

Chemical Analysis Report

CEN-DIST-2018-10-25-03

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

Event Description: **Minnie / Charm + D&B**
Request ID: **RQ-2018-10-15-48**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 16-NOV-2018 12:45

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the "T" and a long horizontal stroke at the end.

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 Charm @ Center

Collection Date/Time: 10/24/2018 09:52

Field ID: G2CE0080

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036179	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P353684	
	EPA 300.0 Rev. 2.1	Chloride	42	A	mg Cl/L	P353979	
		Sulfate	14	A	mg SO4/L	P353981	
	SM 2120 B	Color (true)	32		PCU	P353678	
	SM 2320 B-97	Total Alkalinity	61		mg CaCO3/L	P353899	
	SM 2540 C-97	TDS	179		mg/L	P354163	
	SM 2540 D-97	TSS	4	I	mg/L	P354032	
	SM 4500 F-C-97	Fluoride	0.22		mg F/L	P353904	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.45		mg N/L	P354172	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P354148	
2036181	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P353967	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P354028	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P354198	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	UJ	mg P/L	P353706	MS
	dissolved						

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Refer to the narrative for an explanation of QC Codes.

Sample Location: Lake Minnie @ Center

Collection Date/Time: 10/24/2018 10:41

Field ID: G2CE0108

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036180	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P353685	
	EPA 300.0 Rev. 2.1	Chloride	39		mg Cl/L	P353979	
		Sulfate	2.4		mg SO4/L	P353981	
	SM 2120 B	Color (true)	250		PCU	P353678	
	SM 2320 B-97	Total Alkalinity	48		mg CaCO3/L	P353899	
	SM 2540 C-97	TDS	163		mg/L	P354164	
	SM 2540 D-97	TSS	4	I	mg/L	P354033	
	SM 4500 F-C-97	Fluoride	0.060	I	mg F/L	P353904	
2036182	EPA 350.1 Rev. 2.0	Ammonia-N	0.45		mg N/L	P354194	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P354148	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.048		mg N/L	P353967	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P354029	
	SM 5310 B-00	Organic Carbon	22		mg C/L	P354198	
2036184	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.055		mg P/L	P353695	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Minnie @ Center

Collection Date/Time: 10/24/2018 10:45

Field ID: G2CE0108_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036185	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P353685	
	EPA 300.0 Rev. 2.1	Chloride	38		mg Cl/L	P353979	
		Sulfate	2.4		mg SO4/L	P353981	
	SM 2120 B	Color (true)	250		PCU	P353678	
	SM 2320 B-97	Total Alkalinity	49		mg CaCO3/L	P353899	
	SM 2540 C-97	TDS	161		mg/L	P354164	
	SM 2540 D-97	TSS	3	I	mg/L	P354033	
	SM 4500 F-C-97	Fluoride	0.059	I	mg F/L	P353904	
2036186	EPA 350.1 Rev. 2.0	Ammonia-N	0.45		mg N/L	P354194	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P354148	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.048		mg N/L	P353967	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P354029	
	SM 5310 B-00	Organic Carbon	22		mg C/L	P354198	
2036187	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.057		mg P/L	P353695	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: BLANK_10242018

Collection Date/Time: 10/24/2018 10:55

Field ID: BLANK_10242018

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036188	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P353685	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P353979	
		Sulfate	0.20	U	mg SO4/L	P353981	
		Color (true)	2.5	U	PCU	P353679	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P353899	
	SM 2540 C-97	TDS	15	U	mg/L	P354162	
	SM 2540 D-97	TSS	2	U	mg/L	P354031	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P353904	
2036189	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P354172	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P354148	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P353968	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P354029	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P354198	
2036190	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P353695	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: 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: P353684

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P353685

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353979

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353981

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354172

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354194

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354148

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353967

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353968

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354028

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354029

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353695

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353706

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

Reference Method: SM 2120 B
Batch ID: P353678

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P353679

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P353899

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

Reference Method: SM 2540 C-97
Batch ID: P354162

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P354163

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P354164

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P354031

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P354032

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P354033

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P353904

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P354198

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: P353979

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353981

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354172

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354194

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354148

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353967

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353968

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: P354028

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354029

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.6		P	90 - 110

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353695

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353706

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

Reference Method: SM 2120 B
Batch ID: P353678

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

Reference Method: SM 2120 B
Batch ID: P353679

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	105		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P353899

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

Reference Method: SM 4500 F-C-97
Batch ID: P353904

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P354198

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353979

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036179	Chloride	98.4		P	90 - 110
2036282	Chloride	99.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353981

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036179	Sulfate	98.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354172

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036263	Ammonia-N	97.2	98.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354194

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036105	Ammonia-N	97.8	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353967

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036105	NO2NO3-N	105	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353968

