

Chemical Analysis Report

NW-DIST-2018-08-21-04

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

Event Description: **Bayou Chico BMAP Source**
Request ID: **RQ-2018-07-16-09**
Customer: **NW-DIST**
Project ID: **BMAP**

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

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 06-SEP-2018 12:06



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 groups are included in this report: Nutrients and Pesticides.

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 NAVY BLVD. BRIDGE

Collection Date/Time: 08/20/2018 12:45

Field ID: 33020JE20

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018599	EPA 180.1 Rev. 2.0	Turbidity	3.0		NTU	P350633	
2018601	EPA 350.1 Rev. 2.0	Ammonia-N	0.050		mg N/L	P350660	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39	I	mg N/L	P350703	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.65		mg N/L	P350590	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P350614	
2018639	EPA 8321B	2,4-D	0.0037	I	ug/L	P350331	
		Bentazon	0.0021	I	ug/L	P350331	
		MCP	0.0020	UJ	ug/L	P350331	RPD
		Triclopyr**	0.0040	UJ	ug/L	P350331	RPD
		Imidacloprid	0.016		ug/L	P350331	
		Diuron	0.0060	I	ug/L	P350331	
		Pyraclostrobin**	0.0020	U	ug/L	P350331	
		Primidone**	0.0040	U	ug/L	P350331	
		Linuron	0.0040	U	ug/L	P350331	
		Acetaminophen**	0.014	I	ug/L	P350331	
		Fenuron	0.016	U	ug/L	P350331	
		Imazapyr**	0.0049	I	ug/L	P350331	
		Carbamazepine**	0.0038		ug/L	P350331	
		Fluridone**	4.0E-04	U	ug/L	P350331	
		Hydrocodone**	8.0E-04	U	ug/L	P350331	
		Naproxen**	0.0080	U	ug/L	P350331	
		Ibuprofen**	0.020	U	ug/L	P350331	
		Sucralose**	0.58		ug/L	P350504	

Ref. Method and Comment:

EPA 8321B: Insufficient sample to perform matrix spikes. Refer to the narrative for an explanation of QC Codes.

Sample Location: BAYOU CHICO AT W ST. BRIDGE

Collection Date/Time: 08/20/2018 13:10

Field ID: 33020JF1

Matrix: W-BRACKISH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018600	EPA 180.1 Rev. 2.0	Turbidity	25		NTU	P350633	
2018602	EPA 350.1 Rev. 2.0	Ammonia-N	0.066		mg N/L	P350661	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P350748	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.42		mg N/L	P350668	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P350714	
2018640	EPA 8321B	2,4-D	0.017		ug/L	P350331	
		Bentazon	0.0021	I	ug/L	P350331	
		MCP	0.0020	UJ	ug/L	P350331	RPD
		Triclopyr**	0.0040	UJ	ug/L	P350331	RPD
		Imidacloprid	0.024		ug/L	P350331	
		Diuron	0.012		ug/L	P350331	
		Pyraclostrobin**	0.0020	U	ug/L	P350331	
		Primidone**	0.0040	U	ug/L	P350331	
		Linuron	0.0040	U	ug/L	P350331	
		Acetaminophen**	0.023	I	ug/L	P350331	
		Fenuron	0.016	U	ug/L	P350331	
		Imazapyr**	0.0059	I	ug/L	P350331	
		Carbamazepine**	0.0015	I	ug/L	P350331	
		Fluridone**	4.0E-04	U	ug/L	P350331	
		Hydrocodone**	8.0E-04	U	ug/L	P350331	
		Naproxen**	0.0080	U	ug/L	P350331	
		Ibuprofen**	0.020	U	ug/L	P350331	
		Sucralose**	0.20		ug/L	P350504	

Ref. Method and Comment:

EPA 8321B: Insufficient sample to perform matrix spikes. Refer to the narrative for an explanation of QC Codes.

Sample Location: JONES CREEK UPSTREAM OF NEW WARRINGTON RD.

