Chemical Analysis Report

NW-DIST-2016-12-13-01

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-2016-11-14-19**
Customer: **NW-DIST**
Project ID: **BMAP**

Send Reports to:
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160 Government Center
Suite 308
Pensacola, FL 32502-5794
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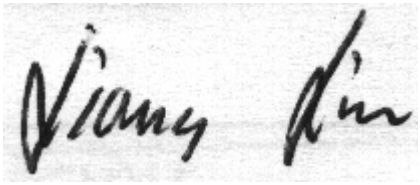
Certified by: Liang Lin, Environmental Administrator

Date Certified: 06-JAN-2017 09:35



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 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: Bayou Chico at Mandalay Prk **Collection Date/Time: 12/12/2016 10:50**

Field ID: B Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857045	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P316710	
1857048	EPA 350.1 Rev. 2.0	Ammonia-N	0.039		mg N/L	P317318	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.38	I	mg N/L	P316817	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.37		mg N/L	P316991	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P316917	

Sample Location: Jones Creek at Old Corry Road **Collection Date/Time: 12/12/2016 11:20**

Field ID: C Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857046	EPA 180.1 Rev. 2.0	Turbidity	3.9		NTU	P316710	
1857049	EPA 350.1 Rev. 2.0	Ammonia-N	0.062		mg N/L	P317318	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P316817	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P316991	
	EPA 365.1 Rev. 2.0	Total-P	0.040		mg P/L	P316917	

Sample Location: Jackson Creek at Old Corry Road **Collection Date/Time: 12/12/2016 11:45**

Field ID: D Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857047	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P316710	
1857050	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P317120	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.15	I	mg N/L	P316995	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.6		mg N/L	P317063	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P316931	

Sample Location: Jones Creek at Old Corry Road **Collection Date/Time: 12/12/2016 11:25**

Field ID: C DUPLICATE Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857051	EPA 180.1 Rev. 2.0	Turbidity	4.1	A	NTU	P316710	
1857052	EPA 350.1 Rev. 2.0	Ammonia-N	0.062		mg N/L	P317318	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P316912	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P316991	
	EPA 365.1 Rev. 2.0	Total-P	0.041		mg P/L	P316917	

Sample Location: Pensacola Bay at Sanders Beach **Collection Date/Time: 12/12/2016 10:20**

Field ID: A Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857169	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P316713	
1857171	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P317074	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.31	I	mg N/L	P316822	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.059		mg N/L	P316992	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P316929	

Sample Location: Jackson Creek at New Warrington Road **Collection Date/Time: 12/12/2016 12:00**

Field ID: E Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857173	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P316713	
1857176	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P317120	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21		mg N/L	P317041	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.6		mg N/L	P317064	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P316981	

Sample Location: Bayou Chico at Navy Blvd Bridge **Collection Date/Time: 12/12/2016 12:20**

Field ID: F Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857174	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P316713	
1857177	EPA 350.1 Rev. 2.0	Ammonia-N	0.059		mg N/L	P317074	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29	I	mg N/L	P316822	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.70		mg N/L	P316992	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P316929	

Sample Location: Bayou Chico at W Street **Collection Date/Time: 12/12/2016 12:35**

Field ID: G Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857175	EPA 180.1 Rev. 2.0	Turbidity	3.0	A	NTU	P316713	
1857178	EPA 350.1 Rev. 2.0	Ammonia-N	0.074		mg N/L	P317121	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27	I	mg N/L	P316822	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.0		mg N/L	P316993	
	EPA 365.1 Rev. 2.0	Total-P	0.058		mg P/L	P316930	

Sample Location: BLANK **Collection Date/Time: 12/12/2016 13:00**

Field ID: Field Blank Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857170	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P316713	
1857172	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P317120	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P316820	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P317064	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P316981	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316710

