Chemical Analysis Report

CEN-DIST-2019-01-25-01

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

Event Description: **Minnie / Silver / Chain / Gleason**
Request ID: **RQ-2019-01-21-28**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

For additional information please contact
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Liang-Tsair Lin, Ph.D.
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Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 12-FEB-2019 15:55

NON-CONFORMANCE REPORT INCLUDED

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: THREE ISLAND LAKE @ CENTER OF SOUTH LOBE **Collection Date/Time: 01/23/2019 09:35**

Field ID: G2CE0085 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2056812	EPA 180.1 Rev. 2.0	Turbidity	1.7	Q	NTU	P357872	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P358248	
		Sulfate	6.3		mg SO4/L	P358250	
	SM 2120 B	Color (true)	200	Q	PCU	P357840	
	SM 2320 B-97	Total Alkalinity	5.8		mg CaCO3/L	P358237	
	SM 2540 C-97	TDS	76		mg/L	P358323	
	SM 2540 D-97	TSS	2	I	mg/L	P358196	
	SM 4500 F-C-97	Fluoride	0.035	I	mg F/L	P358241	
2056816	EPA 350.1 Rev. 2.0	Ammonia-N	0.060		mg N/L	P358016	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P357992	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.17		mg N/L	P357916	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P357934	
	SM 5310 B-00	Organic Carbon	21		mg C/L	P357976	
2056820	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	UQ	mg P/L	P357851	

Ref. Method and Comment:
EPA 180.1 Rev. 2.0: The sample expired prior to receipt.
SM 2120 B: The sample expired prior to receipt.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired prior to receipt.

Sample Location: LAKE GLEASON @ CENTER **Collection Date/Time: 01/23/2019 10:24**

Field ID: G2CE0114 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2056813	EPA 180.1 Rev. 2.0	Turbidity	0.80	Q	NTU	P357872	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P358248	
		Sulfate	2.4		mg SO4/L	P358250	
	SM 2120 B	Color (true)	33	AQ	PCU	P357840	
	SM 2320 B-97	Total Alkalinity	50		mg CaCO3/L	P358237	
	SM 2540 C-97	TDS	94		mg/L	P358323	
	SM 2540 D-97	TSS	2	U	mg/L	P358196	
	SM 4500 F-C-97	Fluoride	0.075	I	mg F/L	P358241	
2056817	EPA 350.1 Rev. 2.0	Ammonia-N	0.19		mg N/L	P358016	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.86		mg N/L	P357992	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P357917	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P357934	
	SM 5310 B-00	Organic Carbon	9.1		mg C/L	P357976	
2056821	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	UQ	mg P/L	P357851	

Ref. Method and Comment:
EPA 180.1 Rev. 2.0: The sample expired prior to receipt.
SM 2120 B: The sample expired prior to receipt.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired prior to receipt.

Sample Location: LAKE MINNIE @ CENTER **Collection Date/Time: 01/23/2019 11:15**

Field ID: G2CE0108 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2056814	EPA 180.1 Rev. 2.0	Turbidity	2.0	Q	NTU	P357873	
	EPA 300.0 Rev. 2.1	Chloride	48		mg Cl/L	P358248	
		Sulfate	2.8		mg SO4/L	P358250	
	SM 2120 B	Color (true)	270	Q	PCU	P357840	
	SM 2320 B-97	Total Alkalinity	37		mg CaCO3/L	P358238	
	SM 2540 C-97	TDS	177		mg/L	P358323	
	SM 2540 D-97	TSS	3	I	mg/L	P358196	
	SM 4500 F-C-97	Fluoride	0.058	I	mg F/L	P358242	
2056818	EPA 350.1 Rev. 2.0	Ammonia-N	0.030		mg N/L	P358016	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P357992	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.068		mg N/L	P357917	
	EPA 365.1 Rev. 2.0	Total-P	0.056		mg P/L	P357934	
	SM 5310 B-00	Organic Carbon	25		mg C/L	P357977	
2056822	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.017	Q	mg P/L	P357851	

Ref. Method and Comment:
EPA 180.1 Rev. 2.0: The sample expired upon receipt.
SM 2120 B: The sample expired upon receipt.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired upon receipt.

