

Chemical Analysis Report

NW-DIST-2019-04-23-01

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

Event Description: **Bayou Chico BMAP**
Request ID: **RQ-2019-03-11-12**
Customer: **NW-DIST**
Project ID: **BMAP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
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Certified by: Colin Wright, Program Administrator

Date Certified: 14-MAY-2019 10:19

A handwritten signature in black ink, appearing to read "Colin Wright", is written over a light blue rectangular 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: Pensacola Bay at Sanders Beach

Collection Date/Time: 04/22/2019 11:05

Field ID: 33020J10

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2080019	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P362738	
2080020	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P363032	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21	I	mg N/L	P363615	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P363155	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P362795	

Sample Location: Bayou Chico at Mandalay Drive

Collection Date/Time: 04/22/2019 11:30

Field ID: 33020JD4

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2080007	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P362737	
2080010	EPA 350.1 Rev. 2.0	Ammonia-N	0.071		mg N/L	P363029	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.97		mg N/L	P362928	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P363154	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P362794	

Sample Location: Jackson Creek at New Warrington Road

Collection Date/Time: 04/22/2019 13:00

Field ID: 33020222

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2080013	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P362737	
2080016	EPA 350.1 Rev. 2.0	Ammonia-N	0.046		mg N/L	P363028	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27		mg N/L	P363095	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.6		mg N/L	P362980	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P362792	

Sample Location: Jackson Creek @ Old Corry Road

Collection Date/Time: 04/22/2019 12:35

Field ID: 33020221

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2080014	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P362737	
2080017	EPA 350.1 Rev. 2.0	Ammonia-N	0.035		mg N/L	P363030	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28		mg N/L	P362989	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.6		mg N/L	P362980	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P362792	

Ref. Method and Comment:

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

Sample Location: Jones Creek Upstream of New Warrington Rd Collection Date/Time: 04/22/2019 13:55

Field ID: 33020117

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2080015	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P362737	
2080018	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P363030	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37		mg N/L	P362989	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.062		mg N/L	P362980	
	EPA 365.1 Rev. 2.0	Total-P	0.01		mg P/L	P362792	

Ref. Method and Comment:

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

Sample Location: Bayou Chico at at W St. Bridge

Collection Date/Time: 04/22/2019 14:35

Field ID: 33020JF1

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2080008	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P362737	
2080011	EPA 350.1 Rev. 2.0	Ammonia-N	0.027		mg N/L	P363029	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.34	I	mg N/L	P362928	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.91		mg N/L	P363494	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P362794	

Sample Location: Bayou Chico at Navy Blvd. Bridge

Collection Date/Time: 04/22/2019 14:15

Field ID: 3302JE20

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2080009	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P362737	
2080012	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P363029	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23	I	mg N/L	P362928	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.75		mg N/L	P363155	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P362795	

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P362737

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P362738

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363028

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363029

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363030

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363032

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362928

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362989

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363095

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363615

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362980

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363154

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363155

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363494

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362792

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362794

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362795

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363028

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363029

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: P363030

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: P363032

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362928

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362989

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363095

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363615

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362980

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.0		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363154

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363155

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363494

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: P362792

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	108		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362794

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362795

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363028

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079856	Ammonia-N	101	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363029

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080011	Ammonia-N	99.7	98.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363030

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080017	Ammonia-N	101	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363032

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080020	Ammonia-N	104	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362928

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079954	Kjeldahl Nitrogen	106	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363095

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080016	Kjeldahl Nitrogen	99.9	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363615

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080104	Kjeldahl Nitrogen	98.1	95.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362980

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079907	NO2NO3-N	98.1	99.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363154

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079954	NO2NO3-N	103	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363155

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080020	NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363494

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2081996	NO2NO3-N	98.7	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362792

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079906	Total-P	106	96.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362794

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079987	Total-P	96.6	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362795

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080012	Total-P	98.3	100	P/P	90 - 110

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P362737

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079928	Turbidity	5.27	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P362738

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080029	Turbidity	2.21	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079856	Ammonia-N	0.606	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363029

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080011	Ammonia-N	0.676	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363030

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080017	Ammonia-N	0.387	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363032

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080020	Ammonia-N	1.26	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362928

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079954	Kjeldahl Nitrogen	0.481	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362989

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080040	Kjeldahl Nitrogen	1.33	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363095

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080016	Kjeldahl Nitrogen	0.102	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363615

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080104	Kjeldahl Nitrogen	2.55	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362980

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079907	NO2NO3-N	0.849	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363154

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079954	NO2NO3-N	0.753	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363155

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080020	NO2NO3-N	0.943	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363494

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2081996	NO2NO3-N	1.04	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362792

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079906	Total-P	8.44	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362794

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079987	Total-P	1.32	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362795

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080012	Total-P	1.77	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: EPA 180.1 Rev. 2.0

Run ID: A90951

Included Lab Sample IDs: 2080007, 2080008, 2080009, 2080013, 2080014, 2080015, 2080019

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A91039

Included Lab Sample IDs: 2080016, 2080017, 2080018

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91062

Included Lab Sample IDs: 2080010, 2080011, 2080012, 2080016, 2080017, 2080018, 2080020

