

Chemical Analysis Report

SO-DIST-2021-06-11-01

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

Event Description: **Caloosa Creeks**
Request ID: **RQ-2021-06-14-33**
Customer: **SO-DIST**
Project ID: **BMAP**

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

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

Certified by: Liang Lin, Environmental Administrator

Date Certified: 06-JUL-2021 13:47

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Orange River @BoatRamp

Collection Date/Time: 06/10/2021 08:30

Field ID: G3SD0128

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2254509	SM 2120 B-2011	Color (true)	36	A	PCU	P399595	
	SM 2320 B-2011	Total Alkalinity	131		mg CaCO3/L	P399964	
	SM 2540 D-2011	TSS	9	I	mg/L	P399857	
	SM 4500 F-C-2011	Fluoride	0.22		mg F/L	P399968	
2254514	SM 5310 B-2011 dissolved	Organic Carbon	11		mg C/L	P400250	
2254519	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P400225	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.88		mg N/L	P399716	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P399693	
	EPA 365.1 Rev. 2.0	Total-P	0.068		mg P/L	P399983	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P400167	
2254524	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.023		mg P/L	P399575	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Roberts Canal @ SR 80

Collection Date/Time: 06/10/2021 09:30

Field ID: G3SD0146

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2254510	SM 2120 B-2011	Color (true)	63		PCU	P399595	
	SM 2320 B-2011	Total Alkalinity	243	J	mg CaCO3/L	P400153	LCS
	SM 2540 D-2011	TSS	62		mg/L	P399857	
	SM 4500 F-C-2011	Fluoride	0.46		mg F/L	P399739	
2254515	SM 5310 B-2011 dissolved	Organic Carbon	15		mg C/L	P400250	
2254520	EPA 350.1 Rev. 2.0	Ammonia-N	0.051		mg N/L	P399992	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P399716	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P399693	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P399983	
	SM 5310 B-2011	Organic Carbon	16		mg C/L	P400167	
2254525	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.017		mg P/L	P399575	

Ref. Method and Comment:

SM 2320 B-2011: Refer to the Lab Analysis Report for an explanation of QC Codes.

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Nine Mile Canal @ SR 80

Collection Date/Time: 06/10/2021 10:10

Field ID: G3SD0088

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2254511	SM 2120 B-2011	Color (true)	98		PCU	P399595	
	SM 2320 B-2011	Total Alkalinity	186	J	mg CaCO3/L	P400153	LCS
	SM 2540 D-2011	TSS	6	I	mg/L	P399857	
	SM 4500 F-C-2011	Fluoride	0.33		mg F/L	P399739	
2254516	SM 5310 B-2011 dissolved	Organic Carbon	23		mg C/L	P400250	
2254521	EPA 350.1 Rev. 2.0	Ammonia-N	0.027		mg N/L	P399992	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.9		mg N/L	P399716	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P399693	
	EPA 365.1 Rev. 2.0	Total-P	0.19		mg P/L	P399995	
	SM 5310 B-2011	Organic Carbon	24		mg C/L	P400167	
2254526	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P399575	

Ref. Method and Comment:

SM 2320 B-2011: Refer to the Lab Analysis Report for an explanation of QC Codes.

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Bee Branch @LoblollyBay

Collection Date/Time: 06/10/2021 10:55

Field ID: G3SD0085

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2254512	SM 2120 B-2011	Color (true)	88		PCU	P399595	
	SM 2320 B-2011	Total Alkalinity	42		mg CaCO3/L	P399965	
	SM 2540 D-2011	TSS	10		mg/L	P399857	
	SM 4500 F-C-2011	Fluoride	0.098	I	mg F/L	P399739	
2254517	SM 5310 B-2011 dissolved	Organic Carbon	15		mg C/L	P400250	
2254522	EPA 350.1 Rev. 2.0	Ammonia-N	0.15		mg N/L	P399992	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P399716	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.055		mg N/L	P399693	
	EPA 365.1 Rev. 2.0	Total-P	0.31		mg P/L	P399995	
	SM 5310 B-2011	Organic Carbon	16		mg C/L	P400168	
2254527	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.14		mg P/L	P399575	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Telegraph Creek @ USGS