Sample Location: SILVER LAKE @ CENTER **Collection Date/Time: 01/23/2019 11:50**

Field ID: G2CE0122 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2056815	EPA 180.1 Rev. 2.0	Turbidity	0.95		NTU	P357872	
	EPA 300.0 Rev. 2.1	Chloride	48		mg Cl/L	P358248	
		Sulfate	23		mg SO4/L	P358250	
	SM 2120 B	Color (true)	7.5	Q	PCU	P357840	
	SM 2320 B-97	Total Alkalinity	8.5	A	mg CaCO3/L	P358238	
	SM 2540 C-97	TDS	127	A	mg/L	P358323	
	SM 2540 D-97	TSS	2	UA	mg/L	P358196	
	SM 4500 F-C-97	Fluoride	0.040	I	mg F/L	P358242	
2056819	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P358185	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36		mg N/L	P357993	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P357917	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P357934	
	SM 5310 B-00	Organic Carbon	4.7		mg C/L	P357977	
2056823	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	UQ	mg P/L	P357851	

Ref. Method and Comment:
SM 2120 B: The sample expired upon receipt.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired upon receipt.

Non-Conformance Report

NCR ID: 7461

Event(s)	Job(s)	Sample(s)	Test(s)
CEN-DIST-2019-01-25-01			

NCR Type: SHIPPING/RECEIVING **NCR Category: Samples arrived late**

Observation: Samples arrived one or more days late by FedEx, samples received within the acceptable temperature range.

Resolution: Customer MIKE LINGER was contacted, email correspondence attached to sample submittal forms.

Authorized by/Date: Joshua Ayres 1/31/2019

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P357872

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P357873

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358248

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358250

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358016

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358185

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357992

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357993

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357916

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357917

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357934

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357851

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

Reference Method: SM 2120 B
Batch ID: P357840

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P358237

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

Reference Method: SM 2320 B-97
Batch ID: P358238

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

Reference Method: SM 2540 C-97
Batch ID: P358323

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P358196

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P358241

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P358242

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P357976

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Reference Method: SM 5310 B-00
Batch ID: P357977

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: P358248

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358250

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358016

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358185

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357992

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357993

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357916

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357917

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357934

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357851

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

Reference Method: SM 2120 B
Batch ID: P357840

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.2		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P358237

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P358238

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P358241

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.7		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P358242

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.7		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P357976

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.4		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P357977

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358248

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056777	Chloride	98.6		P	90 - 110
2056865	Chloride	98.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358250

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056777	Sulfate	99.3		P	90 - 110
2056865	Sulfate	96.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358016

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056782	Ammonia-N	101	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358185

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056819	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357992

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056783	Kjeldahl Nitrogen	101	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357993

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056875	Kjeldahl Nitrogen	98.9	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357916

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056782	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357917

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056817	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357934

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056782	Total-P	104	104	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357851

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056947	O-Phosphate-P	92.6	92.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P358242

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056815	Fluoride	95.4	94.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P357976

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056708	Organic Carbon	99.8	100	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P357977

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2056818	Organic Carbon	98.3		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P357872

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056841	Turbidity	17.1	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P357873

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056976	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358248

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056865	Chloride	0.234	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358250

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056865	Sulfate	0.0866	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358016

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056782	Ammonia-N	0.164	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358185

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056819	Ammonia-N	0.674	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357992

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056783	Kjeldahl Nitrogen	3.70	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357993

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056875	Kjeldahl Nitrogen	1.27	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357916

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056782	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357917

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056817	NO2NO3-N	0.447	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357934

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056782	Total-P	0.562	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357851

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056947	O-Phosphate-P	0.103	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P357840

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056813	Color (true)	0.905	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P358237

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056730	Total Alkalinity	0.448	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P358238

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056815	Total Alkalinity	0.921	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P358323

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056815	TDS	6.30	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P358241

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056730	Fluoride	0.477	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P358242

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056815	Fluoride	0.516	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P357976

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056708	Organic Carbon	0.300	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P357977

