

Chemical Analysis Report

TLH-ROC-2017-11-21-02

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

Event Description: **SMP 2017 kit A-b/t/m PCR-FILTER & PCR-HF183**
Request ID: **RQ-2017-10-30-55**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
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Tallahassee, FL 32399
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 18-DEC-2017 16:29



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: BIG CREEK @ CR 2224

Collection Date/Time: 11/21/2017 12:00

Field ID: G1TLHR0057-2017-08

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1948207	EPA 180.1 Rev. 2.0	Turbidity	3.0	A	NTU	P335797	
	EPA 300.0 Rev. 2.1	Chloride	1.9		mg Cl/L	P336264	
	SM 2120 B	Color (true)	130		PCU	P335816	
	SM 2320 B-97	Total Alkalinity	0.73	I	mg CaCO3/L	P336242	
	SM 2540 C-97	TDS	23	I	mg/L	P336347	
	SM 2540 D-97	TSS	3	I	mg/L	P336297	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P336246	
1948211	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P336339	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21		mg N/L	P336181	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.41		mg N/L	P336318	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P336202	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P336197	
1948215	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P335747	
1948231	EPA 8321B	Sucralose**	0.010	U	ug/L	P335915	
	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P335693	MS
		Diuron	8.0E-04	U	ug/L	P335693	
		Fenuron	0.0080	U	ug/L	P335693	
		Imidacloprid	0.035		ug/L	P335693	MS
		Bentazon	8.0E-04	U	ug/L	P335693	
		Linuron	0.0040	U	ug/L	P335693	
		Acetaminophen**	0.0080	U	ug/L	P335693	
		MCP	0.0020	U	ug/L	P335693	MS
		Carbamazepine**	4.0E-04	U	ug/L	P335693	
		Triclopyr**	0.0040	U	ug/L	P335693	MS
		Primidone**	0.0040	U	ug/L	P335693	
		Fluridone**	4.0E-04	U	ug/L	P335693	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 11/22/2017

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

Sample Location: BLANK QA/QC FIELD BLANK

Collection Date/Time: 11/21/2017 12:10

Field ID: QA/QC FIELD BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1948208	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P335797	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P336264	
	SM 2120 B	Color (true)	2.5	U	PCU	P335816	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P336242	
	SM 2540 C-97	TDS	15	U	mg/L	P336345	
	SM 2540 D-97	TSS	2	U	mg/L	P336295	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P336246	
1948212	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P336339	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P336181	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P336318	

Field ID: QA/QC FIELD BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1948212	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P336529	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P336197	
1948216	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P335747	
1948232	EPA 8321B	Sucralose**	0.010	U	ug/L	P335915	
	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P335693	MS
		Diuron	8.0E-04	U	ug/L	P335693	
		Fenuron	0.0080	U	ug/L	P335693	
		Imidacloprid	8.0E-04	U	ug/L	P335693	MS
		Bentazon	8.0E-04	U	ug/L	P335693	
		Linuron	0.0040	U	ug/L	P335693	
		Acetaminophen**	0.0080	U	ug/L	P335693	
		MCP	0.0020	U	ug/L	P335693	MS
		Carbamazepine**	4.0E-04	U	ug/L	P335693	
		Triclopyr**	0.0040	U	ug/L	P335693	MS
		Primidone**	0.0040	U	ug/L	P335693	
		Fluridone**	4.0E-04	U	ug/L	P335693	

Ref. Method and Comment:

