Chemical Analysis Report

SW-DIST-2018-01-23-01

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

Event Description: **Hills Lakes**
Request ID: **RQ-2018-01-22-14**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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13051 N. Telecom Parkway
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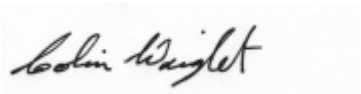
Certified by: Colin Wright, Program Administrator

Date Certified: 13-FEB-2018 10:52



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 MAGDALENE **Collection Date/Time: 01/22/2018 10:00**

Field ID: G1SW0059 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1961107	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P338648	
	EPA 300.0 Rev. 2.1	Chloride	38		mg Cl/L	P338760	
		Sulfate	14		mg SO4/L	P338763	
	SM 2120 B	Color (true)	38		PCU	P338638	
	SM 2320 B-97	Total Alkalinity	42		mg CaCO3/L	P338925	
	SM 2540 C-97	TDS	149		mg/L	P338984	
	SM 2540 D-97	TSS	2	I	mg/L	P338976	
	SM 4500 F-C-97	Fluoride	0.085	I	mg F/L	P339357	
1961111	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P338948	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70		mg N/L	P338667	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.064		mg N/L	P338716	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P338797	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P339030	
1961115	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P338655	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: LAKE ARMISTEAD **Collection Date/Time: 01/22/2018 11:10**

Field ID: G1SW0030 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1961108	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P338649	
	EPA 300.0 Rev. 2.1	Chloride	29		mg Cl/L	P338760	
		Sulfate	5.1		mg SO4/L	P338763	
	SM 2120 B	Color (true)	140		PCU	P338638	
	SM 2320 B-97	Total Alkalinity	29		mg CaCO3/L	P338925	
	SM 2540 C-97	TDS	118		mg/L	P338984	
	SM 2540 D-97	TSS	3	I	mg/L	P338976	
	SM 4500 F-C-97	Fluoride	0.096	I	mg F/L	P339357	
1961112	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P338948	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P338667	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P338716	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P338797	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P339030	
1961116	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P338655	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: LAKE WASTENA **Collection Date/Time: 01/22/2018 11:50**

Field ID: G1SW0020 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1961109	EPA 180.1 Rev. 2.0	Turbidity	1.8	A	NTU	P338649	

Field ID: G1SW0020 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1961109	EPA 300.0 Rev. 2.1	Chloride	21	A	mg Cl/L	P338760	
		Sulfate	6.0	A	mg SO4/L	P338763	
	SM 2120 B	Color (true)	43		PCU	P338638	
	SM 2320 B-97	Total Alkalinity	21		mg CaCO3/L	P338925	
	SM 2540 C-97	TDS	84		mg/L	P338984	
	SM 2540 D-97	TSS	3	I	mg/L	P338976	
	SM 4500 F-C-97	Fluoride	0.059	I	mg F/L	P339357	
1961113	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P338948	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.78		mg N/L	P338667	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P338716	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P338797	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P339030	
1961117	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P338655	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: LITTLE LAKE WILSON SOUTH **Collection Date/Time: 01/22/2018 12:40**

Field ID: G1SW0009 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1961110	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P338649	
	EPA 300.0 Rev. 2.1	Chloride	46		mg Cl/L	P338760	
		Sulfate	2.4		mg SO4/L	P338763	
	SM 2120 B	Color (true)	60		PCU	P338638	
	SM 2320 B-97	Total Alkalinity	58		mg CaCO3/L	P338925	
	SM 2540 C-97	TDS	160	A	mg/L	P338984	
	SM 2540 D-97	TSS	3	IA	mg/L	P338976	
	SM 4500 F-C-97	Fluoride	0.067	I	mg F/L	P339357	
1961114	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P338948	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.89		mg N/L	P338667	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P338716	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P338797	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P339030	
1961118	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P338656	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: 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: P338648

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P338649

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338760

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338763

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338948

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338667

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338716

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338797

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338655

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338656

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: P338638

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P338925

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2540 C-97
Batch ID: P338984

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P338976

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P339357

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P339030

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: P338760

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338763

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338948

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338948

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338667

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338716

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: P338797

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338655

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338656

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.5		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P338925

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.4		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P339357

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P339030

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338760

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1961109	Chloride	107		P	90 - 110
1961160	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338763

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1961109	Sulfate	102		P	90 - 110
1961160	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338948

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1961111	Ammonia-N	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338716

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1961096	NO2NO3-N	107	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338797

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1961111	Total-P	101	96.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338655

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1960999	O-Phosphate-P	100	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338656

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1961118	O-Phosphate-P	99.0	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P339357

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1961110	Fluoride	96.5	97.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P339030

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1960984	Organic Carbon	101	102	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P338648

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1961035	Turbidity	0.503	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P338649

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1961109	Turbidity	3.79	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338760

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1961109	Chloride	4.78	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338763

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1961109	Sulfate	6.97	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338948

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1961111	Ammonia-N	0.504	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338667

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1961095	Kjeldahl Nitrogen	0.0481	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338716

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1961096	NO2NO3-N	4.24	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338797

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1961111	Total-P	4.47	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338655

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1960999	O-Phosphate-P	0.903	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338656

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1961118	O-Phosphate-P	1.60	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P338638

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1961141	Color (true)	2.32	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P338925

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1961484	Total Alkalinity	2.76	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P338984

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1961110	TDS	3.75	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P339357