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2056818	Organic Carbon	0.0911	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: A89020
Included Lab Sample IDs: 2056812, 2056813, 2056814, 2056815

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.9	99.6	P/P	90 - 115
Color (true)	99.6	101	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A89025
Included Lab Sample IDs: 2056820, 2056821, 2056822, 2056823

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.1	98.6	P/P	90 - 110
O-Phosphate-P	99.2	98.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A89028
Included Lab Sample IDs: 2056812, 2056813, 2056814, 2056815

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A89046
Included Lab Sample IDs: 2056816, 2056817, 2056818, 2056819

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

Reference Method: SM 5310 B-00
Run ID: A89070
Included Lab Sample IDs: 2056816, 2056817, 2056818, 2056819

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	100	P/P	90 - 110
Organic Carbon	99.4	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A89072
Included Lab Sample IDs: 2056818

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: A89076
Included Lab Sample IDs: 2056816, 2056817, 2056819

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A89078
Included Lab Sample IDs: 2056816, 2056817, 2056818

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A89103
Included Lab Sample IDs: 2056816, 2056817, 2056818

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A89112
Included Lab Sample IDs: 2056812, 2056813, 2056814, 2056815

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.9	101	P/P	90 - 110
Sulfate	100	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A89115
Included Lab Sample IDs: 2056819

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A89123
Included Lab Sample IDs: 2056819

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

Reference Method: SM 2320 B-97
Run ID: A89154
Included Lab Sample IDs: 2056812, 2056813, 2056814, 2056815

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

Reference Method: SM 4500 F-C-97
Run ID: A89154
Included Lab Sample IDs: 2056812, 2056813, 2056814, 2056815

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.1	98.6	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					17.1	
	Turbidity					0.0	
EPA 300.0 Rev. 2.1	Chloride	97.9	98.4	98.6		0.234	
	Sulfate	97.9	96.8	99.3		0.0866	
EPA 350.1 Rev. 2.0	Ammonia-N	99.2	101	101			0.164
	Ammonia-N	97.5	102	103			0.674
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	101	106			3.70
	Kjeldahl Nitrogen	109	98.9	101			1.27
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102			0.0
	NO2NO3-N	102	102	102			0.447
EPA 365.1 Rev. 2.0	Total-P	101	104	104			0.562
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.8	92.6	92.7			0.103
SM 2120 B	Color (true)	99.2				0.905	
SM 2320 B-97	Total Alkalinity	101				0.448	
	Total Alkalinity	101				0.921	
SM 2540 C-97	TDS					6.30	
SM 4500 F-C-97	Fluoride	96.7					0.477
	Fluoride	96.7	95.4	94.9			0.516
SM 5310 B-00	Organic Carbon	97.4	99.8	100			0.300
	Organic Carbon	97.4	98.3				0.0911

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2056812, 2056813, 2056814, 2056815
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2056812, 2056813, 2056814, 2056815
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2056812, 2056813, 2056814, 2056815
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2056816, 2056817, 2056818, 2056819
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2056816, 2056817, 2056818, 2056819
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2056816, 2056817, 2056818, 2056819
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2056816, 2056817, 2056818, 2056819
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2056820, 2056821, 2056822, 2056823
SM 2120 B / E31780	True Color measured at 450 nm	2056812, 2056813, 2056814, 2056815
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2056812, 2056813, 2056814, 2056815
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2056812, 2056813, 2056814, 2056815
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2056812, 2056813, 2056814, 2056815
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2056812, 2056813, 2056814, 2056815
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2056816, 2056817, 2056818, 2056819