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

Sample Location: BIG CREEK @ CR 2224-DUP

Collection Date/Time: 11/21/2017 12:00

Field ID: G1TLHR0057-2017-08-DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1948209	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P335797	
	EPA 300.0 Rev. 2.1	Chloride	1.9		mg Cl/L	P336264	
	SM 2120 B	Color (true)	130		PCU	P335816	
	SM 2320 B-97	Total Alkalinity	0.80	I	mg CaCO3/L	P336242	
	SM 2540 C-97	TDS	21	I	mg/L	P336347	
	SM 2540 D-97	TSS	2	I	mg/L	P336297	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P336246	
1948213	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P336339	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.24		mg N/L	P336181	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.41		mg N/L	P336318	
	EPA 365.1 Rev. 2.0	Total-P	0.01		mg P/L	P336202	
	SM 5310 B-00	Organic Carbon	5.8		mg C/L	P336196	
1948217	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P335747	
1948233	EPA 8321B	Sucralose**	0.010	U	ug/L	P335915	
	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P335693	MS
		Diuron	8.0E-04	U	ug/L	P335693	
		Fenuron	0.0080	U	ug/L	P335693	
		Imidacloprid	0.038		ug/L	P335693	MS
		Bentazon	8.0E-04	U	ug/L	P335693	
		Linuron	0.0040	U	ug/L	P335693	
		Acetaminophen**	0.0080	U	ug/L	P335693	
		MCP	0.0020	U	ug/L	P335693	MS

Field ID: G1TLHR0057-2017-08-DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1948233	USGS O-2060-01	Carbamazepine**	4.0E-04	U	ug/L	P335693	
		Triclopyr**	0.0040	U	ug/L	P335693	MS
		Primidone**	0.0040	U	ug/L	P335693	
		Fluridone**	4.0E-04	U	ug/L	P335693	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 11/22/2017

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

Sample Location: BEAR CREEK @ SR 267

Collection Date/Time: 11/21/2017 13:30

Field ID: G1TLHR0052-2017-09

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1948210	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P335797	
	EPA 300.0 Rev. 2.1	Chloride	3.0		mg Cl/L	P336264	
	SM 2120 B	Color (true)	39	A	PCU	P335816	
	SM 2320 B-97	Total Alkalinity	2.8		mg CaCO3/L	P336242	
	SM 2540 C-97	TDS	16	I	mg/L	P336347	
	SM 2540 D-97	TSS	2	I	mg/L	P336297	
	SM 4500 F-C-97	Fluoride	0.046	I	mg F/L	P336246	
1948214	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P336339	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21		mg N/L	P336181	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.050		mg N/L	P336318	
	EPA 365.1 Rev. 2.0	Total-P	0.055		mg P/L	P336202	
	SM 5310 B-00	Organic Carbon	2.8		mg C/L	P336196	
1948218	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.042		mg P/L	P335747	
1948234	EPA 8321B	Sucralose**	0.034	I	ug/L	P335915	
	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P335693	MS
		Diuron	8.0E-04	U	ug/L	P335693	
		Fenuron	0.0080	U	ug/L	P335693	
		Imidacloprid	8.0E-04	U	ug/L	P335693	MS
		Bentazon	8.0E-04	U	ug/L	P335693	
		Linuron	0.0040	U	ug/L	P335693	
		Acetaminophen**	0.0080	U	ug/L	P335693	
		MCP	0.0020	U	ug/L	P335693	MS
		Carbamazepine**	4.0E-04	U	ug/L	P335693	
		Triclopyr**	0.0040	U	ug/L	P335693	MS
		Primidone**	0.0040	U	ug/L	P335693	
		Fluridone**	4.0E-04	U	ug/L	P335693	

Ref. Method and Comment:

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

Quality Assurance Report

Method Blank Results

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P335797

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336264

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336339

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336181

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336318

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336202

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336529

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335747

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

Reference Method: EPA 8321B
Batch ID: P335915

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2120 B
Batch ID: P335816

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P336242

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P336345

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P336347

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P336295

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P336297

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P336246

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P336196

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

Reference Method: SM 5310 B-00
Batch ID: P336197

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

Quality Assurance Report Method Blank Results

Reference Method: USGS O-2060-01
Batch ID: P335693

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	8.0E-04	U	ug/L
Fenuron	0.0080	U	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	8.0E-04	U	ug/L
Linuron	0.0040	U	ug/L
MCPP	0.0020	U	ug/L
Primidone	0.0040	U	ug/L
Triclopyr	0.0040	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336264

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	94.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336339

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336181

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336318

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336202

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336529

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P335747

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.5		P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P335915

