

Chemical Analysis Report

SO-DIST-2019-02-06-01

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

Event Description: **Highlands**
Request ID: **RQ-2019-02-04-71**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Maryann Dugan

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 04-MAR-2019 13:56

A handwritten signature in black ink, appearing to read "Colin Wright", is shown on a light-colored rectangular 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 by the Florida Department of Health Environmental Laboratory Certification Program 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: Grassy Creek @CR621E

Collection Date/Time: 02/05/2019 10:35

Field ID: G4SD0165

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2060052	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P358460	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P359196	
		Sulfate	24		mg SO4/L	P359198	
	SM 2120 B	Color (true)	17		PCU	P358452	
	SM 2320 B-97	Total Alkalinity	11		mg CaCO3/L	P358921	RPD
	SM 2540 C-97	TDS	93		mg/L	P359062	
	SM 2540 D-97	TSS	2	I	mg/L	P358943	
	SM 4500 F-C-97	Fluoride	0.048	I	mg F/L	P358925	
2060054	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P358727	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.55		mg N/L	P358587	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.031		mg N/L	P358770	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P358565	
	SM 5310 B-00	Organic Carbon	7.7		mg C/L	P358669	
2060056	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P358449	

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 Pythias @ Middle

Collection Date/Time: 02/05/2019 11:45

Field ID: G4SD0138

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2060058	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P358462	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P359197	
		Sulfate	32		mg SO4/L	P359199	
	SM 2120 B	Color (true)	11		PCU	P358452	
	SM 2320 B-97	Total Alkalinity	3.0		mg CaCO3/L	P358921	RPD
	SM 2540 C-97	TDS	100		mg/L	P359063	
	SM 2540 D-97	TSS	2	I	mg/L	P358944	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P358925	
2060061	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P358729	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37		mg N/L	P358693	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15		mg N/L	P358770	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P358565	
	SM 5310 B-00	Organic Carbon	4.5		mg C/L	P358669	
2060064	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P358449	

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 Damon @ Middle

Collection Date/Time: 02/05/2019 12:35

Field ID: G4SD0168

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2060059	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P358462	
	EPA 300.0 Rev. 2.1	Chloride	16		mg Cl/L	P359197	
		Sulfate	32		mg SO4/L	P359199	
	SM 2120 B	Color (true)	11		PCU	P358453	
	SM 2320 B-97	Total Alkalinity	17	AJ	mg CaCO3/L	P358921	RPD
	SM 2540 C-97	TDS	99		mg/L	P359063	
	SM 2540 D-97	TSS	2	U	mg/L	P358944	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P358925	
2060062	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P358729	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40		mg N/L	P358695	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.037		mg N/L	P358771	
	EPA 365.1 Rev. 2.0	Total-P	0.01		mg P/L	P358565	
	SM 5310 B-00	Organic Carbon	4.4		mg C/L	P358669	
2060065	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P358449	

Ref. Method and Comment:

SM 2320 B-97: Refer to the narrative for an explanation of QC Codes.

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

Sample Location: LittleRedWaterLake@Mid

Collection Date/Time: 02/05/2019 13:15

Field ID: G4SD0171

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2060060	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P358461	
	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P359197	
		Sulfate	9.5		mg SO4/L	P359199	
	SM 2120 B	Color (true)	57		PCU	P358453	
	SM 2320 B-97	Total Alkalinity	3.8		mg CaCO3/L	P358921	RPD
	SM 2540 C-97	TDS	60		mg/L	P359063	
	SM 2540 D-97	TSS	2	I	mg/L	P358944	
	SM 4500 F-C-97	Fluoride	0.055	I	mg F/L	P358925	
2060063	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P358729	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.64		mg N/L	P358695	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P358771	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P358565	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P358669	
2060066	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P358449	

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: Little Charlie Bowlegs

Collection Date/Time: 02/05/2019 14:15

Field ID: G3SD0093

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2060053	EPA 180.1 Rev. 2.0	Turbidity	0.90		NTU	P358461	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P359197	
		Sulfate	8.4		mg SO4/L	P359199	
	SM 2120 B	Color (true)	240		PCU	P358452	
	SM 2320 B-97	Total Alkalinity	9.0		mg CaCO3/L	P358921	RPD
	SM 2540 C-97	TDS	120		mg/L	P359062	
	SM 2540 D-97	TSS	2	U	mg/L	P358943	
	SM 4500 F-C-97	Fluoride	0.081	I	mg F/L	P358925	
2060055	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P358729	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P358693	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P358770	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P358565	
	SM 5310 B-00	Organic Carbon	29		mg C/L	P358669	
2060057	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P358449	

