Chemical Analysis Report

SO-DIST-2018-08-22-02

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

Event Description: **Myakka Streams**
Request ID: **RQ-2018-08-27-08**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Nicole Reistad

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
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Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 06-SEP-2018 12:05

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: Metals, 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: MyakkaRiver(Tidal)@US41 **Collection Date/Time: 08/21/2018 10:00**

Field ID: G3SD0068 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2019102	EPA 8321B	2,4-D	0.0056	I	ug/L	P350552	MS
		Bentazon	0.0091		ug/L	P350552	
		MCPP	0.0020	U	ug/L	P350552	MS
		Triclopyr**	0.0040	U	ug/L	P350552	MS
		Imidacloprid	0.020		ug/L	P350552	
		Diuron	0.0031	I	ug/L	P350552	
		Pyraclostrobin**	0.0020	U	ug/L	P350552	
		Primidone**	0.0040	U	ug/L	P350552	
		Linuron	0.0040	U	ug/L	P350552	
		Acetaminophen**	0.0080	U	ug/L	P350552	
		Fenuron	0.016	U	ug/L	P350552	
		Imazapyr**	0.025		ug/L	P350552	
		Carbamazepine**	8.0E-04	U	ug/L	P350552	
		Fluridone**	9.4E-04	I	ug/L	P350552	
		Hydrocodone**	8.0E-04	U	ug/L	P350552	
		Naproxen**	0.0080	U	ug/L	P350552	
		Ibuprofen**	0.020	U	ug/L	P350552	
		Sucralose**	0.019	I	ug/L	P350504	

Sample Location: Rock Creek@EisenhowerDr **Collection Date/Time: 08/21/2018 10:30**

Field ID: G3SD0070 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2019081	EPA 180.1 Rev. 2.0	Turbidity	3.0		NTU	P350642	
	SM 2320 B-97	Total Alkalinity	64		mg CaCO3/L	P350793	
	SM 2540 D-97	TSS	3	I	mg/L	P351018	
	SM 4500 F-C-97	Fluoride	0.20		mg F/L	P350796	
2019083	EPA 350.1 Rev. 2.0	Ammonia-N	0.030		mg N/L	P350840	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P350750	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.069		mg N/L	P350854	
	EPA 365.1 Rev. 2.0	Total-P	0.29		mg P/L	P350765	
	SM 5310 B-00	Organic Carbon	23		mg C/L	P350836	
2019085	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.25		mg P/L	P350607	
2019103	EPA 200.7 Rev. 4.4	Iron	610		ug/L	P350680	
		Zinc	5.0	U	ug/L	P350680	
	EPA 200.8 Rev. 5.4	Arsenic	1.58		ug/L	P350680	
		Cadmium	0.020	U	ug/L	P350680	
		Chromium	0.64	I	ug/L	P350680	
		Copper	0.80	I	ug/L	P350680	
		Lead	0.18	I	ug/L	P350680	
		Nickel	0.51	I	ug/L	P350680	
		Silver	0.010	U	ug/L	P350680	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Apollo Waterway @ Bend **Collection Date/Time: 08/21/2018 11:00**

Field ID: G3SD0069 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2019087	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P350642	
	SM 2320 B-97	Total Alkalinity	69		mg CaCO3/L	P350793	
	SM 2540 D-97	TSS	3	I	mg/L	P351018	
	SM 4500 F-C-97	Fluoride	0.21		mg F/L	P350796	
2019088	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P350840	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P350750	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.056		mg N/L	P350854	
	EPA 365.1 Rev. 2.0	Total-P	0.29		mg P/L	P350765	
	SM 5310 B-00	Organic Carbon	22		mg C/L	P350836	
2019089	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.23		mg P/L	P350608	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Little Alligator@Midway **Collection Date/Time: 08/21/2018 12:00**