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036249	NO2NO3-N	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354028

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036181	Total-P	97.7	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354029

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036283	Total-P	103	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036183	O-Phosphate-P	76.0	78.8	F/F	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P353904

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036282	Fluoride	99.5	100	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P354198

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036111	Organic Carbon	102	98.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P353684

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036142	Turbidity	3.23	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P353685

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036296	Turbidity	0.310	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353979

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036179	Chloride	1.93	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353981

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036179	Sulfate	0.644	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354172

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036263	Ammonia-N	1.34	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036105	Ammonia-N	1.92	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354148

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036181	Kjeldahl Nitrogen	2.31	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353967

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036105	NO2NO3-N	0.322	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353968

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036249	NO2NO3-N	0.966	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036181	Total-P	1.39	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354029

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036283	Total-P	3.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353695

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036140	O-Phosphate-P	0.804	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036183	O-Phosphate-P	3.62	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P353678

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036110	Color (true)	2.17	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P353679

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036248	Color (true)	2.64	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P353899

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036282	Total Alkalinity	0.276	Sample	P	0 - 1.6

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
 Batch ID: P354162

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035567	TDS	6.41	Sample	P	0 - 10

Reference Method: SM 2540 C-97
 Batch ID: P354163

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035913	TDS	2.83	Sample	P	0 - 10

Reference Method: SM 2540 C-97
 Batch ID: P354164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036248	TDS	0.0	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P353904

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036282	Fluoride	0.470	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P354198

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036111	Organic Carbon	2.23	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: SM 2120 B

Run ID: A87286

Included Lab Sample IDs: 2036179, 2036180, 2036185, 2036188

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	103	P/P	90 - 115
Color (true)	103	105	P/P	90 - 115
Color (true)	106	105	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A87287

Included Lab Sample IDs: 2036183, 2036184, 2036187, 2036190

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	101	P/P	90 - 110
O-Phosphate-P	99.5	99.2	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A87288

Included Lab Sample IDs: 2036179, 2036180, 2036185, 2036188

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A87368

Included Lab Sample IDs: 2036179, 2036180, 2036185, 2036188

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	104	104	P/P	90 - 110
Sulfate	102	103	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A87382

Included Lab Sample IDs: 2036179, 2036180, 2036185, 2036188

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

Reference Method: SM 4500 F-C-97

Run ID: A87382

Included Lab Sample IDs: 2036179, 2036180, 2036185, 2036188

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A87412

Included Lab Sample IDs: 2036181, 2036182, 2036186, 2036189

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	104	P/P	90 - 110
NO2NO3-N	104	104	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A87437

Included Lab Sample IDs: 2036182, 2036186

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A87487

Included Lab Sample IDs: 2036181, 2036189

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A87504

Included Lab Sample IDs: 2036181, 2036189

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.7	P/P	90 - 110
Ammonia-N	99.3	99.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A87519

Included Lab Sample IDs: 2036182, 2036186

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

Reference Method: SM 5310 B-00

Run ID: A87522

Included Lab Sample IDs: 2036181, 2036182, 2036186, 2036189

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	97.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A87524

Included Lab Sample IDs: 2036181, 2036182, 2036186, 2036189

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	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		Precision	
					LCS	MS
EPA 180.1 Rev. 2.0	Turbidity				3.23	
	Turbidity				0.310	
EPA 300.0 Rev. 2.1	Chloride	101	98.4	99.1	1.93	
	Sulfate	98.7	98.0		0.644	
EPA 350.1 Rev. 2.0	Ammonia-N	98.2	97.2	98.6		1.34
	Ammonia-N	99.2	97.8	100		1.92
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104				2.31
EPA 353.2 Rev. 2.0	NO2NO3-N	104	105	104		0.322
	NO2NO3-N	104	104	103		0.966
EPA 365.1 Rev. 2.0	Total-P	99.6	97.7	99.2		1.39
	Total-P	99.6	103	99.8		3.02
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102				0.804
	O-Phosphate-P	101	76.0	78.8		3.62
SM 2120 B	Color (true)	102			2.17	
	Color (true)	105			2.64	
SM 2320 B-97	Total Alkalinity	103			0.276	
SM 2540 C-97	TDS				6.41	
	TDS				2.83	
	TDS				0.0	
SM 4500 F-C-97	Fluoride	101	99.5	100		0.470
SM 5310 B-00	Organic Carbon	98.8	102	98.8		2.23