Collection Date/Time: 08/20/2018 11:55

Field ID: 33020117

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018603	EPA 180.1 Rev. 2.0	Turbidity	3.0	A	NTU	P350634	
2018605	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P350661	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.78		mg N/L	P350686	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.042		mg N/L	P350668	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P350714	
2018641	EPA 8321B	2,4-D	0.0020	U	ug/L	P350331	
		Bentazon	0.0020	I	ug/L	P350331	
		MCP	0.0020	UJ	ug/L	P350331	RPD
		Triclopyr**	0.0040	UJ	ug/L	P350331	RPD
		Imidacloprid	0.0020	U	ug/L	P350331	
		Diuron	0.0020	U	ug/L	P350331	
		Pyraclostrobin**	0.0020	U	ug/L	P350331	
		Primidone**	0.0040	U	ug/L	P350331	
		Linuron	0.0040	U	ug/L	P350331	
		Acetaminophen**	0.0080	U	ug/L	P350331	
		Fenuron	0.016	U	ug/L	P350331	
		Imazapyr**	0.056		ug/L	P350331	
		Carbamazepine**	8.0E-04	U	ug/L	P350331	
		Fluridone**	4.0E-04	U	ug/L	P350331	
		Hydrocodone**	8.0E-04	U	ug/L	P350331	
		Naproxen**	0.017	I	ug/L	P350331	
		Ibuprofen**	0.020	U	ug/L	P350331	
		Sucralose**	0.16		ug/L	P350504	

Ref. Method and Comment:

EPA 8321B: Insufficient sample to perform matrix spikes. Refer to the narrative for an explanation of QC Codes.

Sample Location: JACKSON CREEK AT OLD CORRY ROAD

Collection Date/Time: 08/20/2018 11:10

Field ID: 33020221

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018604	EPA 180.1 Rev. 2.0	Turbidity	28		NTU	P350634	
2018606	EPA 350.1 Rev. 2.0	Ammonia-N	0.034		mg N/L	P350661	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P350704	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.42		mg N/L	P350668	
	EPA 365.1 Rev. 2.0	Total-P	0.17		mg P/L	P350714	
2018642	EPA 8321B	2,4-D	0.065		ug/L	P350331	
		Bentazon	0.0021	I	ug/L	P350331	
		MCP	0.0020	UJ	ug/L	P350331	RPD
		Triclopyr**	0.0040	UJ	ug/L	P350331	RPD
		Imidacloprid	0.012		ug/L	P350331	
		Diuron	0.0040	I	ug/L	P350331	
		Pyraclostrobin**	0.0020	U	ug/L	P350331	
		Primidone**	0.0040	U	ug/L	P350331	
		Linuron	0.0040	U	ug/L	P350331	
		Acetaminophen**	0.022	I	ug/L	P350331	
		Fenuron	0.016	U	ug/L	P350331	
		Imazapyr**	0.0040	U	ug/L	P350331	
		Carbamazepine**	0.0040		ug/L	P350331	
		Fluridone**	4.0E-04	U	ug/L	P350331	
		Hydrocodone**	8.0E-04	U	ug/L	P350331	
		Naproxen**	0.0080	U	ug/L	P350331	
		Ibuprofen**	0.020	U	ug/L	P350331	
		Sucralose**	0.41		ug/L	P350504	

Ref. Method and Comment:

EPA 8321B: Insufficient sample to perform matrix spikes. Refer to the narrative for an explanation of QC Codes.

Sample Location: PENSACOLA BAY AT SANDERS BEACH

Collection Date/Time: 08/20/2018 10:05

Field ID: 33020J10

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018607	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P350634	
2018608	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		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	0.021		mg N/L	P350590	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P350614	

Sample Location: jones creek at old corry road

Collection Date/Time: 08/20/2018 10:50

Field ID: 33020118

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018609	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P350634	
2018611	EPA 350.1 Rev. 2.0	Ammonia-N	0.028		mg N/L	P350661	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P350704	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.040		mg N/L	P350668	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P350714	

Sample Location: bayou chico at mandalay drive

Collection Date/Time: 08/20/2018 10:25

Field ID: 33020JD4

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018610	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P350634	
2018612	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P350660	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57		mg N/L	P350703	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.044		mg N/L	P350590	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P350614	

Sample Location: jackson creek at new warrington road

Collection Date/Time: 08/20/2018 11:35

Field ID: 33020222

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018613	EPA 180.1 Rev. 2.0	Turbidity	35		NTU	P350634	
2018614	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P350661	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P350704	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.79		mg N/L	P350668	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P350714	