Field ID: G3SD0071 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2019082	EPA 180.1 Rev. 2.0	Turbidity	3.8		NTU	P350642	
	SM 2320 B-97	Total Alkalinity	134		mg CaCO3/L	P350793	
	SM 2540 D-97	TSS	5	I	mg/L	P351018	
	SM 4500 F-C-97	Fluoride	0.41		mg F/L	P350796	
2019084	EPA 350.1 Rev. 2.0	Ammonia-N	0.046		mg N/L	P350719	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	5.5		mg N/L	P350751	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.031		mg N/L	P350671	
	EPA 365.1 Rev. 2.0	Total-P	0.26	Y	mg P/L	P350862	MS
	SM 5310 B-00	Organic Carbon	15		mg C/L	P350836	
2019086	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.20		mg P/L	P350609	
2019104	EPA 200.7 Rev. 4.4	Iron	320		ug/L	P350680	
		Zinc	5.0	U	ug/L	P350680	
	EPA 200.8 Rev. 5.4	Arsenic	2.45		ug/L	P350680	
		Cadmium	0.020	U	ug/L	P350680	
		Chromium	0.63	I	ug/L	P350680	
		Copper	0.80		ug/L	P350680	
		Lead	0.15	I	ug/L	P350680	
		Nickel	0.68	I	ug/L	P350680	
		Silver	0.010	U	ug/L	P350680	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: Sample was left out at room temperature overnight, should be stored below 6 degC.
SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Apollo Waterway @ Bend **Collection Date/Time: 08/21/2018 11:10**

Field ID: BLANK_08212018 Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2019090	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P350642	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P350793	
	SM 2540 D-97	TSS	2	U	mg/L	P351018	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P350796	
2019091	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P350840	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P350750	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P350854	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P350765	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P350836	
2019092	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P350608	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Non-Conformance Report

NCR ID: 7193

Event(s)	Job(s)	Sample(s)	Test(s)
SO-DIST-2018-08-22-02	TLH-2018-08-22-63	2019084	W-TOC

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: P350642

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350680

Component	Result	Code	Units
Iron	30	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350680

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/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 350.1 Rev. 2.0
Batch ID: P350840

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350750

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350751

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350671

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: P350854

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350765

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350862

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350607

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350608

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350609

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

Reference Method: EPA 8321B
Batch ID: P350504

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: EPA 8321B
Batch ID: P350552

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 8321B
Batch ID: P350552

Component	Result	Code	Units
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
MCPP	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: SM 2320 B-97
Batch ID: P350793

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

Reference Method: SM 2540 D-97
Batch ID: P351018

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P350796

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P350836

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350680

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	105		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350680

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	102		P	85 - 115
Cadmium	104		P	85 - 115
Chromium	98.9		P	85 - 115
Copper	97.6		P	85 - 115
Lead	102		P	85 - 115
Nickel	101		P	85 - 115
Silver	99.5		P	85 - 115

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 350.1 Rev. 2.0
Batch ID: P350840

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350750

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350751

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: P350671

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: P350854

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350765

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350862

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350607

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350608

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350609

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

Reference Method: EPA 8321B
Batch ID: P350504

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

Reference Method: EPA 8321B
Batch ID: P350552

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	86.0		P	40 - 150
Acetaminophen	113		P	30 - 150
Bentazon	124		P	30 - 150
Carbamazepine	73.5		P	40 - 150
Diuron	79.4		P	40 - 150
Fenuron	104		P	40 - 150
Fluridone	70.9		P	40 - 150
Hydrocodone	95.7		P	40 - 150
Ibuprofen	99.1		P	40 - 150
Imazapyr	89.1		P	40 - 150
Imidacloprid	104		P	40 - 160
Linuron	58.1		P	40 - 150
MCPP	99.3		P	40 - 150
Naproxen	82.8		P	40 - 150
Primidone	102		P	40 - 150
Pyraclostrobin	61.7		P	40 - 150

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P350552

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Triclopyr	104		P	40 - 150

Reference Method: SM 2320 B-97
Batch ID: P350793

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P350796

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P350836

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019133	Iron	106	107	P/P	80 - 120
2019133	Zinc	102	104	P/P	80 - 120
2019437	Iron	104		P	80 - 120
2019437	Zinc	102		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019133	Arsenic	102	100	P/P	80 - 120
2019133	Cadmium	103	101	P/P	80 - 120
2019133	Chromium	97.3	97.7	P/P	80 - 120
2019133	Copper	98.8	96.9	P/P	80 - 120
2019133	Lead	102	99.3	P/P	80 - 120
2019133	Nickel	99.9	98.2	P/P	80 - 120
2019133	Silver	99.0	98.0	P/P	80 - 120
2019437	Arsenic	105		P	80 - 120
2019437	Cadmium	103		P	80 - 120
2019437	Chromium	98.2		P	80 - 120
2019437	Copper	97.0		P	80 - 120
2019437	Lead	103		P	80 - 120
2019437	Nickel	99.3		P	80 - 120
2019437	Silver	99.4		P	80 - 120

