

Chemical Analysis Report

WAS-SECT-2019-05-29-01

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

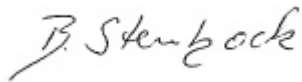
Event Description: **Tallahassee Lakes**
Request ID: **RQ-2019-03-04-69**
Customer: **WAS-SECT**
Project ID: **SMP**

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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 10-JUN-2019 12:27



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: Upper Dianne Lake Middle

Collection Date/Time: 05/29/2019 09:31

Field ID: G1WA0041

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2089696	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P364701	
	EPA 300.0 Rev. 2.1	Chloride	8.1		mg Cl/L	P364936	
		Sulfate	0.62		mg SO4/L	P364938	
	SM 2120 B	Color (true)	7.4		PCU	P364665	
	SM 2320 B-97	Total Alkalinity	34		mg CaCO3/L	P365081	
	SM 2540 C-97	TDS	49		mg/L	P365260	
	SM 2540 D-97	TSS	3	I	mg/L	P365058	
	SM 4500 F-C-97	Fluoride	0.064	I	mg F/L	P365085	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P365204	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P364965	
2089701	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P364729	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P364952	
	SM 5310 B-00	Organic Carbon	4.5		mg C/L	P364905	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P364680	
	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.

Sample Location: Lower Dianne Lake Middle

Collection Date/Time: 05/29/2019 08:46

Field ID: G1WA0040

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2089697	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P364701	
	EPA 300.0 Rev. 2.1	Chloride	8.4		mg Cl/L	P364936	
		Sulfate	1.0		mg SO4/L	P364938	
		Color (true)	8.1		PCU	P364665	
	SM 2320 B-97	Total Alkalinity	29		mg CaCO3/L	P365081	
	SM 2540 C-97	TDS	41		mg/L	P365260	
	SM 2540 D-97	TSS	2	I	mg/L	P365058	
	SM 4500 F-C-97	Fluoride	0.063	I	mg F/L	P365085	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P365204	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P364965	
2089702	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P364729	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P364952	
	SM 5310 B-00	Organic Carbon	4.0		mg C/L	P364905	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P364680	

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.

Sample Location: Pine Hill Lake Middle

Collection Date/Time: 05/29/2019 10:12

Field ID: G1WA0054

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2089698	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P364701	
	EPA 300.0 Rev. 2.1	Chloride	6.0		mg Cl/L	P364936	
		Sulfate	0.62		mg SO4/L	P364938	
	SM 2120 B	Color (true)	10		PCU	P364665	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P365081	
	SM 2540 C-97	TDS	27		mg/L	P365260	
	SM 2540 D-97	TSS	2	I	mg/L	P365058	
	SM 4500 F-C-97	Fluoride	0.046	I	mg F/L	P365085	
2089703	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P365204	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57		mg N/L	P364965	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P364729	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P364952	
	SM 5310 B-00	Organic Carbon	5.0		mg C/L	P364905	
2089708	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P364680	

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.

**Sample Location: LAKE ARROWHEAD AT BOAT DOCK AT
 TURTLE CRK LN NEAR OUTLET**

Collection Date/Time: 05/29/2019 10:47

Field ID: G1WA0004

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2089699	EPA 180.1 Rev. 2.0	Turbidity	8.0		NTU	P364701	
	EPA 300.0 Rev. 2.1	Chloride	5.4		mg Cl/L	P364936	
		Sulfate	0.41	I	mg SO4/L	P364938	
	SM 2120 B	Color (true)	16		PCU	P364665	
	SM 2320 B-97	Total Alkalinity	32		mg CaCO3/L	P365081	
	SM 2540 C-97	TDS	50		mg/L	P365260	
	SM 2540 D-97	TSS	9	I	mg/L	P365058	
	SM 4500 F-C-97	Fluoride	0.055	I	mg F/L	P365085	
2089704	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P365204	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.96		mg N/L	P364965	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P364729	
	EPA 365.1 Rev. 2.0	Total-P	0.041		mg P/L	P364952	
	SM 5310 B-00	Organic Carbon	7.2		mg C/L	P364905	
2089709	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P364680	

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.

Sample Location: LAKE TOM JOHN MIDDLE

Collection Date/Time: 05/29/2019 11:31

Field ID: G1WA0043

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2089700	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P364701	
	EPA 300.0 Rev. 2.1	Chloride	9.0		mg Cl/L	P364936	
		Sulfate	0.20	U	mg SO4/L	P364938	
	SM 2120 B	Color (true)	13		PCU	P364665	
	SM 2320 B-97	Total Alkalinity	21	A	mg CaCO3/L	P365081	
	SM 2540 C-97	TDS	32		mg/L	P365260	
	SM 2540 D-97	TSS	2	I	mg/L	P365058	
	SM 4500 F-C-97	Fluoride	0.048	I	mg F/L	P365085	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P365204	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P364965	
2089705	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P364730	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P364952	
	SM 5310 B-00	Organic Carbon	5.3		mg C/L	P364905	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P364680	
	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.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P364701

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364936

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364938

Component	Result	Code	Units
Sulfate	0.20	U	mg SO ₄ /L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365204