Collection Date/Time: 06/10/2021 11:50

Field ID: G3SD0129

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2254513	SM 2120 B-2011	Color (true)	45		PCU	P399595	
	SM 2320 B-2011	Total Alkalinity	189		mg CaCO3/L	P399964	
	SM 2540 D-2011	TSS	4	I	mg/L	P399857	
	SM 4500 F-C-2011	Fluoride	0.22		mg F/L	P399968	
2254518	SM 5310 B-2011 dissolved	Organic Carbon	14		mg C/L	P400250	
2254523	EPA 350.1 Rev. 2.0	Ammonia-N	0.042		mg N/L	P399992	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.95		mg N/L	P400010	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.047		mg N/L	P399694	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P399995	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P400168	
2254528	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.060		mg P/L	P399576	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P399992

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400225

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P399716

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400010

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P399693

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P399694

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P399983

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P399995

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P399575

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P399576

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

Reference Method: SM 2120 B-2011
Batch ID: P399595

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P399964

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

Reference Method: SM 2320 B-2011
Batch ID: P399965

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

Reference Method: SM 2320 B-2011
Batch ID: P400153

Component	Result	Code	Units
Total Alkalinity	0.72	I	mg CaCO3/L

Reference Method: SM 2540 D-2011
Batch ID: P399857

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P399739

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P399968

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P400167

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

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P400168

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

Reference Method: SM 5310 B-2011 dissolved
Batch ID: P400250

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P399992

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400225

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P399716

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400010

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P399693

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P399694

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P399983

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P399995

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P399575

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P399576

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

Reference Method: SM 2120 B-2011
Batch ID: P399595

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.1		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P399964

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P399965

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P400153

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	107		F	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P399739

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P399968

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.8		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P400167

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.3		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P400168

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.3		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011 dissolved
Batch ID: P400250

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P399992

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2253599	Ammonia-N	106	108	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400225

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2254519	Ammonia-N	96.8	98.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P399693

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2254469	NO2NO3-N	99.5	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P399694

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2254523	NO2NO3-N	99.8	98.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P399983

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2254494	Total-P	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P399995

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2254521	Total-P	104	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P399575

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2254471	O-Phosphate-P	98.0	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P399576

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2254613	O-Phosphate-P	96.3	97.0	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P399739

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2254134	Fluoride	102	102	P/P	92 - 107

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P399968

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2254812	Fluoride	98.0	98.6	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P400167

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2254351	Organic Carbon	96.2	104	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P400168

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2254700	Organic Carbon	102	102	P/P	85 - 115

Reference Method: SM 5310 B-2011 dissolved
Batch ID: P400250

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2254932	Organic Carbon	93.9	95.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P399992

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2253599	Ammonia-N	0.804	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400225

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2254519	Ammonia-N	0.972	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P399716

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2254469	Kjeldahl Nitrogen	3.10	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400010

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2253749	Kjeldahl Nitrogen	3.91	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P399693

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2254469	NO2NO3-N	0.504	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P399694

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2254523	NO2NO3-N	1.22	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P399983

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2254494	Total-P	0.879	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P399995

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2254521	Total-P	1.12	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P399575

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2254471	O-Phosphate-P	1.05	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P399576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2254613	O-Phosphate-P	0.724	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P399595

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2254509	Color (true)	1.73	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P399964

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2254812	Total Alkalinity	0.966	Sample	P	0 - 5.2

Reference Method: SM 2320 B-2011
Batch ID: P399965

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255065	Total Alkalinity	0.0720	Sample	P	0 - 5.2

Reference Method: SM 2320 B-2011
Batch ID: P400153

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255387	Total Alkalinity	0.495	Sample	P	0 - 5.2

Reference Method: SM 4500 F-C-2011
Batch ID: P399739

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2254134	Fluoride	0.479	Spike	P	0 - 2.1

Reference Method: SM 4500 F-C-2011
Batch ID: P399968

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2254812	Fluoride	0.454	Spike	P	0 - 2.1

Quality Assurance Report Precision

Reference Method: SM 5310 B-2011
Batch ID: P400167

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2254351	Organic Carbon	3.88	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P400168

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2254700	Organic Carbon	0.255	Spike	P	0 - 20

Reference Method: SM 5310 B-2011 dissolved
Batch ID: P400250

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2254932	Organic Carbon	0.935	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A106023

Included Lab Sample IDs: 2254524, 2254525, 2254526, 2254527, 2254528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.3	99.9	P/P	90 - 110
O-Phosphate-P	99.9	99.5	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A106026