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 350.1 Rev. 2.0
Batch ID: P350840

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019075	Ammonia-N	100	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350750

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019060	Kjeldahl Nitrogen	107	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350751

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019404	Kjeldahl Nitrogen	104	109	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350671

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350671

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019084	NO2NO3-N	96.0	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350854

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019061	NO2NO3-N	97.0	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350765

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019113	Total-P	97.2	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350862

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019476	Total-P	88.7	94.2	F/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350607

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018997	O-Phosphate-P	97.1	98.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350608

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019116	O-Phosphate-P	96.8	97.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350609

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019086	O-Phosphate-P	97.1	97.4	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

Reference Method: EPA 8321B
Batch ID: P350552

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019699	2,4-D	180	141	F/P	40 - 150
2019699	Acetaminophen	135	138	P/P	30 - 150
2019699	Bentazon	99.7	87.8	P/P	30 - 150
2019699	Carbamazepine	56.2	56.9	P/P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P350552

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019699	Diuron	64.4	64.8	P/P	40 - 150
2019699	Fenuron	75.4	76.2	P/P	40 - 150
2019699	Fluridone	58.9	57.5	P/P	40 - 150
2019699	Hydrocodone	84.2	80.4	P/P	40 - 150
2019699	Ibuprofen	96.9	92.2	P/P	40 - 150
2019699	Imazapyr	100	91.1	P/P	40 - 150
2019699	Imidacloprid	158	156	P/P	40 - 160
2019699	Linuron	54.8	57.3	P/P	40 - 150
2019699	MCPP	162	170	F/F	40 - 150
2019699	Naproxen	109	104	P/P	40 - 150
2019699	Primidone	91.9	91.1	P/P	40 - 150
2019699	Pyraclostrobin	71.0	68.6	P/P	40 - 150
2019699	Triclopyr	182	182	F/F	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P350796

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019110	Fluoride	99.6	99.6	P/P	91 - 105

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P350642

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019074	Turbidity	5.88	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019133	Iron	1.41	Spike	P	0 - 20
2019133	Zinc	2.00	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019133	Arsenic	1.96	Spike	P	0 - 20
2019133	Cadmium	2.05	Spike	P	0 - 20
2019133	Chromium	0.403	Spike	P	0 - 20
2019133	Copper	1.97	Spike	P	0 - 20
2019133	Lead	2.82	Spike	P	0 - 20
2019133	Nickel	1.74	Spike	P	0 - 20
2019133	Silver	1.02	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 350.1 Rev. 2.0
Batch ID: P350840

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019075	Ammonia-N	0.348	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350750

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019060	Kjeldahl Nitrogen	1.87	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350751

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019404	Kjeldahl Nitrogen	3.54	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350671

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019084	NO2NO3-N	2.65	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350854

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019061	NO2NO3-N	1.55	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350765

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019113	Total-P	0.295	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350862

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019476	Total-P	5.95	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350607

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018997	O-Phosphate-P	1.23	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350608

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019116	O-Phosphate-P	0.819	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350609

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019086	O-Phosphate-P	0.152	Spike	P	0 - 20

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

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P350552

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019699	2,4-D	16.2	Spike	P	0 - 30
2019699	Acetaminophen	2.32	Spike	P	0 - 30
2019699	Bentazon	12.0	Spike	P	0 - 30
2019699	Carbamazepine	1.29	Spike	P	0 - 30
2019699	Diuron	0.587	Spike	P	0 - 30
2019699	Fenuron	1.09	Spike	P	0 - 30
2019699	Fluridone	1.59	Spike	P	0 - 30
2019699	Hydrocodone	4.54	Spike	P	0 - 30
2019699	Ibuprofen	4.93	Spike	P	0 - 30
2019699	Imazapyr	5.71	Spike	P	0 - 30
2019699	Imidacloprid	1.75	Spike	P	0 - 30
2019699	Linuron	4.50	Spike	P	0 - 30
2019699	MCPP	5.31	Spike	P	0 - 30
2019699	Naproxen	4.41	Spike	P	0 - 30
2019699	Primidone	0.918	Spike	P	0 - 30
2019699	Pyraclostrobin	3.38	Spike	P	0 - 30
2019699	Triclopyr	0.0605	Spike	P	0 - 30