Non-Conformance Report

NCR ID: 7193

Event(s)

NW-DIST-2018-08-21-04

Job(s)

TLH-2018-08-21-67

Sample(s)

2018602

Test(s)

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: Peter D. Kaus 8/30/2018

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 180.1 Rev. 2.0
Batch ID: P350633

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P350634

Component	Result	Code	Units
Turbidity	0.10	U	NTU

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: P350661

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350686

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	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: P350704

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350748

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350668

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350614

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350714

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

Reference Method: EPA 8321B
Batch ID: P350331

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
Acetaminophen	0.0080	U	ug/L
Bentazon	8.0E-04	U	ug/L
Carbamazepine	8.0E-04	U	ug/L
Diuron	0.0020	U	ug/L
Fenuron	0.016	U	ug/L
Fluridone	4.0E-04	U	ug/L
Hydrocodone	8.0E-04	U	ug/L
Ibuprofen	0.020	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
MCP	0.0020	U	ug/L
Naproxen	0.0080	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Reference Method: EPA 8321B
Batch ID: P350504

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

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: P350661

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: P350686

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: 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: P350704

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: P350748

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	104		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: P350668

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: P350614

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.1		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350714

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

Reference Method: EPA 8321B
Batch ID: P350331

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	101	75.1	P/P	40 - 150
Acetaminophen	131	113	P/P	30 - 150
Bentazon	110	99.5	P/P	30 - 150
Carbamazepine	92.3	90.0	P/P	40 - 150
Diuron	91.6	95.4	P/P	40 - 150
Fenuron	117	107	P/P	40 - 150
Fluridone	79.5	76.8	P/P	40 - 150
Hydrocodone	105	101	P/P	40 - 150
Ibuprofen	88.3	81.8	P/P	40 - 150
Imazapyr	102	98.2	P/P	40 - 150
Imidacloprid	113	106	P/P	40 - 160
Linuron	76.1	74.7	P/P	40 - 150
MCPP	109	72.1	P/P	40 - 150
Naproxen	93.1	70.1	P/P	40 - 150
Primidone	109	108	P/P	40 - 150
Pyraclostrobin	78.9	74.0	P/P	40 - 150
Triclopyr	100	64.7	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P350504

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	89.4		P	40 - 150

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: P350661

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018605	Ammonia-N	98.0	99.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350686

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018546	Kjeldahl Nitrogen	108	108	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: P350704

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018611	Kjeldahl Nitrogen	105	108	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350748

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019015	Kjeldahl Nitrogen	102	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: P350668

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018546	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350614

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018470	Total-P	98.4	99.8	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350714

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018602	Total-P	99.2	101	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P350504

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019172	Sucralose	103	106	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P350633

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018508	Turbidity	2.33	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P350634

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018603	Turbidity	0.0	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: P350661

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018605	Ammonia-N	1.04	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350686

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018546	Kjeldahl Nitrogen	0.356	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: P350704

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018611	Kjeldahl Nitrogen	1.63	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350748

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019015	Kjeldahl Nitrogen	0.177	Spike	P	0 - 20

Quality Assurance Report Precision

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P350668

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018546	NO2NO3-N	2.47	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P350614

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018470	Total-P	1.49	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P350714

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018602	Total-P	1.46	Spike	P	0 - 20

Reference Method: EPA 8321B
 Batch ID: P350331

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
LFB	2,4-D	29.6	LCS	P	0 - 30
LFB	Acetaminophen	15.4	LCS	P	0 - 30
LFB	Bentazon	10.3	LCS	P	0 - 30
LFB	Carbamazepine	2.51	LCS	P	0 - 30
LFB	Diuron	4.14	LCS	P	0 - 30
LFB	Fenuron	8.57	LCS	P	0 - 30
LFB	Fluridone	3.51	LCS	P	0 - 30
LFB	Hydrocodone	3.72	LCS	P	0 - 30
LFB	Ibuprofen	7.63	LCS	P	0 - 30
LFB	Imazapyr	4.06	LCS	P	0 - 30
LFB	Imidacloprid	6.58	LCS	P	0 - 30
LFB	Linuron	1.81	LCS	P	0 - 30
LFB	MCPP	40.5	LCS	F	0 - 30
LFB	Naproxen	28.2	LCS	P	0 - 30
LFB	Primidone	1.36	LCS	P	0 - 30
LFB	Pyraclostrobin	6.43	LCS	P	0 - 30
LFB	Triclopyr	42.9	LCS	F	0 - 30

