

Chemical Analysis Report

NW-DIST-2018-08-21-05

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

Event Description: **Choctawhatchee Bay-Aqualab**
Request ID: **RQ-2018-07-23-11**
Customer: **NW-DIST**
Project ID: **DISTRICT**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 308
Pensacola, FL 32502-5794
Attn: Cheryl Bunch

For additional information please contact
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Dr. rer. nat. Bettina Steinbock
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Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 06-SEP-2018 14:31

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

NON-CONFORMANCE REPORT INCLUDED

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: Field Blank

Collection Date/Time: 08/19/2018 12:50

Field ID: FB

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018688	EPA 120.1	Specific_Conductance	2.0	U	umhos/cm	P350789	
	SM 2540 D-97	TSS	2	U	mg/L	P350811	
2018701	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P350718	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P350889	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P350669	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P350861	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: SRS @ Liza Jackson prk

Collection Date/Time: 08/19/2018 12:09

Field ID: 1

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018689	EPA 120.1	Specific_Conductance	2.95E+04		umhos/cm	P350789	
	SM 2540 D-97	TSS	3	U	mg/L	P350813	
2018702	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P350660	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.24	I	mg N/L	P350703	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.014		mg N/L	P350590	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P350716	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: SRS@Cinco Bayou (west side)

Collection Date/Time: 08/19/2018 15:25

Field ID: 3

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018690	EPA 120.1	Specific_Conductance	2.67E+04		umhos/cm	P350789	
	SM 2540 D-97	TSS	5	I	mg/L	P350813	
2018703	EPA 350.1 Rev. 2.0	Ammonia-N	0.032		mg N/L	P350660	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36	I	mg N/L	P350703	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P350590	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P350716	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Garnier Bayou, Hand Cove

Collection Date/Time: 08/19/2018 10:40

Field ID: 4

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018691	EPA 120.1	Specific_Conductance	2.71E+04		umhos/cm	P350789	
	SM 2540 D-97	TSS	3	U	mg/L	P350813	
2018704	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P350660	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36	I	mg N/L	P350703	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P350591	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P350716	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Choctaw Bay @ OK Isl

Collection Date/Time: 08/19/2018 12:38

Field ID: 5

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018692	EPA 120.1	Specific_Conductance	3.06E+04		umhos/cm	P350789	
	SM 2540 D-97	TSS	3	U	mg/L	P350813	
2018705	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P350719	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.31	I	mg N/L	P350703	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P350591	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P350716	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Regatta Bay, SE End of Mid Bay BR

Collection Date/Time: 08/19/2018 08:21

Field ID: 9

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018693	EPA 120.1	Specific_Conductance	1.75E+04		umhos/cm	P350789	
	SM 2540 D-97	TSS	3	U	mg/L	P350814	
2018706	EPA 350.1 Rev. 2.0	Ammonia-N	0.035		mg N/L	P350719	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36	I	mg N/L	P350749	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P350591	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P350716	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Mack Bayou, S. Choct Bay

Collection Date/Time: 08/19/2018 10:45

Field ID: 12

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018694	EPA 120.1	Specific_Conductance	1.96E+04	A	umhos/cm	P350789	
	SM 2540 D-97	TSS	3	U	mg/L	P350814	
2018707	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P350719	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.31	I	mg N/L	P350749	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.015		mg N/L	P350591	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P350716	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Hogtown Bayou, Cessna prk

Collection Date/Time: 08/19/2018 15:45

Field ID: 13

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018695	EPA 120.1	Specific_Conductance	1.71E+04		umhos/cm	P350789	
	SM 2540 D-97	TSS	10		mg/L	P350814	
2018708	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P350719	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P350749	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P350591	
	EPA 365.1 Rev. 2.0	Total-P	0.053		mg P/L	P350716	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: US 331 Bridge, SE End

Collection Date/Time: 08/19/2018 11:15

Field ID: 15

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018696	EPA 120.1	Specific_Conductance	5.71E+03		umhos/cm	P350789	
	SM 2540 D-97	TSS	4	I	mg/L	P350811	
2018709	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P350719	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.38	I	mg N/L	P350749	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.060		mg N/L	P350591	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P350716	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Tucker Bayou

Collection Date/Time: 08/19/2018 15:00

Field ID: 16

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018697	EPA 120.1	Specific_Conductance	4.87E+03		umhos/cm	P350789	
	SM 2540 D-97	TSS	10	I	mg/L	P350811	
2018710	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P350719	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.64		mg N/L	P350749	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P350591	
	EPA 365.1 Rev. 2.0	Total-P	0.092		mg P/L	P350716	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Old Pass Lagoon at Marina