Included Lab Sample IDs: 2254509, 2254510, 2254511, 2254512, 2254513

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A106065

Included Lab Sample IDs: 2254519, 2254520, 2254521, 2254522, 2254523

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110
NO2NO3-N	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A106087

Included Lab Sample IDs: 2254510, 2254511, 2254512

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	103	105	P/P	90 - 110
Fluoride	105	107	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A106117

Included Lab Sample IDs: 2254519, 2254520, 2254521, 2254522

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.6	96.8	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A106182

Included Lab Sample IDs: 2254509, 2254512, 2254513

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.9	98.2	P/P	90 - 110
Total Alkalinity	98.4	99.8	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A106182

Included Lab Sample IDs: 2254509, 2254513

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A106195

Included Lab Sample IDs: 2254520, 2254521, 2254522, 2254523

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.8	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A106209

Included Lab Sample IDs: 2254519, 2254520, 2254521, 2254522, 2254523

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

Reference Method: SM 2320 B-2011

Run ID: A106248

Included Lab Sample IDs: 2254510, 2254511

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	106	102	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A106258

Included Lab Sample IDs: 2254519, 2254520, 2254521, 2254522, 2254523

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A106277

Included Lab Sample IDs: 2254523

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.4	97.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A106295

Included Lab Sample IDs: 2254519

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.4	98.5	P/P	90 - 110

Reference Method: SM 5310 B-2011 dissolved

Run ID: A106304

Included Lab Sample IDs: 2254514, 2254515, 2254516, 2254517, 2254518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	97.0	P/P	90 - 110
Organic Carbon	97.0	97.1	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 350.1 Rev. 2.0	Ammonia-N	100	106	108		0.804
	Ammonia-N	97.6	96.8	98.0		0.972
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.1				3.10
	Kjeldahl Nitrogen	103				3.91
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	99.5	99.0		0.504
	NO ₂ NO ₃ -N	100	99.8	98.3		1.22
EPA 365.1 Rev. 2.0	Total-P	102	103	102		0.879
	Total-P	101	104	102		1.12
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	98.0	99.5		1.05
	O-Phosphate-P	102	96.3	97.0		0.724
SM 2120 B-2011	Color (true)	99.1			1.73	
SM 2320 B-2011	Total Alkalinity	102			0.966	
	Total Alkalinity	101			0.0720	
	Total Alkalinity	107			0.495	
	Total Alkalinity	107			0.495	
SM 4500 F-C-2011	Fluoride	102	102	102		0.479
	Fluoride	99.8	98.0	98.6		0.454
SM 5310 B-2011	Organic Carbon	97.3	96.2	104		3.88
	Organic Carbon	95.3	102	102		0.255
SM 5310 B-2011 dissolved	Organic Carbon	96.2	93.9	95.2		0.935

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2254519, 2254520, 2254521, 2254522, 2254523
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2254519, 2254520, 2254521, 2254522, 2254523
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2254519, 2254520, 2254521, 2254522, 2254523
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2254519, 2254520, 2254521, 2254522, 2254523
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2254524, 2254525, 2254526, 2254527, 2254528
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2254509, 2254510, 2254511, 2254512, 2254513
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2254509, 2254510, 2254511, 2254512, 2254513
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2254509, 2254510, 2254511, 2254512, 2254513
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2254509, 2254510, 2254511, 2254512, 2254513
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2254519, 2254520, 2254521, 2254522, 2254523
SM 5310 B-2011 dissolved	Dissolved Nonpurgeable Organic Carbon in filtered, aqueous matrices	2254514, 2254515, 2254516, 2254517, 2254518