Reference Method: SM 2320 B-97
Batch ID: P350793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019110	Total Alkalinity	0.105	Sample	P	0 - 1.6

Reference Method: SM 4500 F-C-97
Batch ID: P350796

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019110	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P350836

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019004	Organic Carbon	0.204	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
Surrogates

Lab Sample ID: 2019102
Field Sample ID: G3SD0068

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	97.3	P	30 - 160
EPA 8321B	Acetaminophen-d4	132	P	30 - 160
EPA 8321B	Carbamazepine-d10	62.7	P	30 - 160
EPA 8321B	Diuron-d6	58.1	P	30 - 160
EPA 8321B	Ibuprofen-d3	73.4	P	30 - 160
EPA 8321B	Primidone-d5	71.3	P	30 - 160
EPA 8321B	Sucralose-d6	99.4	P	40 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A86064
Included Lab Sample IDs: 2019085, 2019086, 2019089, 2019092

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.0	97.3	P/P	90 - 110
O-Phosphate-P	98.8	98.0	P/P	90 - 110
O-Phosphate-P	99.8	98.8	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A86071
Included Lab Sample IDs: 2019081, 2019082, 2019087, 2019090

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A86086
Included Lab Sample IDs: 2019084

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

Reference Method: EPA 8321B
Run ID: A86110
Included Lab Sample IDs: 2019102

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	86.8	90.1	P/P	60 - 160

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A86111
Included Lab Sample IDs: 2019103, 2019104

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	99.5	103	P/P	90 - 110
Zinc	98.9	95.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A86114
Included Lab Sample IDs: 2019084

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

Reference Method: SM 2320 B-97
Run ID: A86129
Included Lab Sample IDs: 2019081, 2019082, 2019087, 2019090

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	106	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A86129
Included Lab Sample IDs: 2019081, 2019082, 2019087, 2019090

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

Reference Method: EPA 8321B
Run ID: A86134
Included Lab Sample IDs: 2019102

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	83.4	104	P/P	50 - 150
Bentazon	85.1	88.2	P/P	50 - 160
Ibuprofen	108	97.5	P/P	50 - 160
MCPP	94.4	93.9	P/P	50 - 150
Naproxen	74.5	108	P/P	50 - 160
Triclopyr	96.4	91.5	P/P	50 - 160

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A86139
Included Lab Sample IDs: 2019083, 2019088

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A86147
Included Lab Sample IDs: 2019091

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A86149
Included Lab Sample IDs: 2019084

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

Reference Method: SM 5310 B-00
Run ID: A86150
Included Lab Sample IDs: 2019083, 2019084, 2019088, 2019091

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.0	95.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A86153
Included Lab Sample IDs: 2019083, 2019088, 2019091

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A86155
Included Lab Sample IDs: 2019083, 2019088, 2019091

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A86169
Included Lab Sample IDs: 2019083, 2019088, 2019091

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	97.3	P/P	90 - 110
Kjeldahl Nitrogen	99.4	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A86170
Included Lab Sample IDs: 2019084

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.4	99.2	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A86195
Included Lab Sample IDs: 2019102

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	124	118	P/P	60 - 150
Carbamazepine	100	96.0	P/P	60 - 150
Diuron	120	118	P/P	60 - 150
Fenuron	105	107	P/P	60 - 150
Fluridone	107	110	P/P	60 - 160
Hydrocodone	111	115	P/P	60 - 150
Imazapyr	100	107	P/P	50 - 150
Imidacloprid	109	108	P/P	60 - 150
Linuron	102	106	P/P	60 - 150
Primidone	113	123	P/P	60 - 150
Pyraclostrobin	95.4	94.3	P/P	60 - 150

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A86223
Included Lab Sample IDs: 2019103, 2019104