Collection Date/Time: 08/19/2018 09:30

Field ID: 17

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018698	EPA 120.1	Specific_Conductance	2.82E+04		umhos/cm	P350789	
	SM 2540 D-97	TSS	3	U	mg/L	P350814	
2018711	EPA 350.1 Rev. 2.0	Ammonia-N	0.043		mg N/L	P350719	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40	I	mg N/L	P350749	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P350591	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P350716	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Joe's Bayou

Collection Date/Time: 08/19/2018 13:24

Field ID: 20

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018699	EPA 120.1	Specific_Conductance	1.98E+04		umhos/cm	P350789	
	SM 2540 D-97	TSS	3	U	mg/L	P350814	
2018712	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P350719	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.32	I	mg N/L	P350749	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P350591	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P350717	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Garnier Bayou at Longwood prk

Collection Date/Time: 08/19/2018 10:00

Field ID: 21

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018700	EPA 120.1	Specific_Conductance	1.84E+04		umhos/cm	P350789	
	SM 2540 D-97	TSS	3	UA	mg/L	P350814	
2018713	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P350719	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.30	I	mg N/L	P350749	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.087		mg N/L	P350591	
	EPA 365.1 Rev. 2.0	Total-P	0.010	I	mg P/L	P350717	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Non-Conformance Report

NCR ID: 7193

<u>Event(s)</u>	<u>Job(s)</u>	<u>Sample(s)</u>	<u>Test(s)</u>
NW-DIST-2018-08-21-05	TLH-2018-08-21-97	2018706	
NW-DIST-2018-08-21-05	TLH-2018-08-21-97	2018707	
NW-DIST-2018-08-21-05	TLH-2018-08-21-97	2018708	
NW-DIST-2018-08-21-05	TLH-2018-08-21-97	2018709	
NW-DIST-2018-08-21-05	TLH-2018-08-21-97	2018710	
NW-DIST-2018-08-21-05	TLH-2018-08-21-97	2018711	
NW-DIST-2018-08-21-05	TLH-2018-08-21-97	2018712	
NW-DIST-2018-08-21-05	TLH-2018-08-21-97	2018713	

NCR Type: CUSTODY

NCR Category: General

Observation: Sample was not stored in refrigerator the night of 08/27/2018.

Resolution: Sample was returned to refrigerator on the morning of 08/28/2018. Analyses requiring refrigeration that were prepared or, if preparation is not required, analyzed on or after 08/28/2018 will be Y qualified for incorrect preservation.

Authorized by/Date: Colin Wright 9/6/2018

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 120.1
Batch ID: P350789

Component	Result	Code	Units
Specific_Conductance	2.0	U	umhos/cm

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350660

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350718

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350719

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350703

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350749

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350889

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350590

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350591

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350669

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350716

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350717

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350861

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

Reference Method: SM 2540 D-97
Batch ID: P350811

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P350813

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P350814

Component	Result	Code	Units
TSS	3	U	mg/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 120.1

Batch ID: P350789

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Specific_Conductance	99.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P350660

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P350718

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: P350719

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P350703

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: P350749

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P350889

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: P350590

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: P350591

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350669

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: P350716

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350717

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350861

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.9		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350660

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018470	Ammonia-N	98.7	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350718

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018767	Ammonia-N	102	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350719

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018705	Ammonia-N	101	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018703	Kjeldahl Nitrogen	95.5	98.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350749

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018707	Kjeldahl Nitrogen	99.1	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350889

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018767	Kjeldahl Nitrogen	95.6	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350590

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018608	NO2NO3-N	99.5	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350591

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018704	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350669

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018621	NO2NO3-N	98.0	100	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350716

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018702	Total-P	91.2	95.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350717

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018712	Total-P	98.1	97.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350861

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018672	Total-P	100	97.4	P/P	90 - 110

Quality Assurance Report Precision

Reference Method: EPA 120.1

Batch ID: P350789

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018694	Specific_Conductance	0.102	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P350660

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018470	Ammonia-N	1.96	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P350718

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018767	Ammonia-N	0.625	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P350719

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018705	Ammonia-N	1.57	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P350703

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018703	Kjeldahl Nitrogen	2.32	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P350749

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018707	Kjeldahl Nitrogen	0.801	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P350889

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018767	Kjeldahl Nitrogen	4.83	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P350590

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018608	NO2NO3-N	1.35	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P350591

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018704	NO2NO3-N	1.45	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P350669

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018621	NO2NO3-N	1.57	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P350716

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018702	Total-P	4.21	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P350717

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018712	Total-P	0.907	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P350861

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018672	Total-P	1.75	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 353.2 Rev. 2.0

Run ID: A86060

Included Lab Sample IDs: 2018702, 2018703, 2018704, 2018705, 2018706, 2018707, 2018708, 2018709, 2018710, 2018711, 2018712, 2018713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A86083