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316713

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317074

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317120

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317121

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317318

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316817

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316820

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316822

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316912

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: P316995

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317041

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316991

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316992

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316993

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317063

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317064

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316917

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316929

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: P316930

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316931

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316981

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: P317074

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317120

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317121

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317318

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316817

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316820

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316820

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316822

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316912

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316995

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317041

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316991

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: P316992

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: P316993

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: P317063

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	105		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317064

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316917

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316929

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316930

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316931

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: P316981

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.8		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317074

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857107	Ammonia-N	99.7	99.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317120

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857142	Ammonia-N	97.2	99.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317121

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317121

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857178	Ammonia-N	98.6	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317318

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856748	Ammonia-N	94.2	96.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316817

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857048	Kjeldahl Nitrogen	106	109	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316820

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857227	Kjeldahl Nitrogen	101	93.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316822

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857209	Kjeldahl Nitrogen	102	96.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316912

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857560	Kjeldahl Nitrogen	98.3	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316995

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857711	Kjeldahl Nitrogen	101	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317041

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1858390	Kjeldahl Nitrogen	96.3	95.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316991

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856748	NO2NO3-N	102	99.8	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316992

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857107	NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316993

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857207	NO2NO3-N	96.6	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317063

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857009	NO2NO3-N	106	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317064

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857105	NO2NO3-N	103	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316917

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857049	Total-P	107	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316929

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857107	Total-P	98.6	96.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857207	Total-P	103	94.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316931

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857126	Total-P	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316981

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857142	Total-P	99.4	97.6	P/P	90 - 110

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316710

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857051	Turbidity	1.23	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316713

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857175	Turbidity	10.6	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317074

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857107	Ammonia-N	0.0471	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317120

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857142	Ammonia-N	1.18	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317121

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857178	Ammonia-N	1.12	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317318

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856748	Ammonia-N	1.11	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316817

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857048	Kjeldahl Nitrogen	2.38	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316820

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857227	Kjeldahl Nitrogen	6.53	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316822

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857209	Kjeldahl Nitrogen	5.11	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316912

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857560	Kjeldahl Nitrogen	4.63	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316995

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857711	Kjeldahl Nitrogen	1.90	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317041

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858390	Kjeldahl Nitrogen	0.243	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316991

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856748	NO2NO3-N	1.89	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316992

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857107	NO2NO3-N	0.948	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316993

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857207	NO2NO3-N	2.34	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317063

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857009	NO2NO3-N	4.83	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317064

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857105	NO2NO3-N	1.43	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316917

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857049	Total-P	4.40	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316929

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857107	Total-P	1.77	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857207	Total-P	8.33	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316931

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857126	Total-P	0.598	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316981

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857142	Total-P	1.17	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: A73348
Included Lab Sample IDs: 1857045, 1857046, 1857047, 1857051, 1857169, 1857170, 1857173, 1857174, 1857175

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	97.5	99.0	P/P	95 - 105
Turbidity	98.0	98.5	P/P	95 - 105

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A73438
Included Lab Sample IDs: 1857171, 1857172, 1857177, 1857178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.1	96.2	P/P	90 - 110
Kjeldahl Nitrogen	96.2	95.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A73439
Included Lab Sample IDs: 1857048, 1857049

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.1	96.4	P/P	90 - 110
Kjeldahl Nitrogen	98.5	98.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A73447
Included Lab Sample IDs: 1857048, 1857049, 1857052, 1857171, 1857177, 1857178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	95.5	94.5	P/P	90 - 110
NO2NO3-N	98.5	97.5	P/P	90 - 110
NO2NO3-N	99.5	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A73460
Included Lab Sample IDs: 1857048, 1857049, 1857050, 1857052, 1857171, 1857177, 1857178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	97.5	P/P	90 - 110
Total-P	98.8	99.0	P/P	90 - 110
Total-P	99.2	97.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A73461
Included Lab Sample IDs: 1857052

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.5	97.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A73485
Included Lab Sample IDs: 1857050, 1857172, 1857176