Reference Method: EPA 8321B
 Batch ID: P350504

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
--------------------------	-----------	-----------	-------------------	-----------	----------------

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P350504

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019172	Sucralose	2.64	Spike	P	0 - 30

* 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 Surrogates

Lab Sample ID: 2018639
Field Sample ID: 33020JE20

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	111	P	30 - 160
EPA 8321B	Acetaminophen-d4	140	P	30 - 160
EPA 8321B	Carbamazepine-d10	67.5	P	30 - 160
EPA 8321B	Diuron-d6	64.4	P	30 - 160
EPA 8321B	Ibuprofen-d3	72.1	P	30 - 160
EPA 8321B	Primidone-d5	87.7	P	30 - 160
EPA 8321B	Sucralose-d6	87.5	P	40 - 160

Lab Sample ID: 2018640
Field Sample ID: 33020JF1

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	108	P	30 - 160
EPA 8321B	Acetaminophen-d4	152	P	30 - 160
EPA 8321B	Carbamazepine-d10	72.9	P	30 - 160
EPA 8321B	Diuron-d6	76.2	P	30 - 160
EPA 8321B	Ibuprofen-d3	79.8	P	30 - 160
EPA 8321B	Primidone-d5	108	P	30 - 160
EPA 8321B	Sucralose-d6	90.6	P	40 - 160

Lab Sample ID: 2018641
Field Sample ID: 33020117

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	97.4	P	30 - 160
EPA 8321B	Acetaminophen-d4	155	P	30 - 160
EPA 8321B	Carbamazepine-d10	63.4	P	30 - 160
EPA 8321B	Diuron-d6	67.5	P	30 - 160
EPA 8321B	Ibuprofen-d3	80.4	P	30 - 160
EPA 8321B	Primidone-d5	89.4	P	30 - 160
EPA 8321B	Sucralose-d6	99.1	P	40 - 160

Lab Sample ID: 2018642
Field Sample ID: 33020221

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	128	P	30 - 160
EPA 8321B	Acetaminophen-d4	131	P	30 - 160
EPA 8321B	Carbamazepine-d10	66.9	P	30 - 160
EPA 8321B	Diuron-d6	73.4	P	30 - 160
EPA 8321B	Ibuprofen-d3	80.4	P	30 - 160
EPA 8321B	Primidone-d5	98.7	P	30 - 160
EPA 8321B	Sucralose-d6	95.0	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A86035

Included Lab Sample IDs: 2018599, 2018600, 2018603, 2018604, 2018607, 2018609, 2018610, 2018613

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	102	P/P	95 - 105
Turbidity	103	102	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A86060

Included Lab Sample IDs: 2018601, 2018608, 2018612

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86078

Included Lab Sample IDs: 2018601, 2018608, 2018612

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A86083

Included Lab Sample IDs: 2018601, 2018602, 2018605, 2018606, 2018608, 2018611, 2018612, 2018614

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.3	P/P	90 - 110
Ammonia-N	98.2	99.3	P/P	90 - 110
Ammonia-N	99.3	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A86085

Included Lab Sample IDs: 2018602, 2018605, 2018606, 2018611, 2018614

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

Reference Method: EPA 8321B

Run ID: A86110

Included Lab Sample IDs: 2018639, 2018640, 2018641, 2018642

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	77.3	86.8	P/P	60 - 160
Sucralose	89.4	77.3	P/P	60 - 160

Reference Method: EPA 8321B

Run ID: A86112

Included Lab Sample IDs: 2018639, 2018640, 2018641, 2018642

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	106	99.9	P/P	50 - 150
Bentazon	150	136	P/P	50 - 160
Ibuprofen	117	88.7	P/P	50 - 160
MCP	112	111	P/P	50 - 150
Naproxen	84.8	133	P/P	50 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A86112

Included Lab Sample IDs: 2018639, 2018640, 2018641, 2018642

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Triclopyr	97.8	100	P/P	50 - 160