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: P358460

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P358461

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P358462

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359196

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359197

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359198

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359199

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358727

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358729

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358587

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358693

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358695

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358770

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358771

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358565

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358449

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

Reference Method: SM 2120 B
Batch ID: P358452

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P358453

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P358921

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

Reference Method: SM 2540 C-97
Batch ID: P359062

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P359063

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P358943

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P358944

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P358925

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P358669

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: P359196

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359197

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359198

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359199

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358727

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358729

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: P358587

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358693

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: P358695

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358770

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358771

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358565

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358449

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

Reference Method: SM 2120 B
Batch ID: P358452

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

Reference Method: SM 2120 B
Batch ID: P358453

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

Reference Method: SM 2320 B-97
Batch ID: P358921

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P358925

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

Reference Method: SM 5310 B-00
Batch ID: P358669

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.7		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359196

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2059775	Chloride	95.1		P	90 - 110
2059984	Chloride	96.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359197

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060053	Chloride	97.7		P	90 - 110
2060208	Chloride	91.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359198

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2059775	Sulfate	94.1		P	90 - 110
2059984	Sulfate	96.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359199

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060053	Sulfate	97.3		P	90 - 110
2060208	Sulfate	94.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358727

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2059990	Ammonia-N	101	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358729

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060061	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358587

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060054	Kjeldahl Nitrogen	109	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358693

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060055	Kjeldahl Nitrogen	91.1	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358695

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: P358695

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060172	Kjeldahl Nitrogen	111	108	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358770

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2059966	NO2NO3-N	98.1	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358771

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060062	NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358565

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060062	Total-P	103	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358449

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060066	O-Phosphate-P	97.0	97.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P358925

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2060059	Fluoride	96.4	96.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P358669

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2059991	Organic Carbon	101	101	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P358460

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2059987	Turbidity	2.50	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P358461

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060202	Turbidity	8.34	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P358462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060207	Turbidity	1.89	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359196

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2059775	Chloride	1.19	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359197

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060208	Chloride	1.05	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359198

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2059775	Sulfate	0.918	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359199

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060208	Sulfate	1.14	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358727

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2059990	Ammonia-N	0.466	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358729

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060061	Ammonia-N	0.982	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358587

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060054	Kjeldahl Nitrogen	2.59	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358693

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060055	Kjeldahl Nitrogen	4.55	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358695

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060172	Kjeldahl Nitrogen	1.82	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358770

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2059966	NO2NO3-N	2.44	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358771

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060062	NO2NO3-N	0.419	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358565

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060062	Total-P	2.24	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358449

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060066	O-Phosphate-P	0.719	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
 Batch ID: P358452

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2059986	Color (true)	1.57	Sample	P	0 - 20

Reference Method: SM 2120 B
 Batch ID: P358453

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060202	Color (true)	1.72	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P358921

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060059	Total Alkalinity	2.05	Sample	F	0 - 1.6

Reference Method: SM 2540 C-97
 Batch ID: P359062

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2059841	TDS	2.02	Sample	P	0 - 10

Reference Method: SM 2540 C-97
 Batch ID: P359063

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060203	TDS	5.29	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P358925

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2060059	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P358669

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2059991	Organic Carbon	0.227	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: A89230

Included Lab Sample IDs: 2060056, 2060057, 2060064, 2060065, 2060066

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

Reference Method: SM 2120 B

Run ID: A89231

Included Lab Sample IDs: 2060052, 2060053, 2060058, 2060059, 2060060

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	101	P/P	90 - 115
Color (true)	105	104	P/P	90 - 115
Color (true)	99.5	101	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A89232

Included Lab Sample IDs: 2060052, 2060053, 2060058, 2060059, 2060060

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	100	P/P	95 - 105
Turbidity	100	101	P/P	95 - 105
Turbidity	101	100	P/P	95 - 105

Reference Method: SM 5310 B-00

Run ID: A89320

Included Lab Sample IDs: 2060054, 2060055, 2060061, 2060062, 2060063

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.8	99.8	P/P	90 - 110
Organic Carbon	99.8	98.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89336

Included Lab Sample IDs: 2060054

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.1	96.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A89337

Included Lab Sample IDs: 2060055

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A89341

Included Lab Sample IDs: 2060054, 2060061, 2060062, 2060063

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	98.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A89347