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 350.1 Rev. 2.0	06/11/2021			06/21/2021 13:10	Ping Hua	2254520
	06/11/2021			06/21/2021 13:11	Ping Hua	2254521
	06/11/2021			06/21/2021 13:13	Ping Hua	2254522
	06/11/2021			06/21/2021 13:14	Ping Hua	2254523
	06/11/2021			06/25/2021 11:51	Ping Hua	2254519
EPA 351.2 Rev. 2.0	06/11/2021	06/15/2021 14:18	Benjamin T. Nordmann	06/16/2021 12:22	Virginia P. Brown	2254519
	06/11/2021	06/15/2021 14:18	Benjamin T. Nordmann	06/16/2021 12:23	Virginia P. Brown	2254520
	06/11/2021	06/15/2021 14:18	Benjamin T. Nordmann	06/16/2021 12:25	Virginia P. Brown	2254521
	06/11/2021	06/15/2021 14:18	Benjamin T. Nordmann	06/16/2021 12:27	Virginia P. Brown	2254522
	06/11/2021	06/21/2021 14:57	Benjamin T. Nordmann	06/24/2021 16:13	Letuzia M De Oliveira	2254523
EPA 353.2 Rev. 2.0	06/11/2021			06/15/2021 10:33	Beverly Y. Sanders	2254519
	06/11/2021			06/15/2021 10:34	Beverly Y. Sanders	2254520
	06/11/2021			06/15/2021 10:35	Beverly Y. Sanders	2254521
	06/11/2021			06/15/2021 10:37	Beverly Y. Sanders	2254522
	06/11/2021			06/15/2021 10:44	Beverly Y. Sanders	2254523
EPA 365.1 Rev. 2.0	06/11/2021	06/21/2021 16:53	Madeline Gruver	06/22/2021 11:05	Shengyu Ding	2254519
	06/11/2021	06/21/2021 16:53	Madeline Gruver	06/22/2021 11:06	Shengyu Ding	2254520
	06/11/2021	06/21/2021 16:53	Madeline Gruver	06/22/2021 11:09	Shengyu Ding	2254521
	06/11/2021	06/21/2021 16:53	Madeline Gruver	06/22/2021 11:14	Shengyu Ding	2254522
	06/11/2021	06/21/2021 16:53	Madeline Gruver	06/22/2021 11:15	Shengyu Ding	2254523
EPA 365.1 Rev. 2.0 dissolved	06/11/2021			06/11/2021 14:03	Ping Hua	2254524, 2254525
	06/11/2021			06/11/2021 14:04	Ping Hua	2254526
	06/11/2021			06/11/2021 14:05	Ping Hua	2254527
	06/11/2021			06/11/2021 14:15	Ping Hua	2254528
SM 2120 B-2011	06/11/2021			06/11/2021 15:55	Sarah A Nixon	2254509
	06/11/2021			06/11/2021 15:57	Sarah A Nixon	2254510
	06/11/2021			06/11/2021 15:58	Sarah A Nixon	2254511
	06/11/2021			06/11/2021 15:59	Sarah A Nixon	2254512
	06/11/2021			06/11/2021 16:00	Sarah A Nixon	2254513
SM 2320 B-2011	06/11/2021			06/19/2021 04:15	Dale L. Simmons	2254509
	06/11/2021			06/19/2021 04:31	Dale L. Simmons	2254513
	06/11/2021			06/19/2021 11:02	Dale L. Simmons	2254512
	06/11/2021			06/23/2021 19:42	Patrick M. Roche	2254510
	06/11/2021			06/23/2021 19:55	Patrick M. Roche	2254511
SM 2540 D-2011	06/11/2021			06/15/2021 14:12	Yijie Li	2254509, 2254510, 2254511, 2254512, 2254513
SM 4500 F-C-2011	06/11/2021			06/15/2021 19:21	Dale L. Simmons	2254510
	06/11/2021			06/15/2021 19:42	Dale L. Simmons	2254511
	06/11/2021			06/15/2021 19:47	Dale L. Simmons	2254512
	06/11/2021			06/19/2021 04:15	Dale L. Simmons	2254509

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-2011	06/11/2021			06/19/2021 04:31	Dale L. Simmons	2254513
SM 5310 B-2011	06/11/2021			06/23/2021 01:43	Madeline Gruver	2254519
	06/11/2021			06/23/2021 01:56	Madeline Gruver	2254520
	06/11/2021			06/23/2021 02:09	Madeline Gruver	2254521
	06/11/2021			06/23/2021 04:08	Madeline Gruver	2254522
	06/11/2021			06/23/2021 04:21	Madeline Gruver	2254523
SM 5310 B-2011 dissolved	06/11/2021			06/23/2021 22:37	Madeline Gruver	2254514
	06/11/2021			06/23/2021 22:49	Madeline Gruver	2254515
	06/11/2021			06/23/2021 23:28	Madeline Gruver	2254516
	06/11/2021			06/23/2021 23:41	Madeline Gruver	2254517
	06/11/2021			06/23/2021 23:54	Madeline Gruver	2254518