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.0	95.0	P/P	90 - 110
NO2NO3-N	99.5	99.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A73488
Included Lab Sample IDs: 1857171, 1857177

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	93.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A73493
Included Lab Sample IDs: 1857050

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.9	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A73498
Included Lab Sample IDs: 1857050, 1857172, 1857176, 1857178

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A73507
Included Lab Sample IDs: 1857172, 1857176

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A73522
Included Lab Sample IDs: 1857176

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	96.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A73560
Included Lab Sample IDs: 1857048, 1857049, 1857052

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	101	P/P	90 - 110
Ammonia-N	101	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	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					1.23	
	Turbidity					10.6	
EPA 350.1 Rev. 2.0	Ammonia-N	105	99.7	99.8			0.0471
	Ammonia-N	103	97.2	99.2			1.18
	Ammonia-N	98.7	98.6	101			1.12
	Ammonia-N	105	94.2	96.3			1.11
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	106	109			2.38
	Kjeldahl Nitrogen	101	101	93.7			6.53
	Kjeldahl Nitrogen	101	102	96.2			5.11

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108	98.3	103			4.63
	Kjeldahl Nitrogen	99.4	101	98.5			1.90
	Kjeldahl Nitrogen	102	96.3	95.9			0.243
EPA 353.2 Rev. 2.0	NO2NO3-N	101	102	99.8			1.89
	NO2NO3-N	100	102	101			0.948
	NO2NO3-N	101	96.6	99.2			2.34
	NO2NO3-N	105	106	101			4.83
	NO2NO3-N	103	103	101			1.43
EPA 365.1 Rev. 2.0	Total-P	106	107	102			4.40
	Total-P	103	98.6	96.8			1.77
	Total-P	99.2	103	94.8			8.33
	Total-P	104	104	105			0.598
	Total-P	98.8	99.4	97.6			1.17

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1857045, 1857046, 1857047, 1857051, 1857169, 1857170, 1857173, 1857174, 1857175
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1857048, 1857049, 1857050, 1857052, 1857171, 1857172, 1857176, 1857177, 1857178
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1857048, 1857049, 1857050, 1857052, 1857171, 1857172, 1857176, 1857177, 1857178
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1857048, 1857049, 1857050, 1857052, 1857171, 1857172, 1857176, 1857177, 1857178
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1857048, 1857049, 1857050, 1857052, 1857171, 1857172, 1857176, 1857177, 1857178

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	12/13/2016			12/13/2016 19:27	Julie Michelle Frank	1857169, 1857170, 1857173, 1857174, 1857175
EPA 350.1 Rev. 2.0	12/13/2016			12/19/2016	Sofia Elnemr	1857171, 1857177
	12/13/2016			12/20/2016	Sofia Elnemr	1857172, 1857176, 1857178
	12/13/2016			12/22/2016	Sofia Elnemr	1857048, 1857049, 1857052
EPA 351.2 Rev. 2.0	12/13/2016	12/15/2016	Adrian Shelby	12/16/2016	Joseph Suarez	1857048, 1857049
	12/13/2016	12/16/2016	Adrian Shelby	12/19/2016	Joseph Suarez	1857052
	12/13/2016	12/19/2016	Adrian Shelby	12/20/2016	Joseph Suarez	1857050
	12/13/2016	12/20/2016	Adrian Shelby	12/21/2016	Joseph Suarez	1857176
EPA 353.2 Rev. 2.0	12/13/2016			12/16/2016	Beverly Y. Sanders	1857171, 1857177, 1857178
	12/13/2016			12/20/2016	Beverly Y. Sanders	1857050
EPA 365.1 Rev. 2.0	12/13/2016	12/16/2016	Vijayalakshmi Reddy	12/19/2016	Lipi Saha	1857048, 1857049, 1857050, 1857052
	12/13/2016	12/19/2016	Vijayalakshmi Reddy	12/20/2016	Lipi Saha	1857172, 1857176