540 C-97	TDS					2.50	
SM 4500 F-C-97	Fluoride	98.1	96.8	98.4			1.47
	Fluoride	99.0					0.473
SM 5310 B-00	Organic Carbon	99.6	99.4	96.8			1.37

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1834560, 1834561, 1834562
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1834560, 1834561, 1834562
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1834560, 1834561, 1834562
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1834563, 1834564, 1834565
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1834563, 1834564, 1834565
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1834563, 1834564, 1834565
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1834563, 1834564, 1834565
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1834566, 1834567, 1834568
SM 2120 B / E31780	True Color measured at 450 nm	1834560, 1834561, 1834562
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1834560, 1834561, 1834562
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1834560, 1834561, 1834562
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1834560, 1834561, 1834562
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1834560, 1834561, 1834562
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1834563, 1834564, 1834565

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	09/27/2016			09/27/2016 15:28	Sima Feizi	1834560, 1834561, 1834562
EPA 300.0 Rev. 2.1	09/27/2016			10/01/2016	Ping Hua	1834560
	09/27/2016			10/02/2016	Ping Hua	1834561, 1834562
EPA 350.1 Rev. 2.0	09/27/2016			09/28/2016	Sofia Elnemr	1834563
	09/27/2016			10/03/2016	Sofia Elnemr	1834564
	09/27/2016			10/05/2016	Sofia Elnemr	1834565
EPA 351.2 Rev. 2.0	09/27/2016	10/05/2016	Adrian Shelby	10/06/2016	Christopher Armour	1834563, 1834564, 1834565
EPA 353.2 Rev. 2.0	09/27/2016			10/03/2016	Beverly Y. Sanders	1834563, 1834564, 1834565
EPA 365.1 Rev. 2.0	09/27/2016	10/05/2016	Vijayalakshmi Reddy	10/07/2016	Lipi Saha	1834563, 1834564, 1834565
EPA 365.1 Rev. 2.0 dissolved	09/27/2016			09/27/2016 14:44	Julia Storbeck	1834566
	09/27/2016			09/27/2016 15:37	Julia Storbeck	1834567
	09/27/2016			09/27/2016 15:39	Julia Storbeck	1834568
SM 2120 B	09/27/2016			09/27/2016 15:54	Julie Michelle Frank	1834560
	09/27/2016			09/27/2016 15:55	Julie Michelle Frank	1834561
	09/27/2016			09/27/2016 16:30	Julie Michelle Frank	1834562
SM 2320 B-97	09/27/2016			09/29/2016	Dale L. Simmons	1834560, 1834561, 1834562
SM 2540 C-97	09/27/2016			09/30/2016	Yijie Li	1834560, 1834561, 1834562
SM 2540 D-97	09/27/2016			09/30/2016	Yijie Li	1834560, 1834561, 1834562
SM 4500 F-C-97	09/27/2016			09/29/2016	Dale L. Simmons	1834560, 1834561, 1834562
SM 5310 B-00	09/27/2016			09/29/2016	Julie Michelle Frank	1834563, 1834564, 1834565