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	123		P	40 - 150

Reference Method: SM 2320 B-97
 Batch ID: P336242

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
 Batch ID: P336246

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.5		P	92 - 103

Reference Method: SM 5310 B-00
 Batch ID: P336196

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.8		P	85 - 115

Reference Method: SM 5310 B-00
 Batch ID: P336197

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

Reference Method: USGS O-2060-01
 Batch ID: P335693

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	59.2		P	40 - 150
Acetaminophen	105		P	30 - 150
Bentazon	35.8		P	30 - 150
Carbamazepine	100		P	40 - 150
Diuron	114		P	40 - 150
Fenuron	103		P	40 - 150
Fluridone	101		P	40 - 150
Imidacloprid	90.7		P	40 - 160
Linuron	102		P	40 - 150
MCPP	48.5		P	40 - 150
Primidone	88.9		P	40 - 150
Triclopyr	48.9		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336264

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948210	Chloride	95.0		P	90 - 110
1948248	Chloride	94.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336339

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948211	Ammonia-N	105	109	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336181

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948213	Kjeldahl Nitrogen	105	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336318

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948164	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336202

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948176	Total-P	107	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336529

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949724	Total-P	97.6	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335747

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948026	O-Phosphate-P	96.7	94.6	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P335915

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948302	Sucralose	120	133	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P336246

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948163	Fluoride	98.3	101	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
 Batch ID: P336196

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948250	Organic Carbon	99.8	99.8	P/P	85 - 115

Reference Method: SM 5310 B-00
 Batch ID: P336197

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947934	Organic Carbon	96.7	98.0	P/P	85 - 115

Reference Method: USGS O-2060-01
 Batch ID: P335693

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947629	2,4-D	24.7	29.6	F/F	40 - 150
1947629	Acetaminophen	99.0	107	P/P	30 - 150
1947629	Bentazon	34.8	35.8	P/P	30 - 150
1947629	Carbamazepine	71.7	72.7	P/P	40 - 150
1947629	Diuron	75.2	76.1	P/P	40 - 150
1947629	Fenuron	72.1	69.1	P/P	40 - 150
1947629	Fluridone	87.6	89.9	P/P	40 - 150
1947629	Imidacloprid	178	182	F/F	40 - 160
1947629	Linuron	89.7	89.4	P/P	40 - 150
1947629	MCP	22.2	22.5	F/F	40 - 150
1947629	Primidone	80.4	82.4	P/P	40 - 150
1947629	Triclopyr	23.3	22.3	F/F	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P335797

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948207	Turbidity	2.37	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P336264

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948248	Chloride	0.378	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P336339

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948211	Ammonia-N	3.67	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336181

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948213	Kjeldahl Nitrogen	0.486	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336318

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948164	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336202

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948176	Total-P	4.55	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336529

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949724	Total-P	2.42	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335747

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948026	O-Phosphate-P	2.20	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P335915

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948302	Sucralose	10.0	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P335816

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948210	Color (true)	2.65	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P336242

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948163	Total Alkalinity	0.0237	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P336345

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947831	TDS	3.96	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P336347

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948173	TDS	1.87	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P336246

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948163	Fluoride	1.42	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P336196

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948250	Organic Carbon	0.0467	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P336197

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947934	Organic Carbon	0.944	Spike	P	0 - 20

Reference Method: USGS O-2060-01
Batch ID: P335693

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947629	2,4-D	18.1	Spike	P	0 - 30
1947629	Acetaminophen	7.80	Spike	P	0 - 30
1947629	Bentazon	2.79	Spike	P	0 - 30
1947629	Carbamazepine	1.45	Spike	P	0 - 30
1947629	Diuron	1.20	Spike	P	0 - 30
1947629	Fenuron	4.24	Spike	P	0 - 30
1947629	Fluridone	2.62	Spike	P	0 - 30
1947629	Imidacloprid	1.82	Spike	P	0 - 30
1947629	Linuron	0.279	Spike	P	0 - 30
1947629	MCP	1.61	Spike	P	0 - 30
1947629	Primidone	2.47	Spike	P	0 - 30
1947629	Triclopyr	4.52	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: 1948231