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2036179, 2036180, 2036185, 2036188
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2036179, 2036180, 2036185, 2036188
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2036179, 2036180, 2036185, 2036188
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2036181, 2036182, 2036186, 2036189
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2036181, 2036182, 2036186, 2036189
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2036181, 2036182, 2036186, 2036189
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2036181, 2036182, 2036186, 2036189
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2036183, 2036184, 2036187, 2036190
SM 2120 B / E31780	True Color measured at 450 nm	2036179, 2036180, 2036185, 2036188
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2036179, 2036180, 2036185, 2036188
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2036179, 2036180, 2036185, 2036188
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2036179, 2036180, 2036185, 2036188
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2036179, 2036180, 2036185, 2036188
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2036181, 2036182, 2036186, 2036189

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	10/25/2018			10/25/2018 17:19	Julia Storbeck	2036179, 2036180, 2036185, 2036188
EPA 300.0 Rev. 2.1	10/25/2018			10/30/2018 22:10	Lipi Saha	2036179
	10/25/2018			10/30/2018 23:23	Lipi Saha	2036180
	10/25/2018			10/30/2018 23:35	Lipi Saha	2036185
	10/25/2018			10/30/2018 23:47	Lipi Saha	2036188
EPA 350.1 Rev. 2.0	10/25/2018			11/02/2018 12:32	Julia Storbeck	2036189
	10/25/2018			11/02/2018 14:32	Ping Hua	2036182
	10/25/2018			11/02/2018 14:34	Ping Hua	2036186
	10/25/2018			11/02/2018 15:23	Julia Storbeck	2036181
EPA 351.2 Rev. 2.0	10/25/2018	11/02/2018 12:30	Adrian Shelby	11/05/2018 11:01	Joseph Suarez	2036181
	10/25/2018	11/02/2018 12:30	Adrian Shelby	11/05/2018 11:06	Joseph Suarez	2036182
	10/25/2018	11/02/2018 12:30	Adrian Shelby	11/05/2018 11:07	Joseph Suarez	2036186
	10/25/2018	11/02/2018 12:30	Adrian Shelby	11/05/2018 11:09	Joseph Suarez	2036189
EPA 353.2 Rev. 2.0	10/25/2018			10/31/2018 11:27	Beverly Y. Sanders	2036181
	10/25/2018			10/31/2018 11:28	Beverly Y. Sanders	2036182
	10/25/2018			10/31/2018 11:30	Beverly Y. Sanders	2036186
	10/25/2018			10/31/2018 11:43	Beverly Y. Sanders	2036189
EPA 365.1 Rev. 2.0	10/25/2018	10/31/2018 16:00	Adrian Shelby	11/01/2018 10:00	Beverly Y. Sanders	2036182
	10/25/2018	10/31/2018 16:00	Adrian Shelby	11/01/2018 10:01	Beverly Y. Sanders	2036186
	10/25/2018	10/31/2018 16:00	Adrian Shelby	11/02/2018 10:02	Beverly Y. Sanders	2036181
	10/25/2018	10/31/2018 16:00	Adrian Shelby	11/02/2018 10:11	Beverly Y. Sanders	2036189
EPA 365.1 Rev. 2.0 dissolved	10/25/2018			10/25/2018 14:57	Lipi Saha	2036183
	10/25/2018			10/25/2018 16:18	Lipi Saha	2036184, 2036187
	10/25/2018			10/25/2018 16:19	Lipi Saha	2036190
SM 2120 B	10/25/2018			10/25/2018 15:52	Chelsea Hernandez	2036179
	10/25/2018			10/25/2018 15:57	Chelsea Hernandez	2036188
	10/25/2018			10/25/2018 16:20	Chelsea Hernandez	2036180
	10/25/2018			10/25/2018 16:21	Chelsea Hernandez	2036185
SM 2320 B-97	10/25/2018			10/29/2018 11:24	Dale L. Simmons	2036179
	10/25/2018			10/29/2018 11:35	Dale L. Simmons	2036180
	10/25/2018			10/29/2018 11:46	Dale L. Simmons	2036185
	10/25/2018			10/29/2018 11:59	Dale L. Simmons	2036188
SM 2540 C-97	10/25/2018			10/26/2018 14:25	Yijie Li	2036179, 2036180, 2036185, 2036188
SM 2540 D-97	10/25/2018			10/26/2018 14:25	Yijie Li	2036179, 2036180, 2036185, 2036188
SM 4500 F-C-97	10/25/2018			10/29/2018 11:24	Dale L. Simmons	2036179
	10/25/2018			10/29/2018 11:35	Dale L. Simmons	2036180
	10/25/2018			10/29/2018 11:46	Dale L. Simmons	2036185
	10/25/2018			10/29/2018 11:59	Dale L. Simmons	2036188
SM 5310 B-00	10/25/2018			11/02/2018 09:06	Megan Treadwell	2036181
	10/25/2018			11/02/2018 09:18	Megan Treadwell	2036182

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	10/25/2018			11/02/2018 09:30	Megan Treadwell	2036186
	10/25/2018			11/02/2018 09:42	Megan Treadwell	2036189