

Chemical Analysis Report

TLH-ROC-2018-04-26-01

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

Event Description: **kit B-b/t/m (WBID 3310A)**

Request ID: **RQ-2018-03-12-47**

Customer: **TLH-ROC**

Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Michael Eckles

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: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 15-MAY-2018 13:38

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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: AUCILLA RIVER @ MOUTH

Collection Date/Time: 04/26/2018 13:45

Field ID: G1TLHR0091

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1988157	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P344155	
	SM 2320 B-97	Total Alkalinity	130		mg CaCO3/L	P344833	
	SM 2540 D-97	TSS	7	IA	mg/L	P344602	
	SM 4500 F-C-97	Fluoride	0.73		mg F/L	P344836	
1988158	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	IY	mg N/L	P344761	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57	Y	mg N/L	P344365	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	IY	mg N/L	P344379	
	EPA 365.1 Rev. 2.0	Total-P	0.016	Y	mg P/L	P344410	
	SM 5310 B-00	Organic Carbon	6.4	Y	mg C/L	P344689	
1988159	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P344390	
1988163	EPA 8321B	2,4-D	0.0034	I	ug/L	P344034	
		Bentazon	8.0E-04	U	ug/L	P344034	
		MCP	0.0020	U	ug/L	P344034	
		Triclopyr**	0.0040	U	ug/L	P344034	
		Imidacloprid	0.0020	U	ug/L	P344034	MS
		Diuron	0.0020	U	ug/L	P344034	
		Pyraclostrobin**	0.0020	U	ug/L	P344034	
		Primidone**	0.0040	U	ug/L	P344034	
		Linuron	0.0040	U	ug/L	P344034	
		Acetaminophen**	0.0080	U	ug/L	P344034	
		Fenuron	0.016	U	ug/L	P344034	
		Imazapyr**	0.0040	U	ug/L	P344034	
		Carbamazepine**	4.0E-04	U	ug/L	P344034	
		Fluridone**	8.0E-04	U	ug/L	P344034	
		Hydrocodone**	8.0E-04	U	ug/L	P344034	
		Sucralose**	0.10	U	ug/L	P344028	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 351.2 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 353.2 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 365.1 Rev. 2.0: Total-P: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

SM 5310 B-00: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

Non-Conformance Report

NCR ID: 7003

Event(s)

TLH-ROC-2018-04-26-01

Job(s)

TLH-2018-04-26-105

Sample(s)

1988158

Test(s)

NCR Type: SHIPPING/RECEIVING

NCR Category: Preservation Not Intact

Observation: Sample not preserved to pH < 2.

Resolution: Sample preserved in the laboratory with sulfuric acid on 4/26/18 at 3:47 lot#SA 8085170 exp:03-26-19

Authorized by/Date: Joshua Ayres 4/27/2018

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: P344155

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344761

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P344365

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344379

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344410

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344390

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

Reference Method: EPA 8321B
Batch ID: P344028

Component	Result	Code	Units
Sucralose	0.10	U	ug/L

Reference Method: EPA 8321B
Batch ID: P344034

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	4.0E-04	U	ug/L
Diuron	0.0020	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
Batch ID: P344034

Component	Result	Code	Units
Fenuron	0.030	I	ug/L
Fluridone	8.0E-04	U	ug/L
Hydrocodone	8.0E-04	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
MCPP	0.0020	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: P344833

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

Reference Method: SM 2540 D-97
Batch ID: P344602

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P344836

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P344689

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344761

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P344365

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344379

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344410

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344390

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

Reference Method: EPA 8321B
Batch ID: P344028

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	112		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P344034

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	109		P	40 - 150
Acetaminophen	93.3		P	30 - 150
Bentazon	135		P	30 - 150
Carbamazepine	103		P	40 - 150
Diuron	91.0		P	40 - 150
Fenuron	110		P	40 - 150
Fluridone	91.5		P	40 - 150
Hydrocodone	116		P	40 - 150
Imazapyr	107		P	40 - 150
Imidacloprid	110		P	40 - 160
Linuron	91.5		P	40 - 150
MCPP	115		P	40 - 150
Primidone	88.5		P	40 - 150
Pyraclostrobin	92.4		P	40 - 150
Triclopyr	122		P	40 - 150

Reference Method: SM 2320 B-97
Batch ID: P344833

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	106		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P344836

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.5		P	91 - 105

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
 Batch ID: P344689

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P344761

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987669	Ammonia-N	102	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P344365