Field Sample ID: G1TLHR0057-2017-08

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	83.6	P	30 - 160
EPA 8321B	Carbamazepine-d10	99.7	P	30 - 160
EPA 8321B	Diuron-d6	82.4	P	30 - 160
EPA 8321B	Primidone-d5	85.0	P	30 - 160
EPA 8321B	Sucralose-d6	123	P	40 - 160
USGS O-2060-01	2,4-D-d3	33.2	P	30 - 160
USGS O-2060-01	Acetaminophen-d4	83.6	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	99.7	P	30 - 160
USGS O-2060-01	Diuron-d6	82.4	P	30 - 160
USGS O-2060-01	Primidone-d5	85.0	P	30 - 160
USGS O-2060-01	Sucralose-d6	123	P	40 - 160

Lab Sample ID: 1948232

Field Sample ID: QA/QC FIELD BLANK

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	99.4	P	30 - 160
EPA 8321B	Carbamazepine-d10	108	P	30 - 160
EPA 8321B	Diuron-d6	94.5	P	30 - 160
EPA 8321B	Primidone-d5	94.6	P	30 - 160
EPA 8321B	Sucralose-d6	128	P	40 - 160
USGS O-2060-01	2,4-D-d3	47.5	P	30 - 160
USGS O-2060-01	Acetaminophen-d4	99.4	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	108	P	30 - 160
USGS O-2060-01	Diuron-d6	94.5	P	30 - 160
USGS O-2060-01	Primidone-d5	94.6	P	30 - 160
USGS O-2060-01	Sucralose-d6	128	P	40 - 160

Lab Sample ID: 1948233

Field Sample ID: G1TLHR0057-2017-08-DUP

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	88.0	P	30 - 160
EPA 8321B	Carbamazepine-d10	107	P	30 - 160
EPA 8321B	Diuron-d6	87.8	P	30 - 160
EPA 8321B	Primidone-d5	90.8	P	30 - 160
EPA 8321B	Sucralose-d6	125	P	40 - 160
USGS O-2060-01	2,4-D-d3	35.8	P	30 - 160
USGS O-2060-01	Acetaminophen-d4	88.0	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	107	P	30 - 160
USGS O-2060-01	Diuron-d6	87.8	P	30 - 160
USGS O-2060-01	Primidone-d5	90.8	P	30 - 160
USGS O-2060-01	Sucralose-d6	125	P	40 - 160

Lab Sample ID: 1948234

Field Sample ID: G1TLHR0052-2017-09

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	103	P	30 - 160
EPA 8321B	Carbamazepine-d10	119	P	30 - 160
EPA 8321B	Diuron-d6	98.6	P	30 - 160
EPA 8321B	Primidone-d5	111	P	30 - 160

Quality Assurance Report Surrogates

Lab Sample ID: 1948234

Field Sample ID: G1TLHR0052-2017-09

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	121	P	40 - 160
USGS O-2060-01	2,4-D-d3	35.5	P	30 - 160
USGS O-2060-01	Acetaminophen-d4	103	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	119	P	30 - 160
USGS O-2060-01	Diuron-d6	98.6	P	30 - 160
USGS O-2060-01	Primidone-d5	111	P	30 - 160
USGS O-2060-01	Sucralose-d6	121	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A80443

Included Lab Sample IDs: 1948215, 1948216, 1948217, 1948218

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.9	96.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A80463

Included Lab Sample IDs: 1948207, 1948208, 1948209, 1948210

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.5	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A80477

Included Lab Sample IDs: 1948207, 1948208, 1948209, 1948210

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.8	99.9	P/P	85 - 115

Reference Method: USGS O-2060-01

Run ID: A80505

Included Lab Sample IDs: 1948231, 1948232, 1948233, 1948234

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	83.6	93.9	P/P	50 - 150
Acetaminophen	111	114	P/P	60 - 150
Bentazon	88.8	89.9	P/P	50 - 150
Carbamazepine	106	105	P/P	60 - 150
Diuron	116	114	P/P	60 - 150
Fenuron	109	107	P/P	60 - 150
Fluridone	113	113	P/P	60 - 160
Imidacloprid	99.0	106	P/P	60 - 150
Linuron	112	108	P/P	60 - 150
MCPP	90.4	89.7	P/P	50 - 150
Primidone	107	96.4	P/P	60 - 150
Triclopyr	92.4	88.2	P/P	50 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A80568