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364965

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364729

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364730

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364952

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364680

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2120 B
Batch ID: P364665

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P365081

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

Reference Method: SM 2540 C-97
Batch ID: P365260

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P365058

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P365085

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P364905

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: P364936

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364938

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365204

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364965

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	91.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364729

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364730

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: P364952

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364680

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	95.9		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P364665

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P365081

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P365085

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P364905

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364936

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089638	Chloride	105		P	90 - 110
2089698	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364938

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089698	Sulfate	105		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365204

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089701	Ammonia-N	99.6	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364965

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089701	Kjeldahl Nitrogen	104	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364729

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089604	NO2NO3-N	98.9	98.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364730

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089705	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364952

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089701	Total-P	96.3	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089739	O-Phosphate-P	97.2	97.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P365085

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089700	Fluoride	99.0	97.4	P/P	89 - 106

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 5310 B-00

Batch ID: P364905

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2089635	Organic Carbon	100	99.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P364701

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089638	Turbidity	1.14	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364936

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089638	Chloride	12.5	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364938

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089638	Sulfate	12.6	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365204

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089701	Ammonia-N	1.42	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364965

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089701	Kjeldahl Nitrogen	1.77	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364729

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089604	NO2NO3-N	0.471	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364730

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089705	NO2NO3-N	0.499	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364952

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089701	Total-P	3.80	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P364680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089739	O-Phosphate-P	0.127	Spike	P	0 - 20

Reference Method: SM 2120 B
 Batch ID: P364665

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089644	Color (true)	1.60	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P365081

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089700	Total Alkalinity	0.253	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
 Batch ID: P365260

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089644	TDS	5.71	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P365085

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089700	Fluoride	1.48	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
 Batch ID: P364905

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2089635	Organic Carbon	0.290	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: A91724

Included Lab Sample IDs: 2089696, 2089697, 2089698, 2089699, 2089700

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A91728

Included Lab Sample IDs: 2089706, 2089707, 2089708, 2089709, 2089710

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	94.6	94.6	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A91733

Included Lab Sample IDs: 2089696, 2089697, 2089698, 2089699, 2089700

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A91740

Included Lab Sample IDs: 2089701, 2089702, 2089703, 2089704, 2089705

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	99.0	P/P	90 - 110
NO2NO3-N	99.0	102	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A91812

Included Lab Sample IDs: 2089701, 2089702, 2089703, 2089704, 2089705

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	98.7	P/P	90 - 110
Organic Carbon	98.7	99.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A91823

Included Lab Sample IDs: 2089696, 2089697, 2089698, 2089699, 2089700

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

Reference Method: SM 2320 B-97

Run ID: A91867

Included Lab Sample IDs: 2089696, 2089697, 2089698, 2089699, 2089700

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110
Total Alkalinity	103	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A91867

Included Lab Sample IDs: 2089696, 2089697, 2089698, 2089699, 2089700

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	98.5	P/P	90 - 110
Fluoride	98.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91886

Included Lab Sample IDs: 2089701, 2089702, 2089703, 2089704, 2089705

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A91914

Included Lab Sample IDs: 2089701, 2089702, 2089703, 2089704, 2089705

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A91922

Included Lab Sample IDs: 2089701, 2089702, 2089703, 2089704, 2089705

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	98.2	P/P	90 - 110
Kjeldahl Nitrogen	98.2	101	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				1.14	
EPA 300.0 Rev. 2.1	Chloride	100	105	104	12.5	
	Sulfate	103	105		12.6	
EPA 350.1 Rev. 2.0	Ammonia-N	100	99.6	101		1.42
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	91.7	104	101		1.77
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	98.9	98.4		0.471
	NO2NO3-N	99.0	100	100		0.499
EPA 365.1 Rev. 2.0	Total-P	94.8	96.3	100		3.80
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	95.9	97.2	97.4		0.127
SM 2120 B	Color (true)	101			1.60	
SM 2320 B-97	Total Alkalinity	104			0.253	
SM 2540 C-97	TDS				5.71	
SM 4500 F-C-97	Fluoride	96.9	99.0	97.4		1.48
SM 5310 B-00	Organic Carbon	99.8	100	99.9		0.290

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2089696, 2089697, 2089698, 2089699, 2089700
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2089696, 2089697, 2089698, 2089699, 2089700
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2089696, 2089697, 2089698, 2089699, 2089700
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2089701, 2089702, 2089703, 2089704, 2089705
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2089701, 2089702, 2089703, 2089704, 2089705
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2089701, 2089702, 2089703, 2089704, 2089705
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2089701, 2089702, 2089703, 2089704, 2089705
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2089706, 2089707, 2089708, 2089709, 2089710
SM 2120 B / E31780	True Color measured at 450 nm	2089696, 2089697, 2089698, 2089699, 2089700
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2089696, 2089697, 2089698, 2089699, 2089700
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2089696, 2089697, 2089698, 2089699, 2089700
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2089696, 2089697, 2089698, 2089699, 2089700
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2089696, 2089697, 2089698, 2089699, 2089700
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2089701, 2089702, 2089703, 2089704, 2089705