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	95.7	95.9	P/P	90 - 110
Arsenic	96.7	95.7	P/P	90 - 110
Cadmium	95.0	94.6	P/P	90 - 110
Cadmium	95.5	95.0	P/P	90 - 110
Chromium	92.7	92.9	P/P	90 - 110
Chromium	92.9	92.6	P/P	90 - 110
Copper	93.7	93.3	P/P	90 - 110
Copper	94.2	93.7	P/P	90 - 110
Lead	101	101	P/P	90 - 110
Lead	102	101	P/P	90 - 110
Nickel	93.6	94.0	P/P	90 - 110
Nickel	94.8	93.6	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A86223
Included Lab Sample IDs: 2019103, 2019104

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	94.0	94.2	P/P	90 - 110
Silver	94.3	94.0	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						5.88	
EPA 200.7 Rev. 4.4	Iron	105	106	107	104			1.41
	Zinc	102	102	104	102			2.00
EPA 200.8 Rev. 5.4	Arsenic	102	102	100	105			1.96
	Cadmium	104	103	101	103			2.05
	Chromium	98.9	97.3	97.7	98.2			0.403
	Copper	97.6	98.8	96.9	97.0			1.97
	Lead	102	102	99.3	103			2.82
	Nickel	101	99.9	98.2	99.3			1.74
	Silver	99.5	99.0	98.0	99.4			1.02
EPA 350.1 Rev. 2.0	Ammonia-N	98.9	101	103				1.57
	Ammonia-N	98.5	100	101				0.348
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.5	107	103				1.87
	Kjeldahl Nitrogen	103	104	109				3.54
EPA 353.2 Rev. 2.0	NO2NO3-N	100	96.0	99.0				2.65
	NO2NO3-N	99.0	97.0	99.0				1.55
EPA 365.1 Rev. 2.0	Total-P	96.8	97.2	97.5				0.295
	Total-P	98.4	88.7	94.2				5.95
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.4	97.1	98.3				1.23
	O-Phosphate-P	96.7	96.8	97.9				0.819
	O-Phosphate-P	98.5	97.1	97.4				0.152
EPA 8321B	2,4-D	86.0	180	141				16.2
	Acetaminophen	113	135	138				2.32
	Bentazon	124	99.7	87.8				12.0
	Carbamazepine	73.5	56.2	56.9				1.29
	Diuron	79.4	64.4	64.8				0.587
	Fenuron	104	75.4	76.2				1.09
	Fluridone	70.9	58.9	57.5				1.59
	Hydrocodone	95.7	84.2	80.4				4.54
	Ibuprofen	99.1	96.9	92.2				4.93
	Imazapyr	89.1	100	91.1				5.71
	Imidacloprid	104	158	156				1.75
	Linuron	58.1	54.8	57.3				4.50
	MCPP	99.3	162	170				5.31
	Naproxen	82.8	109	104				4.41
	Primidone	102	91.9	91.1				0.918
	Pyraclostrobin	61.7	71.0	68.6				3.38
	Sucralose	89.4	103	106				2.64
	Triclopyr	104	182	182				0.0605
SM 2320 B-97	Total Alkalinity	105					0.105	
SM 4500 F-C-97	Fluoride	100	99.6	99.6				0.0
SM 5310 B-00	Organic Carbon	96.8						0.204

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2019081, 2019082, 2019087, 2019090
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2019103, 2019104
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2019103, 2019104
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2019083, 2019084, 2019088, 2019091

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2019083, 2019084, 2019088, 2019091
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2019083, 2019084, 2019088, 2019091
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2019083, 2019084, 2019088, 2019091
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2019085, 2019086, 2019089, 2019092
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2019102
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2019081, 2019082, 2019087, 2019090
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2019081, 2019082, 2019087, 2019090
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2019081, 2019082, 2019087, 2019090
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2019083, 2019084, 2019088, 2019091