Included Lab Sample IDs: 2018702, 2018703, 2018704

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A86085

Included Lab Sample IDs: 2018701

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A86114

Included Lab Sample IDs: 2018701, 2018705, 2018706, 2018707, 2018708, 2018709, 2018710, 2018711, 2018712, 2018713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	103	P/P	90 - 110
Ammonia-N	103	102	P/P	90 - 110
Ammonia-N	103	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86122

Included Lab Sample IDs: 2018702, 2018703, 2018704, 2018705, 2018706, 2018707, 2018708, 2018709, 2018710, 2018711, 2018712, 2018713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	99.0	P/P	90 - 110
Total-P	99.8	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86126

Included Lab Sample IDs: 2018702, 2018703, 2018704, 2018705

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.1	95.6	P/P	90 - 110

Reference Method: EPA 120.1

Run ID: A86129

Included Lab Sample IDs: 2018688, 2018689, 2018690, 2018691, 2018692, 2018693, 2018694, 2018695, 2018696, 2018697, 2018698, 2018699, 2018700

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Specific_Conductance	100	102	P/P	85 - 115
Specific_Conductance	102	100	P/P	85 - 115

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86157

Included Lab Sample IDs: 2018706, 2018707, 2018708, 2018709, 2018710, 2018711, 2018712, 2018713

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86173

Included Lab Sample IDs: 2018701

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86206

Included Lab Sample IDs: 2018701

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.7	99.9	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 120.1	Specific_Conductance	99.6				0.102	
EPA 350.1 Rev. 2.0	Ammonia-N	98.5	98.7	101			1.96
	Ammonia-N	100	102	101			0.625
	Ammonia-N	98.9	101	103			1.57
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108	95.5	98.1			2.32
	Kjeldahl Nitrogen	103	99.1	100			0.801
	Kjeldahl Nitrogen	103	95.6	102			4.83
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	99.5	101			1.35
	NO2NO3-N	102	100	102			1.45
	NO2NO3-N	101	98.0	100			1.57
EPA 365.1 Rev. 2.0	Total-P	99.0	91.2	95.2			4.21
	Total-P	98.6	98.1	97.2			0.907
	Total-P	99.9	100	97.4			1.75

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 120.1 / E31780	Specific Conductivity in aqueous matrices (umhos/cm at 25 deg C).	2018688, 2018689, 2018690, 2018691, 2018692, 2018693, 2018694, 2018695, 2018696, 2018697, 2018698, 2018699, 2018700
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2018701, 2018702, 2018703, 2018704, 2018705, 2018706, 2018707, 2018708, 2018709, 2018710, 2018711, 2018712, 2018713
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2018701, 2018702, 2018703, 2018704, 2018705, 2018706, 2018707, 2018708, 2018709, 2018710, 2018711, 2018712, 2018713
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2018701, 2018702, 2018703, 2018704, 2018705, 2018706, 2018707, 2018708, 2018709, 2018710, 2018711, 2018712, 2018713
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2018701, 2018702, 2018703, 2018704, 2018705, 2018706, 2018707, 2018708, 2018709, 2018710, 2018711, 2018712, 2018713
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2018688, 2018689, 2018690, 2018691, 2018692, 2018693, 2018694, 2018695, 2018696, 2018697, 2018698, 2018699, 2018700

