Chemical Analysis Report

TLH-ROC-2022-02-02-01

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

Event Description: **Run 14**
Request ID: **RQ-2022-01-17-45**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
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Certified by: Colin Wright, Program Administrator

Date Certified: 01-MAR-2022 08:37

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: N Bay @ N Anderson Bayou **Collection Date/Time: 02/02/2022 11:05**

Field ID: G3TLHR0034 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2303215	EPA 180.1 Rev. 2.0	Turbidity	0.95	I	NTU	P409438	
	SM 2320 B-2011	Total Alkalinity	86		mg CaCO3/L	P409547	
	SM 2540 D-2011	TSS	3	UA	mg/L	P409813	
	SM 4500 F-C-2011	Fluoride	0.68		mg F/L	P409550	
2303219	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P409816	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.32	I	mg N/L	P409377	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P409381	
	EPA 365.1 Rev. 2.0	Total-P	0.009	I	mg P/L	P409509	
	SM 5310 B-2011	Organic Carbon	3.2		mg C/L	P410236	
2303223	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P409396	

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

Sample Location: N Bay @ S Anderson Bayou **Collection Date/Time: 02/02/2022 11:25**

Field ID: G3TLHR0033 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2303216	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P409438	
	SM 2320 B-2011	Total Alkalinity	74		mg CaCO3/L	P409547	
	SM 2540 D-2011	TSS	5	I	mg/L	P409813	
	SM 4500 F-C-2011	Fluoride	0.52		mg F/L	P409550	
2303220	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P409474	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40	I	mg N/L	P409377	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P409381	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P409509	
	SM 5310 B-2011	Organic Carbon	3.8		mg C/L	P410236	
2303224	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P409396	

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

Sample Location: N Bay @ N Lynn Haven Bayou **Collection Date/Time: 02/02/2022 11:40**

Field ID: G3TLHR0029 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2303217	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P409438	
	SM 2320 B-2011	Total Alkalinity	107	A	mg CaCO3/L	P409547	
	SM 2540 D-2011	TSS	6	I	mg/L	P409813	
	SM 4500 F-C-2011	Fluoride	1.0		mg F/L	P409550	
2303221	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P409816	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.31	I	mg N/L	P409377	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P409381	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P409509	
	SM 5310 B-2011	Organic Carbon	2.5		mg C/L	P410236	
2303225	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P409396	

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

Sample Location: N Bay @ S Lynn Haven Bayou **Collection Date/Time: 02/02/2022 11:55**

Field ID: G3TLHR0028 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2303218	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P409438	
	SM 2320 B-2011	Total Alkalinity	108		mg CaCO3/L	P409547	
	SM 2540 D-2011	TSS	4	I	mg/L	P409813	
	SM 4500 F-C-2011	Fluoride	1.0		mg F/L	P409550	
2303222	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P409474	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.34	I	mg N/L	P409377	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P409381	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P409509	
	SM 5310 B-2011	Organic Carbon	3.0		mg C/L	P410236	
2303226	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P409396	

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

Sample Location: Field Blank **Collection Date/Time: 02/02/2022 12:05**

Field ID: FB_02022022 Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2303227	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P409438	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P409546	
	SM 2540 D-2011	TSS	2	U	mg/L	P409810	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P409549	
2303228	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P409817	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P409669	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P409518	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P409511	
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P409976	
2303229	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P409395	

Ref. Method and Comment:
SM 2540 D-2011: 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: P409438

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409474

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409816

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409817

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409377

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409669

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P409381

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P409518

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P409509

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P409511

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P409395

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P409396

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

Reference Method: SM 2320 B-2011
Batch ID: P409546

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

Reference Method: SM 2320 B-2011
Batch ID: P409547

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

Reference Method: SM 2540 D-2011
Batch ID: P409810

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P409813

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P409549

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P409550

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P409976

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

Reference Method: SM 5310 B-2011
Batch ID: P410236

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P409438

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	96.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409474

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409816

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409817

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409377

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409669

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.4		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P409381

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P409518

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P409509

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P409511

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P409395

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P409396

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.1		P	90 - 110

Reference Method: SM 2320 B-2011
Batch ID: P409546

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P409547

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.9		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P409549

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.3		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P409550

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.3		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P409976

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	92.1		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P410236

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409474

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2301487	Ammonia-N	97.4	97.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409816

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2303095	Ammonia-N	106	107	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409817

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2302144	Ammonia-N	96.4	96.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409377

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2303099	Kjeldahl Nitrogen	91.7	95.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409669

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2303277	Kjeldahl Nitrogen	96.0	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P409381

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2303101	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P409518

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2303191	NO2NO3-N	95.4	95.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P409509

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2303219	Total-P	98.0	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P409511

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2303275	Total-P	103	105	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P409395

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2303260	O-Phosphate-P	97.5	98.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P409396

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2303225	O-Phosphate-P	97.6	99.9	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P409549

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2303494	Fluoride	96.2	97.8	P/P	92 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P409550