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1961110	Fluoride	0.519	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P339030

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1960984	Organic Carbon	0.731	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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2120 B
Run ID: A81607
Included Lab Sample IDs: 1961107, 1961108, 1961109, 1961110

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A81610
Included Lab Sample IDs: 1961107, 1961108, 1961109, 1961110

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.5	P/P	95 - 105
Turbidity	99.5	99.0	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A81611
Included Lab Sample IDs: 1961115, 1961116, 1961117, 1961118

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.9	P/P	90 - 110
O-Phosphate-P	99.5	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A81616
Included Lab Sample IDs: 1961107, 1961108, 1961109, 1961110

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A81625
Included Lab Sample IDs: 1961111, 1961112, 1961113, 1961114

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A81661
Included Lab Sample IDs: 1961111, 1961112, 1961113, 1961114

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	102	P/P	90 - 110
Kjeldahl Nitrogen	102	97.6	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A81689
Included Lab Sample IDs: 1961107, 1961108, 1961109, 1961110

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.2	99.3	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A81694
Included Lab Sample IDs: 1961111, 1961112, 1961113, 1961114

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A81704
Included Lab Sample IDs: 1961111, 1961112, 1961113, 1961114

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

Reference Method: SM 5310 B-00
Run ID: A81738
Included Lab Sample IDs: 1961111, 1961112, 1961113, 1961114

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.8	99.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A81863
Included Lab Sample IDs: 1961107, 1961108, 1961109, 1961110

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	99.5	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		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					0.503	
	Turbidity					3.79	
EPA 300.0 Rev. 2.1	Chloride	104	107	103		4.78	
	Sulfate	101	102	101		6.97	
EPA 350.1 Rev. 2.0	Ammonia-N	100	104	104			0.504
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.5					0.0481
EPA 353.2 Rev. 2.0	NO2NO3-N	104	107	101			4.24
EPA 365.1 Rev. 2.0	Total-P	98.9	101	96.6			4.47
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	100	99.2			0.903
	O-Phosphate-P	97.5	99.0	101			1.60
SM 2120 B	Color (true)					2.32	
SM 2320 B-97	Total Alkalinity	99.4				2.76	
SM 2540 C-97	TDS					3.75	
SM 4500 F-C-97	Fluoride	97.5	96.5	97.1			0.519
SM 5310 B-00	Organic Carbon	97.8	101	102			0.731

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1961107, 1961108, 1961109, 1961110
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1961107, 1961108, 1961109, 1961110
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1961107, 1961108, 1961109, 1961110
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1961111, 1961112, 1961113, 1961114
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1961111, 1961112, 1961113, 1961114
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1961111, 1961112, 1961113, 1961114
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1961111, 1961112, 1961113, 1961114
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1961115, 1961116, 1961117, 1961118
SM 2120 B / E31780	True Color measured at 450 nm	1961107, 1961108, 1961109, 1961110
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1961107, 1961108, 1961109, 1961110
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1961107, 1961108, 1961109, 1961110
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1961107, 1961108, 1961109, 1961110
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1961107, 1961108, 1961109, 1961110
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1961111, 1961112, 1961113, 1961114

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	01/23/2018			01/23/2018 15:16	DeAsia Armster	1961107, 1961108, 1961109, 1961110
EPA 300.0 Rev. 2.1	01/23/2018			01/24/2018	Julia Storbeck	1961109
	01/23/2018			01/25/2018	Julia Storbeck	1961107, 1961108, 1961110
EPA 350.1 Rev. 2.0	01/23/2018			01/26/2018	Ping Hua	1961111, 1961112, 1961113, 1961114
EPA 351.2 Rev. 2.0	01/23/2018	01/24/2018	Adrian Shelby	01/26/2018	Joseph Suarez	1961111, 1961112, 1961113, 1961114
EPA 353.2 Rev. 2.0	01/23/2018			01/24/2018	Lauren Bottorf	1961111, 1961112, 1961113, 1961114
EPA 365.1 Rev. 2.0	01/23/2018	01/25/2018	Sima Feizi	01/26/2018	Lipi Saha	1961111, 1961112, 1961113, 1961114
EPA 365.1 Rev. 2.0 dissolved	01/23/2018			01/23/2018 15:22	Megan Treadwell	1961118
	01/23/2018			01/23/2018 16:01	Megan Treadwell	1961115
	01/23/2018			01/23/2018 16:02	Megan Treadwell	1961116
	01/23/2018			01/23/2018 16:03	Megan Treadwell	1961117
SM 2120 B	01/23/2018			01/23/2018 15:18	Tanya Welborn	1961107, 1961108
	01/23/2018			01/23/2018 15:19	Tanya Welborn	1961109
	01/23/2018			01/23/2018 15:20	Tanya Welborn	1961110
SM 2320 B-97	01/23/2018			01/27/2018	Lauren Bottorf	1961107, 1961108, 1961109, 1961110
SM 2540 C-97	01/23/2018			01/24/2018	Yijie Li	1961107, 1961108, 1961109, 1961110
SM 2540 D-97	01/23/2018			01/24/2018	Yijie Li	1961107, 1961108, 1961109, 1961110
SM 4500 F-C-97	01/23/2018			02/05/2018	Dale L. Simmons	1961107, 1961108, 1961109, 1961110
SM 5310 B-00	01/23/2018			01/29/2018	Megan Treadwell	1961111, 1961112, 1961113, 1961114