Included Lab Sample IDs: 2060054, 2060055, 2060061, 2060062, 2060063

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89363

Included Lab Sample IDs: 2060055, 2060061

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	99.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A89364

Included Lab Sample IDs: 2060054, 2060055, 2060061, 2060062, 2060063

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.0	P/P	90 - 110
NO2NO3-N	99.0	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89390

Included Lab Sample IDs: 2060062, 2060063

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.5	104	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A89417

Included Lab Sample IDs: 2060052, 2060053, 2060058, 2060059, 2060060

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	100	P/P	90 - 110
Total Alkalinity	99.9	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A89417

Included Lab Sample IDs: 2060052, 2060053, 2060058, 2060059, 2060060

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.1	99.5	P/P	90 - 110
Fluoride	99.5	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A89517

Included Lab Sample IDs: 2060052, 2060053, 2060058, 2060059, 2060060

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	98.6	P/P	90 - 110
Chloride	98.6	97.4	P/P	90 - 110
Sulfate	100	97.9	P/P	90 - 110
Sulfate	97.9	96.9	P/P	90 - 110

Quality Assurance Report

Calibration Verification

* 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	MS
EPA 180.1 Rev. 2.0	Turbidity				2.50	
	Turbidity				8.34	
	Turbidity				1.89	
EPA 300.0 Rev. 2.1	Chloride	98.2	95.1	96.8	1.19	
	Chloride	98.7	91.5	97.7	1.05	
	Sulfate	99.2	94.1	96.9	0.918	
	Sulfate	97.8	94.6	97.3	1.14	
EPA 350.1 Rev. 2.0	Ammonia-N	101	101	100		0.466
	Ammonia-N	101	101	102		0.982
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108	109	105		2.59
	Kjeldahl Nitrogen	103	91.1	100		4.55
	Kjeldahl Nitrogen	103	111	108		1.82
EPA 353.2 Rev. 2.0	NO2NO3-N	98.0	98.1	101		2.44
	NO2NO3-N	99.0	100	101		0.419
EPA 365.1 Rev. 2.0	Total-P	101	103	100		2.24
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.1	97.0	97.7		0.719
SM 2120 B	Color (true)	101			1.57	
	Color (true)	101			1.72	
SM 2320 B-97	Total Alkalinity	103			2.05	
SM 2540 C-97	TDS				2.02	
	TDS				5.29	
SM 4500 F-C-97	Fluoride	97.1	96.4	96.4		0.0
SM 5310 B-00	Organic Carbon	99.7	101	101		0.227

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2060052, 2060053, 2060058, 2060059, 2060060
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2060052, 2060053, 2060058, 2060059, 2060060
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2060052, 2060053, 2060058, 2060059, 2060060
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2060054, 2060055, 2060061, 2060062, 2060063
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2060054, 2060055, 2060061, 2060062, 2060063
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2060054, 2060055, 2060061, 2060062, 2060063
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2060054, 2060055, 2060061, 2060062, 2060063
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2060056, 2060057, 2060064, 2060065, 2060066
SM 2120 B / E31780	True Color measured at 450 nm	2060052, 2060053, 2060058, 2060059, 2060060
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2060052, 2060053, 2060058, 2060059, 2060060
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2060052, 2060053, 2060058, 2060059, 2060060
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2060052, 2060053, 2060058, 2060059, 2060060
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2060052, 2060053, 2060058, 2060059, 2060060
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2060054, 2060055, 2060061, 2060062, 2060063