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2303217	Fluoride	94.5	96.0	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P409976

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2302865	Organic Carbon	90.9	91.5	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P410236

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2303220	Organic Carbon	93.1	93.0	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P409438

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2303261	Turbidity	10.7	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409474

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2301487	Ammonia-N	0.321	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409816

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2303095	Ammonia-N	1.42	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P409817

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2302144	Ammonia-N	0.345	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409377

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2303099	Kjeldahl Nitrogen	3.62	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409669

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2303277	Kjeldahl Nitrogen	2.82	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P409381

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2303101	NO2NO3-N	0.482	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P409518

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2303191	NO2NO3-N	0.449	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P409509

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2303219	Total-P	2.05	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P409511

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2303275	Total-P	2.18	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P409395

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2303260	O-Phosphate-P	1.22	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P409396

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2303225	O-Phosphate-P	2.33	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P409546

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2303494	Total Alkalinity	1.12	Sample	P	0 - 5.2

Reference Method: SM 2320 B-2011
Batch ID: P409547

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2303217	Total Alkalinity	0.125	Sample	P	0 - 5.2

Reference Method: SM 4500 F-C-2011
Batch ID: P409549

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2303494	Fluoride	0.993	Spike	P	0 - 2.1

Reference Method: SM 4500 F-C-2011
Batch ID: P409550

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2303217	Fluoride	0.993	Spike	P	0 - 2.1

Quality Assurance Report
Precision

Reference Method: SM 5310 B-2011
Batch ID: P409976

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2302865	Organic Carbon	0.408	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P410236

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2303220	Organic Carbon	0.146	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A110192
Included Lab Sample IDs: 2303219, 2303220, 2303221, 2303222

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A110206
Included Lab Sample IDs: 2303223, 2303224, 2303225, 2303226, 2303229

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.5	101	P/P	90 - 110
O-Phosphate-P	99.1	98.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A110226
Included Lab Sample IDs: 2303215, 2303216, 2303217, 2303218, 2303227

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	99.0	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A110252
Included Lab Sample IDs: 2303220, 2303222

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	95.4	96.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A110264
Included Lab Sample IDs: 2303228

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A110275
Included Lab Sample IDs: 2303219, 2303220, 2303221, 2303222

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.1	92.0	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A110279
Included Lab Sample IDs: 2303215, 2303216, 2303217, 2303218, 2303227

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	97.0	P/P	90 - 110
Total Alkalinity	99.3	96.8	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A110279
Included Lab Sample IDs: 2303215, 2303216, 2303217, 2303218, 2303227

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-2011
Run ID: A110279
Included Lab Sample IDs: 2303215, 2303216, 2303217, 2303218, 2303227

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	99.1	P/P	90 - 110
Fluoride	99.1	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A110324
Included Lab Sample IDs: 2303219, 2303220, 2303221, 2303222, 2303228

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A110395
Included Lab Sample IDs: 2303228

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	97.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A110400
Included Lab Sample IDs: 2303219, 2303221, 2303228

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.3	P/P	90 - 110
Ammonia-N	98.1	101	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A110463
Included Lab Sample IDs: 2303228

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.4	93.6	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A110566
Included Lab Sample IDs: 2303219, 2303220, 2303221, 2303222

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.0	97.9	P/P	90 - 110
Organic Carbon	96.8	97.0	P/P	90 - 110
Organic Carbon	97.9	98.1	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	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity	96.7				10.7	
EPA 350.1 Rev. 2.0	Ammonia-N	96.2	97.4	97.0			0.321
	Ammonia-N	101	106	107			1.42
	Ammonia-N	99.0	96.4	96.8			0.345
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.1	91.7	95.7			3.62
	Kjeldahl Nitrogen	99.4	96.0	98.8			2.82
EPA 353.2 Rev. 2.0	NO2NO3-N	103	104	104			0.482
	NO2NO3-N	101	95.4	95.8			0.449
EPA 365.1 Rev. 2.0	Total-P	103	98.0	100			2.05
	Total-P	105	103	105			2.18
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.6	97.5	98.7			1.22
	O-Phosphate-P	99.1	97.6	99.9			2.33
SM 2320 B-2011	Total Alkalinity	100				1.12	
	Total Alkalinity	97.9				0.125	
SM 4500 F-C-2011	Fluoride	97.3	96.2	97.8			0.993
	Fluoride	97.3	94.5	96.0			0.993
SM 5310 B-2011	Organic Carbon	92.1	90.9	91.5			0.408
	Organic Carbon	98.8	93.1	93.0			0.146

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2303215, 2303216, 2303217, 2303218, 2303227
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2303219, 2303220, 2303221, 2303222, 2303228
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2303219, 2303220, 2303221, 2303222, 2303228
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2303219, 2303220, 2303221, 2303222, 2303228
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2303219, 2303220, 2303221, 2303222, 2303228
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2303223, 2303224, 2303225, 2303226, 2303229
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2303215, 2303216, 2303217, 2303218, 2303227
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2303215, 2303216, 2303217, 2303218, 2303227
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2303215, 2303216, 2303217, 2303218, 2303227
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2303219, 2303220, 2303221, 2303222, 2303228