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	08/22/2018			08/22/2018 17:25	Megan Treadwell	2019081, 2019082, 2019087, 2019090
EPA 200.7 Rev. 4.4	08/22/2018	08/23/2018 17:30	Elliott D. Healy	08/24/2018 13:28	Betina Topolski	2019103
	08/22/2018	08/23/2018 17:30	Elliott D. Healy	08/24/2018 13:35	Betina Topolski	2019104
EPA 200.8 Rev. 5.4	08/22/2018	08/23/2018 17:30	Elliott D. Healy	08/30/2018 20:19	Allison Taylor	2019103
	08/22/2018	08/23/2018 17:30	Elliott D. Healy	08/30/2018 20:57	Allison Taylor	2019104
EPA 350.1 Rev. 2.0	08/22/2018			08/24/2018 11:47	Ping Hua	2019084
	08/22/2018			08/27/2018 11:49	Ping Hua	2019083
	08/22/2018			08/27/2018 11:51	Ping Hua	2019088
	08/22/2018			08/27/2018 11:52	Ping Hua	2019091
EPA 351.2 Rev. 2.0	08/22/2018	08/27/2018 11:00	Adrian Shelby	08/28/2018 11:44	Joseph Suarez	2019084
	08/22/2018	08/27/2018 11:00	Adrian Shelby	08/29/2018 09:57	Joseph Suarez	2019083
	08/22/2018	08/27/2018 11:00	Adrian Shelby	08/29/2018 10:02	Joseph Suarez	2019088
	08/22/2018	08/27/2018 11:00	Adrian Shelby	08/29/2018 10:03	Joseph Suarez	2019091
EPA 353.2 Rev. 2.0	08/22/2018			08/23/2018 14:36	Lauren Bottorf	2019084
	08/22/2018			08/28/2018 12:10	Lauren Bottorf	2019091
	08/22/2018			08/28/2018 12:14	Lauren Bottorf	2019083
	08/22/2018			08/28/2018 12:16	Lauren Bottorf	2019088
EPA 365.1 Rev. 2.0	08/22/2018	08/27/2018 12:15	Sima Feizi	08/28/2018 09:23	Beverly Y. Sanders	2019083
	08/22/2018	08/27/2018 12:15	Sima Feizi	08/28/2018 09:25	Beverly Y. Sanders	2019088
	08/22/2018	08/27/2018 12:15	Sima Feizi	08/28/2018 12:11	Beverly Y. Sanders	2019091
	08/22/2018	08/28/2018 15:06	Sima Feizi	08/29/2018 11:02	Beverly Y. Sanders	2019084
EPA 365.1 Rev. 2.0 dissolved	08/22/2018			08/22/2018 14:41	Julia Storbeck	2019092
	08/22/2018			08/22/2018 14:47	Julia Storbeck	2019085
	08/22/2018			08/22/2018 14:53	Julia Storbeck	2019089
	08/22/2018			08/22/2018 15:09	Julia Storbeck	2019086
EPA 8321B	08/22/2018	08/23/2018 12:45	Mohammad Ghaffari	08/24/2018 14:33	Mohammad Ghaffari	2019102
	08/22/2018	08/23/2018 13:00	Hoor Shaik	08/26/2018 06:47	Juyoung Kim	2019102
	08/22/2018	08/23/2018 13:00	Hoor Shaik	08/26/2018 13:00	Juyoung Kim	2019102
SM 2320 B-97	08/22/2018			08/25/2018 11:03	Dale L. Simmons	2019081
	08/22/2018			08/25/2018 11:13	Dale L. Simmons	2019087
	08/22/2018			08/25/2018 11:26	Dale L. Simmons	2019090
	08/22/2018			08/25/2018 11:48	Dale L. Simmons	2019082
SM 2540 D-97	08/22/2018			08/24/2018 16:01	Yijie Li	2019081, 2019082, 2019087, 2019090
SM 4500 F-C-97	08/22/2018			08/25/2018 11:03	Dale L. Simmons	2019081
	08/22/2018			08/25/2018 11:13	Dale L. Simmons	2019087
	08/22/2018			08/25/2018 11:26	Dale L. Simmons	2019090
	08/22/2018			08/25/2018 11:48	Dale L. Simmons	2019082
SM 5310 B-00	08/22/2018			08/28/2018 02:39	Megan Treadwell	2019083
	08/22/2018			08/28/2018 02:55	Megan Treadwell	2019084
	08/22/2018			08/28/2018 03:09	Megan Treadwell	2019088

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	08/22/2018			08/28/2018 03:22	Megan Treadwell	2019091