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	02/06/2019			02/06/2019 17:47	Adrian Shelby	2060052, 2060053, 2060058, 2060059, 2060060
EPA 300.0 Rev. 2.1	02/06/2019			02/19/2019 04:37	Lipi Saha	2060052
	02/06/2019			02/19/2019 06:53	Lipi Saha	2060053
	02/06/2019			02/19/2019 07:28	Lipi Saha	2060058
	02/06/2019			02/19/2019 07:45	Lipi Saha	2060059
	02/06/2019			02/19/2019 08:02	Lipi Saha	2060060
EPA 350.1 Rev. 2.0	02/06/2019			02/11/2019 12:03	Ping Hua	2060054
	02/06/2019			02/11/2019 12:42	Ping Hua	2060061
	02/06/2019			02/11/2019 12:47	Ping Hua	2060055
	02/06/2019			02/11/2019 12:48	Ping Hua	2060062
	02/06/2019			02/11/2019 12:50	Ping Hua	2060063
EPA 351.2 Rev. 2.0	02/06/2019	02/08/2019 11:55	Adrian Shelby	02/11/2019 12:09	Joseph Suarez	2060054
	02/06/2019	02/11/2019 11:30	Adrian Shelby	02/12/2019 10:55	Joseph Suarez	2060055
	02/06/2019	02/11/2019 11:30	Adrian Shelby	02/12/2019 10:59	Joseph Suarez	2060061
	02/06/2019	02/11/2019 11:30	Adrian Shelby	02/13/2019 08:58	Joseph Suarez	2060062
	02/06/2019	02/11/2019 11:30	Adrian Shelby	02/13/2019 09:00	Joseph Suarez	2060063
EPA 353.2 Rev. 2.0	02/06/2019			02/12/2019 12:03	Lauren Lees	2060054
	02/06/2019			02/12/2019 12:05	Lauren Lees	2060055
	02/06/2019			02/12/2019 12:06	Lauren Lees	2060061
	02/06/2019			02/12/2019 12:13	Lauren Lees	2060062
	02/06/2019			02/12/2019 12:19	Lauren Lees	2060063
EPA 365.1 Rev. 2.0	02/06/2019	02/08/2019 15:00	Sima Feizi	02/11/2019 10:57	Rosalyn Ballman	2060055
	02/06/2019	02/08/2019 15:00	Sima Feizi	02/11/2019 16:21	Rosalyn Ballman	2060054
	02/06/2019	02/08/2019 15:00	Sima Feizi	02/11/2019 16:22	Rosalyn Ballman	2060061
	02/06/2019	02/08/2019 15:00	Sima Feizi	02/11/2019 16:23	Rosalyn Ballman	2060062
	02/06/2019	02/08/2019 15:00	Sima Feizi	02/11/2019 16:24	Rosalyn Ballman	2060063
EPA 365.1 Rev. 2.0 dissolved	02/06/2019			02/06/2019 15:52	Jhamieka S. Greenwood	2060066
	02/06/2019			02/06/2019 16:08	Jhamieka S. Greenwood	2060056
	02/06/2019			02/06/2019 16:09	Jhamieka S. Greenwood	2060057
	02/06/2019			02/06/2019 16:10	Jhamieka S. Greenwood	2060064
	02/06/2019			02/06/2019 16:11	Jhamieka S. Greenwood	2060065
SM 2120 B	02/06/2019			02/06/2019 16:33	Chelsea Hernandez	2060052
	02/06/2019			02/06/2019 16:34	Chelsea Hernandez	2060058
	02/06/2019			02/06/2019 16:38	Chelsea Hernandez	2060059
	02/06/2019			02/06/2019 16:39	Chelsea Hernandez	2060060
	02/06/2019			02/06/2019 17:26	Chelsea Hernandez	2060053
SM 2320 B-97	02/06/2019			02/13/2019 05:05	Dale L. Simmons	2060059
	02/06/2019			02/13/2019 08:30	Dale L. Simmons	2060052
	02/06/2019			02/13/2019 08:41	Dale L. Simmons	2060053

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	02/06/2019			02/13/2019 08:52	Dale L. Simmons	2060058
	02/06/2019			02/13/2019 09:04	Dale L. Simmons	2060060
SM 2540 C-97	02/06/2019			02/08/2019 15:25	Yijie Li	2060052, 2060053, 2060058, 2060059, 2060060
SM 2540 D-97	02/06/2019			02/08/2019 15:25	Yijie Li	2060052, 2060053, 2060058, 2060059, 2060060
SM 4500 F-C-97	02/06/2019			02/13/2019 04:56	Dale L. Simmons	2060059
	02/06/2019			02/13/2019 08:30	Dale L. Simmons	2060052
	02/06/2019			02/13/2019 08:41	Dale L. Simmons	2060053
	02/06/2019			02/13/2019 08:52	Dale L. Simmons	2060058
	02/06/2019			02/13/2019 09:04	Dale L. Simmons	2060060
SM 5310 B-00	02/06/2019			02/08/2019 00:46	Chelsea Hernandez	2060054
	02/06/2019			02/08/2019 00:58	Chelsea Hernandez	2060055
	02/06/2019			02/08/2019 01:10	Chelsea Hernandez	2060061
	02/06/2019			02/08/2019 01:47	Chelsea Hernandez	2060062
	02/06/2019			02/08/2019 01:59	Chelsea Hernandez	2060063