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	01/25/2019			01/25/2019 11:32	Megan Treadwell	2056815
	01/25/2019			01/25/2019 11:46	Megan Treadwell	2056812
	01/25/2019			01/25/2019 11:47	Megan Treadwell	2056813
	01/25/2019			01/25/2019 11:52	Megan Treadwell	2056814
EPA 300.0 Rev. 2.1	01/25/2019			01/31/2019 20:22	Lipi Saha	2056812
	01/25/2019			01/31/2019 20:37	Lipi Saha	2056813
	01/25/2019			01/31/2019 20:52	Lipi Saha	2056814
	01/25/2019			01/31/2019 21:07	Lipi Saha	2056815
EPA 350.1 Rev. 2.0	01/25/2019			01/29/2019 13:50	Ping Hua	2056816
	01/25/2019			01/29/2019 13:52	Ping Hua	2056817
	01/25/2019			01/29/2019 13:53	Ping Hua	2056818
	01/25/2019			01/31/2019 10:57	Ping Hua	2056819
EPA 351.2 Rev. 2.0	01/25/2019	01/29/2019 12:30	Adrian Shelby	01/30/2019 13:23	Joseph Suarez	2056816
	01/25/2019	01/29/2019 12:30	Adrian Shelby	01/30/2019 13:25	Joseph Suarez	2056817
	01/25/2019	01/29/2019 12:30	Adrian Shelby	01/30/2019 13:26	Joseph Suarez	2056818
	01/25/2019	01/29/2019 12:30	Adrian Shelby	01/31/2019 09:38	Joseph Suarez	2056819
EPA 353.2 Rev. 2.0	01/25/2019			01/28/2019 10:19	Beverly Y. Sanders	2056816
	01/25/2019			01/28/2019 10:26	Beverly Y. Sanders	2056817
	01/25/2019			01/28/2019 10:31	Beverly Y. Sanders	2056818
	01/25/2019			01/28/2019 10:33	Beverly Y. Sanders	2056819
EPA 365.1 Rev. 2.0	01/25/2019	01/28/2019 15:30	Adrian Shelby	01/29/2019 13:29	Julia Storbeck	2056818
	01/25/2019	01/28/2019 15:30	Adrian Shelby	01/29/2019 16:44	Julia Storbeck	2056816
	01/25/2019	01/28/2019 15:30	Adrian Shelby	01/29/2019 16:45	Julia Storbeck	2056817
	01/25/2019	01/28/2019 15:30	Adrian Shelby	01/29/2019 16:46	Julia Storbeck	2056819
EPA 365.1 Rev. 2.0 dissolved	01/25/2019			01/25/2019 12:43	Jhamieka S. Greenwood	2056820
	01/25/2019			01/25/2019 13:01	Jhamieka S. Greenwood	2056821
	01/25/2019			01/25/2019 13:02	Jhamieka S. Greenwood	2056822, 2056823
SM 2120 B	01/25/2019			01/25/2019 12:26	Chelsea Hernandez	2056813
	01/25/2019			01/25/2019 12:31	Chelsea Hernandez	2056815
	01/25/2019			01/25/2019 12:38	Chelsea Hernandez	2056812
	01/25/2019			01/25/2019 12:39	Chelsea Hernandez	2056814
SM 2320 B-97	01/25/2019			02/02/2019 15:34	Dale L. Simmons	2056812
	01/25/2019			02/02/2019 15:46	Dale L. Simmons	2056813
	01/25/2019			02/02/2019 16:34	Dale L. Simmons	2056815
	01/25/2019			02/02/2019 16:55	Dale L. Simmons	2056814
SM 2540 C-97	01/25/2019			01/28/2019 14:20	Yijie Li	2056812, 2056813, 2056814, 2056815
SM 2540 D-97	01/25/2019			01/28/2019 14:20	Yijie Li	2056812, 2056813, 2056814, 2056815
SM 4500 F-C-97	01/25/2019			02/02/2019 15:34	Dale L. Simmons	2056812
	01/25/2019			02/02/2019 15:46	Dale L. Simmons	2056813
	01/25/2019			02/02/2019 16:27	Dale L. Simmons	2056815

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-97	01/25/2019			02/02/2019 16:55	Dale L. Simmons	2056814
SM 5310 B-00	01/25/2019			01/29/2019 00:41	Chelsea Hernandez	2056816
	01/25/2019			01/29/2019 00:53	Chelsea Hernandez	2056817
	01/25/2019			01/29/2019 01:54	Chelsea Hernandez	2056818
	01/25/2019			01/29/2019 02:43	Chelsea Hernandez	2056819