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1988286	Kjeldahl Nitrogen	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P344379

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987785	NO2NO3-N	99.4	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P344410

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1988158	Total-P	95.7	96.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P344390

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1988159	O-Phosphate-P	95.0	97.1	P/P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P344028

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987104	Sucralose	85.1	72.9	P/P	40 - 150

Reference Method: EPA 8321B
 Batch ID: P344034

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987389	2,4-D	99.8	89.8	P/P	40 - 150
1987389	Acetaminophen	126	115	P/P	30 - 150
1987389	Bentazon	68.4	62.8	P/P	30 - 150
1987389	Carbamazepine	118	109	P/P	40 - 150
1987389	Diuron	96.8	88.3	P/P	40 - 150
1987389	Fenuron	114	104	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P344034

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987389	Fluridone	94.9	88.0	P/P	40 - 150
1987389	Hydrocodone	149	134	P/P	40 - 150
1987389	Imazapyr	133	117	P/P	40 - 150
1987389	Imidacloprid	229	198	F/F	40 - 160
1987389	Linuron	104	95.7	P/P	40 - 150
1987389	MCP	78.3	80.0	P/P	40 - 150
1987389	Primidone	119	112	P/P	40 - 150
1987389	Pyraclostrobin	108	99.4	P/P	40 - 150
1987389	Triclopyr	87.0	86.4	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P344836

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1988252	Fluoride	94.9	96.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P344689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1988158	Organic Carbon	101	99.5	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P344155

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987934	Turbidity	4.08	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344761

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987669	Ammonia-N	0.168	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P344365

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1988286	Kjeldahl Nitrogen	0.0443	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344379

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344379

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987785	NO2NO3-N	0.487	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344410

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1988158	Total-P	1.08	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344390

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1988159	O-Phosphate-P	2.19	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P344028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987104	Sucralose	15.4	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P344034

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987389	2,4-D	10.6	Spike	P	0 - 30
1987389	Acetaminophen	8.88	Spike	P	0 - 30
1987389	Bentazon	6.96	Spike	P	0 - 30
1987389	Carbamazepine	7.79	Spike	P	0 - 30
1987389	Diuron	9.17	Spike	P	0 - 30
1987389	Fenuron	9.62	Spike	P	0 - 30
1987389	Fluridone	7.59	Spike	P	0 - 30
1987389	Hydrocodone	10.9	Spike	P	0 - 30
1987389	Imazapyr	13.4	Spike	P	0 - 30
1987389	Imidacloprid	14.2	Spike	P	0 - 30
1987389	Linuron	8.47	Spike	P	0 - 30
1987389	MCP	2.08	Spike	P	0 - 30
1987389	Primidone	5.96	Spike	P	0 - 30
1987389	Pyraclostrobin	7.86	Spike	P	0 - 30
1987389	Triclopyr	0.626	Spike	P	0 - 30

Reference Method: SM 2320 B-97
Batch ID: P344833

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1988252	Total Alkalinity	0.187	Sample	P	0 - 1.6

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
 Batch ID: P344836

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1988252	Fluoride	1.46	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P344689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1988158	Organic Carbon	1.03	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: 1988163
 Field Sample ID: G1TLHR0091

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	71.0	P	30 - 160
EPA 8321B	2,4-D-d3	71.0	P	30 - 160
EPA 8321B	Acetaminophen-d4	114	P	30 - 160
EPA 8321B	Acetaminophen-d4	114	P	30 - 160
EPA 8321B	Carbamazepine-d10	107	P	30 - 160
EPA 8321B	Carbamazepine-d10	107	P	30 - 160
EPA 8321B	Diuron-d6	82.1	P	30 - 160
EPA 8321B	Diuron-d6	82.1	P	30 - 160
EPA 8321B	Primidone-d5	106	P	30 - 160
EPA 8321B	Primidone-d5	106	P	30 - 160
EPA 8321B	Sucralose-d6	83.6	P	40 - 160
EPA 8321B	Sucralose-d6	83.6	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
 Run ID: A83486
 Included Lab Sample IDs: 1988157

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

Reference Method: EPA 8321B
 Run ID: A83560
 Included Lab Sample IDs: 1988163

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	86.1	97.0	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A83568

Included Lab Sample IDs: 1988158

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A83572

Included Lab Sample IDs: 1988159

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	97.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A83611

Included Lab Sample IDs: 1988158

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.9	95.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A83630