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86117

Included Lab Sample IDs: 2018602, 2018606, 2018614

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86122

Included Lab Sample IDs: 2018605, 2018611

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86124

Included Lab Sample IDs: 2018605

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86126

Included Lab Sample IDs: 2018601, 2018608, 2018612

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	99.1	P/P	90 - 110
Kjeldahl Nitrogen	99.1	95.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86128

Included Lab Sample IDs: 2018606, 2018611, 2018614

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.8	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86157

Included Lab Sample IDs: 2018602

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.2	102	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A86195

Included Lab Sample IDs: 2018639, 2018640, 2018641, 2018642

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A86195

Included Lab Sample IDs: 2018639, 2018640, 2018641, 2018642

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	106	111	P/P	60 - 150
Carbamazepine	100	98.0	P/P	60 - 150
Diuron	119	122	P/P	60 - 150
Fenuron	108	107	P/P	60 - 150
Fluridone	111	110	P/P	60 - 160
Hydrocodone	110	110	P/P	60 - 150
Imazapyr	95.9	96.9	P/P	50 - 150
Imidacloprid	109	109	P/P	60 - 150
Linuron	104	113	P/P	60 - 150
Primidone	100	105	P/P	60 - 150
Pyraclostrobin	96.6	97.0	P/P	60 - 150

* 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	
							SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						2.33	
	Turbidity						0.0	
EPA 350.1 Rev. 2.0	Ammonia-N	98.5		98.7	101			1.96
	Ammonia-N	101		98.0	99.6			1.04
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108		108	108			0.356
	Kjeldahl Nitrogen	108		95.5	98.1			2.32
	Kjeldahl Nitrogen	103		105	108			1.63
	Kjeldahl Nitrogen	104		102	102			0.177
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5		99.5	101			1.35
	NO2NO3-N	100		100	102			2.47
EPA 365.1 Rev. 2.0	Total-P	96.1		98.4	99.8			1.49
	Total-P	98.1		99.2	101			1.46
EPA 8321B	2,4-D	101	75.1			29.6		
	Acetaminophen	131	113			15.4		
	Bentazon	110	99.5			10.3		
	Carbamazepine	92.3	90.0			2.51		
	Diuron	91.6	95.4			4.14		
	Fenuron	117	107			8.57		
	Fluridone	79.5	76.8			3.51		
	Hydrocodone	105	101			3.72		
	Ibuprofen	88.3	81.8			7.63		
	Imazapyr	102	98.2			4.06		
	Imidacloprid	113	106			6.58		
	Linuron	76.1	74.7			1.81		
	MCP	109	72.1			40.5		
	Naproxen	93.1	70.1			28.2		
	Primidone	109	108			1.36		
	Pyraclostrobin	78.9	74.0			6.43		
	Sucralose	89.4		103	106			2.64
	Triclopyr	100	64.7			42.9		

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2018599, 2018600, 2018603, 2018604, 2018607, 2018609, 2018610, 2018613
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2018601, 2018602, 2018605, 2018606, 2018608, 2018611, 2018612, 2018614
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2018601, 2018602, 2018605, 2018606, 2018608, 2018611, 2018612, 2018614
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2018601, 2018602, 2018605, 2018606, 2018608, 2018611, 2018612, 2018614
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2018601, 2018602, 2018605, 2018606, 2018608, 2018611, 2018612, 2018614
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2018639, 2018640, 2018641, 2018642