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	05/29/2019			05/29/2019 16:48	Adrian Shelby	2089696, 2089697, 2089698, 2089699, 2089700
EPA 300.0 Rev. 2.1	05/29/2019			06/04/2019 00:03	Lipi Saha	2089698
	05/29/2019			06/04/2019 02:16	Lipi Saha	2089696
	05/29/2019			06/04/2019 02:29	Lipi Saha	2089697
	05/29/2019			06/04/2019 02:41	Lipi Saha	2089699
	05/29/2019			06/04/2019 02:53	Lipi Saha	2089700
EPA 350.1 Rev. 2.0	05/29/2019			06/05/2019 10:17	Ping Hua	2089701
	05/29/2019			06/05/2019 10:23	Ping Hua	2089702
	05/29/2019			06/05/2019 10:25	Ping Hua	2089703
	05/29/2019			06/05/2019 10:26	Ping Hua	2089704
	05/29/2019			06/05/2019 10:28	Ping Hua	2089705
EPA 351.2 Rev. 2.0	05/29/2019	06/04/2019 17:45	Adrian Shelby	06/05/2019 15:11	Joseph Suarez	2089701
	05/29/2019	06/04/2019 17:45	Adrian Shelby	06/05/2019 15:16	Joseph Suarez	2089702
	05/29/2019	06/04/2019 17:45	Adrian Shelby	06/05/2019 15:18	Joseph Suarez	2089703
	05/29/2019	06/04/2019 17:45	Adrian Shelby	06/05/2019 15:22	Joseph Suarez	2089704
	05/29/2019	06/04/2019 17:45	Adrian Shelby	06/05/2019 15:24	Joseph Suarez	2089705
EPA 353.2 Rev. 2.0	05/29/2019			05/30/2019 10:28	Beverly Y. Sanders	2089701
	05/29/2019			05/30/2019 10:30	Beverly Y. Sanders	2089702
	05/29/2019			05/30/2019 10:31	Beverly Y. Sanders	2089703
	05/29/2019			05/30/2019 10:32	Beverly Y. Sanders	2089704
	05/29/2019			05/30/2019 10:39	Beverly Y. Sanders	2089705
EPA 365.1 Rev. 2.0	05/29/2019	06/04/2019 11:15	Sima Feizi	06/05/2019 13:59	Rosalyn Ballman	2089701, 2089702
	05/29/2019	06/04/2019 11:15	Sima Feizi	06/05/2019 14:00	Rosalyn Ballman	2089703
	05/29/2019	06/04/2019 11:15	Sima Feizi	06/05/2019 14:01	Rosalyn Ballman	2089704
	05/29/2019	06/04/2019 11:15	Sima Feizi	06/05/2019 14:02	Rosalyn Ballman	2089705
EPA 365.1 Rev. 2.0 dissolved	05/29/2019			05/29/2019 17:10	Jhamieka S. Greenwood	2089706
	05/29/2019			05/29/2019 17:11	Jhamieka S. Greenwood	2089707
	05/29/2019			05/29/2019 17:12	Jhamieka S. Greenwood	2089708
	05/29/2019			05/29/2019 17:13	Jhamieka S. Greenwood	2089709
	05/29/2019			05/29/2019 17:14	Jhamieka S. Greenwood	2089710
SM 2120 B	05/29/2019			05/29/2019 15:33	Madeline Funaro	2089696
	05/29/2019			05/29/2019 15:34	Madeline Funaro	2089697
	05/29/2019			05/29/2019 15:35	Madeline Funaro	2089698, 2089699
	05/29/2019			05/29/2019 15:36	Madeline Funaro	2089700
SM 2320 B-97	05/29/2019			06/04/2019 23:11	Samantha Davila	2089700
	05/29/2019			06/05/2019 00:09	Samantha Davila	2089696
	05/29/2019			06/05/2019 00:20	Samantha Davila	2089697
	05/29/2019			06/05/2019 00:31	Samantha Davila	2089698
	05/29/2019			06/05/2019 01:24	Samantha Davila	2089699

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 C-97	05/29/2019			05/31/2019 15:11	Yijie Li	2089696, 2089697, 2089698, 2089699, 2089700
SM 2540 D-97	05/29/2019			05/31/2019 15:11	Yijie Li	2089696, 2089697, 2089698, 2089699, 2089700
SM 4500 F-C-97	05/29/2019			06/04/2019 23:02	Samantha Davila	2089700
	05/29/2019			06/05/2019 00:09	Samantha Davila	2089696
	05/29/2019			06/05/2019 00:20	Samantha Davila	2089697
	05/29/2019			06/05/2019 00:31	Samantha Davila	2089698
	05/29/2019			06/05/2019 01:24	Samantha Davila	2089699
SM 5310 B-00	05/29/2019			05/31/2019 17:42	Julia Storbeck	2089701
	05/29/2019			05/31/2019 18:21	Julia Storbeck	2089702
	05/29/2019			05/31/2019 18:33	Julia Storbeck	2089703
	05/29/2019			05/31/2019 18:45	Julia Storbeck	2089704
	05/29/2019			05/31/2019 18:57	Julia Storbeck	2089705