Included Lab Sample IDs: 1988158

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

Reference Method: SM 5310 B-00

Run ID: A83673

Included Lab Sample IDs: 1988158

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A83701

Included Lab Sample IDs: 1988158

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

Reference Method: SM 2320 B-97

Run ID: A83721

Included Lab Sample IDs: 1988157

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.3	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A83721

Included Lab Sample IDs: 1988157

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.1	97.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
 Run ID: A83753
 Included Lab Sample IDs: 1988163

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	114	109	P/P	50 - 150
Bentazon	136	138	P/P	50 - 150
MCPP	99.9	99.0	P/P	50 - 150
Triclopyr	113	109	P/P	50 - 160

Reference Method: EPA 8321B
 Run ID: A83769
 Included Lab Sample IDs: 1988163

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	107	109	P/P	60 - 150
Carbamazepine	108	107	P/P	60 - 150
Diuron	115	115	P/P	60 - 150
Fenuron	114	114	P/P	60 - 150
Fluridone	105	107	P/P	60 - 160
Hydrocodone	117	116	P/P	60 - 150
Imazapyr	112	112	P/P	50 - 150
Imidacloprid	108	107	P/P	60 - 150
Linuron	110	120	P/P	60 - 150
Primidone	110	96.7	P/P	60 - 150
Pyraclostrobin	113	113	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				4.08	
EPA 350.1 Rev. 2.0	Ammonia-N	99.5	102 101			0.168
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	101 101			0.0443
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	99.4 99.9			0.487
EPA 365.1 Rev. 2.0	Total-P	104	95.7 96.8			1.08
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.0	95.0 97.1			2.19
EPA 8321B	2,4-D	109	99.8 89.8			10.6
	Acetaminophen	93.3	126 115			8.88
	Bentazon	135	68.4 62.8			6.96
	Carbamazepine	103	118 109			7.79
	Diuron	91.0	96.8 88.3			9.17
	Fenuron	110	114 104			9.62
	Fluridone	91.5	94.9 88.0			7.59
	Hydrocodone	116	149 134			10.9
	Imazapyr	107	133 117			13.4
	Imidacloprid	110	229 198			14.2
	Linuron	91.5	104 95.7			8.47
	MCPP	115	78.3 80.0			2.08
	Primidone	88.5	119 112			5.96

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 8321B	Pyraclostrobin	92.4	108 99.4			7.86
	Sucralose	112	85.1 72.9			15.4
	Triclopyr	122	87.0 86.4			0.626
SM 2320 B-97	Total Alkalinity	106			0.187	
SM 4500 F-C-97	Fluoride	94.5	94.9 96.8			1.46
SM 5310 B-00	Organic Carbon	102	101 99.5			1.03

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1988157
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1988158
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1988158
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1988158
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1988158
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1988159
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	1988163
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1988157
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1988157
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1988157
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1988158

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	04/26/2018			04/26/2018 17:23	William L. Brown IV	1988157
EPA 350.1 Rev. 2.0	04/26/2018			05/03/2018 14:18	Ping Hua	1988158
EPA 351.2 Rev. 2.0	04/26/2018	05/01/2018 15:30	Adrian Shelby	05/02/2018 12:57	Joseph Suarez	1988158
EPA 353.2 Rev. 2.0	04/26/2018			05/01/2018 11:24	Lauren Bottorf	1988158
EPA 365.1 Rev. 2.0	04/26/2018	05/01/2018 14:01	Sima Feizi	05/03/2018 12:43	Beverly Y. Sanders	1988158
EPA 365.1 Rev. 2.0 dissolved	04/26/2018			04/27/2018 16:45	Megan Treadwell	1988159
EPA 8321B	04/26/2018	04/27/2018 12:34	Juyoung Kim	04/28/2018 04:15	Juyoung Kim	1988163
	04/26/2018	04/30/2018 10:00	Hoor Shaik	05/05/2018 09:20	Juyoung Kim	1988163
	04/26/2018	04/30/2018 10:00	Hoor Shaik	05/06/2018 08:33	Juyoung Kim	1988163
SM 2320 B-97	04/26/2018			05/08/2018 01:29	Dale L. Simmons	1988157
SM 2540 D-97	04/26/2018			04/30/2018 14:05	William L. Brown IV	1988157
SM 4500 F-C-97	04/26/2018			05/07/2018 23:29	Dale L. Simmons	1988157
SM 5310 B-00	04/26/2018			05/04/2018 03:50	Megan Treadwell	1988158