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	08/21/2018			08/21/2018 16:11	Megan Treadwell	2018599, 2018600, 2018603, 2018604, 2018607, 2018609, 2018610, 2018613
EPA 350.1 Rev. 2.0	08/21/2018			08/23/2018 11:41	Adrian Shelby	2018601
	08/21/2018			08/23/2018 11:42	Adrian Shelby	2018608
	08/21/2018			08/23/2018 11:50	Adrian Shelby	2018612
	08/21/2018			08/23/2018 12:10	Adrian Shelby	2018602
	08/21/2018			08/23/2018 12:11	Adrian Shelby	2018605
	08/21/2018			08/23/2018 12:16	Adrian Shelby	2018606
	08/21/2018			08/23/2018 12:17	Adrian Shelby	2018611
EPA 351.2 Rev. 2.0	08/21/2018			08/23/2018 12:19	Adrian Shelby	2018614
	08/21/2018	08/24/2018 11:15	Adrian Shelby	08/27/2018 12:24	Joseph Suarez	2018605
	08/21/2018	08/24/2018 11:15	Adrian Shelby	08/27/2018 14:07	Joseph Suarez	2018601
	08/21/2018	08/24/2018 11:15	Adrian Shelby	08/27/2018 14:12	Joseph Suarez	2018608
	08/21/2018	08/24/2018 11:15	Adrian Shelby	08/27/2018 14:14	Joseph Suarez	2018612
	08/21/2018	08/24/2018 11:15	Adrian Shelby	08/27/2018 15:08	Joseph Suarez	2018606
	08/21/2018	08/24/2018 11:15	Adrian Shelby	08/27/2018 15:10	Joseph Suarez	2018611
EPA 353.2 Rev. 2.0	08/21/2018	08/24/2018 11:15	Adrian Shelby	08/27/2018 15:15	Joseph Suarez	2018614
	08/21/2018	08/27/2018 11:00	Adrian Shelby	08/28/2018 14:17	Joseph Suarez	2018602
	08/21/2018			08/22/2018 12:11	Lauren Bottorf	2018608
	08/21/2018			08/22/2018 12:17	Lauren Bottorf	2018601
	08/21/2018			08/22/2018 12:18	Lauren Bottorf	2018612
	08/21/2018			08/23/2018 13:31	Lauren Bottorf	2018602
	08/21/2018			08/23/2018 13:32	Lauren Bottorf	2018605
EPA 365.1 Rev. 2.0	08/21/2018			08/23/2018 13:34	Lauren Bottorf	2018606
	08/21/2018			08/23/2018 13:35	Lauren Bottorf	2018611
	08/21/2018			08/23/2018 13:36	Lauren Bottorf	2018614
	08/21/2018	08/22/2018 13:40	Sima Feizi	08/23/2018 12:51	Beverly Y. Sanders	2018601
	08/21/2018	08/22/2018 13:40	Sima Feizi	08/23/2018 12:52	Beverly Y. Sanders	2018608
	08/21/2018	08/22/2018 13:40	Sima Feizi	08/23/2018 12:53	Beverly Y. Sanders	2018612
	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 08:41	Beverly Y. Sanders	2018602
EPA 8321B	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 08:49	Beverly Y. Sanders	2018606
	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 08:51	Beverly Y. Sanders	2018614
	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 12:02	Beverly Y. Sanders	2018605
	08/21/2018	08/24/2018 12:31	Sima Feizi	08/27/2018 12:03	Beverly Y. Sanders	2018611
	08/21/2018	08/21/2018 15:00	Hoor Shaik	08/25/2018 13:28	Juyoung Kim	2018639
	08/21/2018	08/21/2018 15:00	Hoor Shaik	08/25/2018 14:03	Juyoung Kim	2018640
	08/21/2018	08/21/2018 15:00	Hoor Shaik	08/25/2018 14:37	Juyoung Kim	2018641
	08/21/2018	08/21/2018 15:00	Hoor Shaik	08/25/2018 15:12	Juyoung Kim	2018642
	08/21/2018	08/21/2018 15:00	Hoor Shaik	08/25/2018 23:44	Juyoung Kim	2018639
	08/21/2018	08/21/2018 15:00	Hoor Shaik	08/26/2018 00:18	Juyoung Kim	2018640

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	08/21/2018	08/21/2018 15:00	Hoor Shaik	08/26/2018 00:53	Juyoung Kim	2018641
	08/21/2018	08/21/2018 15:00	Hoor Shaik	08/26/2018 01:28	Juyoung Kim	2018642
	08/21/2018	08/23/2018 12:45	Mohammad Ghaffari	08/24/2018 09:54	Mohammad Ghaffari	2018639
	08/21/2018	08/23/2018 12:45	Mohammad Ghaffari	08/24/2018 10:09	Mohammad Ghaffari	2018640
	08/21/2018	08/23/2018 12:45	Mohammad Ghaffari	08/24/2018 10:38	Mohammad Ghaffari	2018641
	08/21/2018	08/23/2018 12:45	Mohammad Ghaffari	08/24/2018 10:53	Mohammad Ghaffari	2018642