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 120.1	08/21/2018			08/24/2018 18:19	Dale L. Simmons	2018688
	08/21/2018			08/24/2018 18:28	Dale L. Simmons	2018694
	08/21/2018			08/24/2018 18:31	Dale L. Simmons	2018689
	08/21/2018			08/24/2018 18:33	Dale L. Simmons	2018690
	08/21/2018			08/24/2018 19:20	Dale L. Simmons	2018691
	08/21/2018			08/24/2018 19:23	Dale L. Simmons	2018692
	08/21/2018			08/24/2018 19:25	Dale L. Simmons	2018693
	08/21/2018			08/24/2018 19:27	Dale L. Simmons	2018695
	08/21/2018			08/24/2018 19:30	Dale L. Simmons	2018696
	08/21/2018			08/24/2018 19:32	Dale L. Simmons	2018697
	08/21/2018			08/24/2018 19:34	Dale L. Simmons	2018698
	08/21/2018			08/24/2018 19:36	Dale L. Simmons	2018699
	08/21/2018			08/24/2018 19:39	Dale L. Simmons	2018700
	08/21/2018			08/23/2018 11:52	Adrian Shelby	2018702
EPA 350.1 Rev. 2.0	08/21/2018			08/23/2018 11:53	Adrian Shelby	2018703
	08/21/2018			08/23/2018 11:55	Adrian Shelby	2018704
	08/21/2018			08/24/2018 11:14	Ping Hua	2018701
	08/21/2018			08/24/2018 11:25	Ping Hua	2018705
	08/21/2018			08/24/2018 11:29	Ping Hua	2018706
	08/21/2018			08/24/2018 11:31	Ping Hua	2018707
	08/21/2018			08/24/2018 11:32	Ping Hua	2018708
	08/21/2018			08/24/2018 11:34	Ping Hua	2018709
	08/21/2018			08/24/2018 11:35	Ping Hua	2018710
	08/21/2018			08/24/2018 11:37	Ping Hua	2018711
	08/21/2018			08/24/2018 11:44	Ping Hua	2018712
	08/21/2018			08/24/2018 11:46	Ping Hua	2018713
	08/21/2018	08/24/2018 11:15	Adrian Shelby	08/27/2018 14:15	Joseph Suarez	2018702
	08/21/2018	08/24/2018 11:15	Adrian Shelby	08/27/2018 14:17	Joseph Suarez	2018703
EPA 351.2 Rev. 2.0	08/21/2018	08/24/2018 11:15	Adrian Shelby	08/27/2018 14:21	Joseph Suarez	2018704
	08/21/2018	08/24/2018 11:15	Adrian Shelby	08/27/2018 14:23	Joseph Suarez	2018705
	08/21/2018	08/27/2018 11:00	Adrian Shelby	08/28/2018 14:41	Joseph Suarez	2018706
	08/21/2018	08/27/2018 11:00	Adrian Shelby	08/28/2018 14:43	Joseph Suarez	2018707
	08/21/2018	08/27/2018 11:00	Adrian Shelby	08/28/2018 14:48	Joseph Suarez	2018708
	08/21/2018	08/27/2018 11:00	Adrian Shelby	08/28/2018 14:49	Joseph Suarez	2018709
	08/21/2018	08/27/2018 11:00	Adrian Shelby	08/28/2018 14:51	Joseph Suarez	2018710
	08/21/2018	08/27/2018 11:00	Adrian Shelby	08/28/2018 14:52	Joseph Suarez	2018711
	08/21/2018	08/27/2018 11:00	Adrian Shelby	08/28/2018 14:54	Joseph Suarez	2018712
	08/21/2018	08/27/2018 11:00	Adrian Shelby	08/28/2018 14:55	Joseph Suarez	2018713
	08/21/2018	08/29/2018 15:30	Adrian Shelby	08/30/2018 11:12	Joseph Suarez	2018701
	08/21/2018			08/22/2018 11:26	Lauren Bottorf	2018704
	08/21/2018					
	08/21/2018					
EPA 353.2 Rev. 2.0	08/21/2018					

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 353.2 Rev. 2.0	08/21/2018			08/22/2018 11:32	Lauren Bottorf	2018705
	08/21/2018			08/22/2018 11:33	Lauren Bottorf	2018706
	08/21/2018			08/22/2018 11:34	Lauren Bottorf	2018707
	08/21/2018			08/22/2018 11:35	Lauren Bottorf	2018708
	08/21/2018			08/22/2018 11:36	Lauren Bottorf	2018709
	08/21/2018			08/22/2018 11:38	Lauren Bottorf	2018710
	08/21/2018			08/22/2018 11:39	Lauren Bottorf	2018711
	08/21/2018			08/22/2018 11:40	Lauren Bottorf	2018712
	08/21/2018			08/22/2018 11:41	Lauren Bottorf	2018713
	08/21/2018			08/22/2018 12:19	Lauren Bottorf	2018702
	08/21/2018			08/22/2018 12:20	Lauren Bottorf	2018703
	08/21/2018			08/23/2018 13:54	Lauren Bottorf	2018701
EPA 365.1 Rev. 2.0	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 12:18	Beverly Y. Sanders	2018702
	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 12:19	Beverly Y. Sanders	2018703
	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 12:20	Beverly Y. Sanders	2018704
	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 12:21	Beverly Y. Sanders	2018705
	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 12:22	Beverly Y. Sanders	2018706
	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 12:23	Beverly Y. Sanders	2018707
	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 12:24	Beverly Y. Sanders	2018708
	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 12:25	Beverly Y. Sanders	2018709
	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 12:26	Beverly Y. Sanders	2018710
	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 12:27	Beverly Y. Sanders	2018711
	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 12:35	Beverly Y. Sanders	2018712
	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 12:36	Beverly Y. Sanders	2018713
	08/21/2018	08/28/2018 15:06	Sima Feizi	08/29/2018 12:09	Beverly Y. Sanders	2018701
	08/21/2018			08/22/2018 15:33	Yijie Li	2018688, 2018689, 2018690, 2018691, 2018692, 2018693, 2018694, 2018695, 2018696, 2018697, 2018698, 2018699, 2018700
SM 2540 D-97						