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A91064

Included Lab Sample IDs: 2080010, 2080011, 2080012

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.0	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A91070

Included Lab Sample IDs: 2080010, 2080011, 2080012, 2080016, 2080017, 2080018, 2080020

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A91098

Included Lab Sample IDs: 2080017, 2080018

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A91123

Included Lab Sample IDs: 2080010, 2080012, 2080020

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A91214

Included Lab Sample IDs: 2080016

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.0	97.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A91250

Included Lab Sample IDs: 2080011

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A91333

Included Lab Sample IDs: 2080020

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	100	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		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					5.27	
	Turbidity					2.21	
EPA 350.1 Rev. 2.0	Ammonia-N	99.2	101	101			0.606
	Ammonia-N	101	99.7	98.6			0.676
	Ammonia-N	101	101	101			0.387
	Ammonia-N	101	104	103			1.26
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	106	106			0.481
	Kjeldahl Nitrogen	109					1.33
	Kjeldahl Nitrogen	102	99.9	99.8			0.102
	Kjeldahl Nitrogen	109	98.1	95.1			2.55
EPA 353.2 Rev. 2.0	NO2NO3-N	98.0	98.1	99.6			0.849
	NO2NO3-N	100	103	102			0.753
	NO2NO3-N	101	102	101			0.943
	NO2NO3-N	100	98.7	100			1.04
EPA 365.1 Rev. 2.0	Total-P	108	106	96.5			8.44
	Total-P	104	96.6	98.0			1.32
	Total-P	97.7	98.3	100			1.77

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2080007, 2080008, 2080009, 2080013, 2080014, 2080015, 2080019
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2080010, 2080011, 2080012, 2080016, 2080017, 2080018, 2080020
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2080010, 2080011, 2080012, 2080016, 2080017, 2080018, 2080020
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2080010, 2080011, 2080012, 2080016, 2080017, 2080018, 2080020
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2080010, 2080011, 2080012, 2080016, 2080017, 2080018, 2080020

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	04/23/2019			04/23/2019 17:05	Adrian Shelby	2080007, 2080008, 2080009, 2080013, 2080014, 2080015, 2080019
EPA 350.1 Rev. 2.0	04/23/2019			04/26/2019 11:10	Ping Hua	2080011
	04/23/2019			04/26/2019 11:30	Ping Hua	2080010
	04/23/2019			04/26/2019 11:33	Ping Hua	2080012
	04/23/2019			04/26/2019 11:37	Ping Hua	2080017
	04/23/2019			04/26/2019 11:48	Ping Hua	2080018
	04/23/2019			04/26/2019 12:37	Ping Hua	2080020
EPA 351.2 Rev. 2.0	04/23/2019			04/26/2019 13:07	Ping Hua	2080016
	04/23/2019	04/26/2019 12:15	Adrian Shelby	04/29/2019 13:47	Joseph Suarez	2080010
	04/23/2019	04/26/2019 12:15	Adrian Shelby	04/29/2019 13:48	Joseph Suarez	2080011
	04/23/2019	04/26/2019 12:15	Adrian Shelby	04/29/2019 13:50	Joseph Suarez	2080012
	04/23/2019	04/29/2019 13:15	Adrian Shelby	04/30/2019 10:57	Joseph Suarez	2080017
	04/23/2019	04/29/2019 13:15	Adrian Shelby	04/30/2019 10:59	Joseph Suarez	2080018
EPA 353.2 Rev. 2.0	04/23/2019	04/30/2019 12:15	Adrian Shelby	05/06/2019 09:04	Joseph Suarez	2080016
	04/23/2019	05/08/2019 12:15	Adrian Shelby	05/09/2019 11:11	Joseph Suarez	2080020
	04/23/2019			04/26/2019 13:44	Beverly Y. Sanders	2080016
	04/23/2019			04/26/2019 13:46	Beverly Y. Sanders	2080017
	04/23/2019			04/26/2019 13:47	Beverly Y. Sanders	2080018
	04/23/2019			05/01/2019 09:29	Beverly Y. Sanders	2080010
EPA 365.1 Rev. 2.0	04/23/2019			05/01/2019 09:38	Beverly Y. Sanders	2080012
	04/23/2019			05/01/2019 09:44	Beverly Y. Sanders	2080020
	04/23/2019			05/07/2019 10:42	Lauren Lees	2080011
	04/23/2019	04/24/2019 13:50	Sima Feizi	04/29/2019 12:10	Rosalyn Ballman	2080016
	04/23/2019	04/24/2019 13:50	Sima Feizi	04/29/2019 12:18	Rosalyn Ballman	2080017
	04/23/2019	04/24/2019 13:50	Sima Feizi	04/29/2019 12:19	Rosalyn Ballman	2080018
	04/23/2019	04/24/2019 13:50	Sima Feizi	04/29/2019 12:38	Rosalyn Ballman	2080010
	04/23/2019	04/24/2019 13:50	Sima Feizi	04/29/2019 12:39	Rosalyn Ballman	2080011
	04/23/2019	04/24/2019 13:50	Sima Feizi	04/29/2019 12:41	Rosalyn Ballman	2080012
	04/23/2019	04/24/2019 13:50	Sima Feizi	04/29/2019 12:42	Rosalyn Ballman	2080020