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	02/02/2022			02/03/2022 15:25	Khloe J Berg	2303215
	02/02/2022			02/03/2022 15:26	Khloe J Berg	2303216
	02/02/2022			02/03/2022 15:28	Khloe J Berg	2303217
	02/02/2022			02/03/2022 15:29	Khloe J Berg	2303218
	02/02/2022			02/03/2022 15:31	Khloe J Berg	2303227
EPA 350.1 Rev. 2.0	02/02/2022			02/04/2022 15:48	Ping Hua	2303220
	02/02/2022			02/04/2022 15:50	Ping Hua	2303222
	02/02/2022			02/14/2022 14:51	Roberta Tatti	2303219
	02/02/2022			02/14/2022 14:52	Roberta Tatti	2303221
	02/02/2022			02/14/2022 15:31	Roberta Tatti	2303228
EPA 351.2 Rev. 2.0	02/02/2022	02/04/2022 09:26	Samantha L Bates	02/07/2022 16:14	Alexandra J Mattheus	2303219
	02/02/2022	02/04/2022 09:26	Samantha L Bates	02/07/2022 16:15	Alexandra J Mattheus	2303220
	02/02/2022	02/04/2022 09:26	Samantha L Bates	02/07/2022 16:17	Alexandra J Mattheus	2303221
	02/02/2022	02/04/2022 09:26	Samantha L Bates	02/07/2022 16:18	Alexandra J Mattheus	2303222
	02/02/2022	02/11/2022 10:44	Alexandra J Mattheus	02/14/2022 11:21	Alexandra J Mattheus	2303228
EPA 353.2 Rev. 2.0	02/02/2022			02/03/2022 10:16	Beverly Y. Sanders	2303219
	02/02/2022			02/03/2022 10:17	Beverly Y. Sanders	2303220
	02/02/2022			02/03/2022 10:18	Beverly Y. Sanders	2303221
	02/02/2022			02/03/2022 10:20	Beverly Y. Sanders	2303222
	02/02/2022			02/07/2022 11:46	Beverly Y. Sanders	2303228
EPA 365.1 Rev. 2.0	02/02/2022	02/08/2022 14:30	Simonne.V. Calhoun	02/09/2022 14:19	Shengyu Ding	2303219
	02/02/2022	02/08/2022 14:30	Simonne.V. Calhoun	02/09/2022 14:23	Shengyu Ding	2303220
	02/02/2022	02/08/2022 14:30	Simonne.V. Calhoun	02/09/2022 14:24	Shengyu Ding	2303221
	02/02/2022	02/08/2022 14:30	Simonne.V. Calhoun	02/09/2022 14:25	Shengyu Ding	2303222
	02/02/2022	02/08/2022 14:30	Simonne.V. Calhoun	02/09/2022 14:54	Shengyu Ding	2303228
EPA 365.1 Rev. 2.0 dissolved	02/02/2022			02/03/2022 14:16	James L Waggerby	2303229
	02/02/2022			02/03/2022 14:25	James L Waggerby	2303225
	02/02/2022			02/03/2022 14:27	James L Waggerby	2303223
	02/02/2022			02/03/2022 14:28	James L Waggerby	2303224
	02/02/2022			02/03/2022 14:29	James L Waggerby	2303226
SM 2320 B-2011	02/02/2022			02/08/2022 03:17	Dale L. Simmons	2303227
	02/02/2022			02/08/2022 07:20	Dale L. Simmons	2303217
	02/02/2022			02/08/2022 07:32	Dale L. Simmons	2303215
	02/02/2022			02/08/2022 07:43	Dale L. Simmons	2303216
	02/02/2022			02/08/2022 07:56	Dale L. Simmons	2303218
SM 2540 D-2011	02/02/2022			02/04/2022 14:55	Yijie Li	2303215, 2303216, 2303217, 2303218, 2303227
SM 4500 F-C-2011	02/02/2022			02/08/2022 03:17	Dale L. Simmons	2303227
	02/02/2022			02/08/2022 05:37	Dale L. Simmons	2303217
	02/02/2022			02/08/2022 05:52	Dale L. Simmons	2303215

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	02/02/2022			02/08/2022 05:57	Dale L. Simmons	2303216
	02/02/2022			02/08/2022 06:02	Dale L. Simmons	2303218
SM 5310 B-2011	02/02/2022			02/16/2022 20:49	Nathaniel J Jones	2303228
	02/02/2022			02/21/2022 22:16	Khloe J Berg	2303220
	02/02/2022			02/22/2022 02:04	Khloe J Berg	2303222
	02/02/2022			02/22/2022 18:20	Khloe J Berg	2303219
	02/02/2022			02/22/2022 19:14	Khloe J Berg	2303221