Included Lab Sample IDs: 1948231, 1948232, 1948233, 1948234

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	111	132	P/P	60 - 150

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A80632

Included Lab Sample IDs: 1948207, 1948208, 1948209, 1948210

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

Reference Method: SM 5310 B-00

Run ID: A80633

Included Lab Sample IDs: 1948211, 1948212, 1948213, 1948214

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	100	P/P	90 - 110
Organic Carbon	99.7	100	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A80654

Included Lab Sample IDs: 1948207, 1948208, 1948209, 1948210

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.6	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A80654

Included Lab Sample IDs: 1948207, 1948208, 1948209, 1948210

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A80667

Included Lab Sample IDs: 1948214

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A80677

Included Lab Sample IDs: 1948211, 1948213

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A80683

Included Lab Sample IDs: 1948211, 1948212, 1948213, 1948214

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A80683

Included Lab Sample IDs: 1948211, 1948212, 1948213, 1948214

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A80695

Included Lab Sample IDs: 1948211, 1948212, 1948213, 1948214

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	104	98.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A80699

Included Lab Sample IDs: 1948211, 1948212, 1948213, 1948214

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.6	99.7	P/P	90 - 110
Kjeldahl Nitrogen	99.7	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A80809

Included Lab Sample IDs: 1948212

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	103	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					2.37	
EPA 300.0 Rev. 2.1	Chloride	94.9	94.6	95.0		0.378	
EPA 350.1 Rev. 2.0	Ammonia-N	103	105	109			3.67
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.8	105	105			0.486
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104	104			0.0
EPA 365.1 Rev. 2.0	Total-P	101	107	101			4.55
	Total-P	104	97.6	100			2.42
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.5	96.7	94.6			2.20
EPA 8321B	Sucralose	123	120	133			10.0
SM 2120 B	Color (true)					2.65	
SM 2320 B-97	Total Alkalinity	102				0.0237	
SM 2540 C-97	TDS					3.96	
	TDS					1.87	
SM 4500 F-C-97	Fluoride	99.5	98.3	101			1.42
SM 5310 B-00	Organic Carbon	99.8	99.8	99.8			0.0467
	Organic Carbon	101	96.7	98.0			0.944
USGS O-2060-01	2,4-D	59.2	24.7	29.6			18.1

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision LCS	SMP	MS
USGS O-2060-01	Acetaminophen	105	99.0	107			7.80
	Bentazon	35.8	34.8	35.8			2.79
	Carbamazepine	100	71.7	72.7			1.45
	Diuron	114	75.2	76.1			1.20
	Fenuron	103	72.1	69.1			4.24
	Fluridone	101	87.6	89.9			2.62
	Imidacloprid	90.7	178	182			1.82
	Linuron	102	89.7	89.4			0.279
	MCP	48.5	22.2	22.5			1.61
	Primidone	88.9	80.4	82.4			2.47
	Triclopyr	48.9	23.3	22.3			4.52

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1948207, 1948208, 1948209, 1948210
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1948207, 1948208, 1948209, 1948210
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1948211, 1948212, 1948213, 1948214
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1948211, 1948212, 1948213, 1948214
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1948211, 1948212, 1948213, 1948214
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1948211, 1948212, 1948213, 1948214
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1948215, 1948216, 1948217, 1948218
EPA 8321B / E31780	Analysis of sucralose in water matrices by HPLC/MS/MS	1948231, 1948232, 1948233, 1948234
SM 2120 B / E31780	True Color measured at 450 nm	1948207, 1948208, 1948209, 1948210
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1948207, 1948208, 1948209, 1948210
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1948207, 1948208, 1948209, 1948210
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1948207, 1948208, 1948209, 1948210
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1948207, 1948208, 1948209, 1948210
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1948211, 1948212, 1948213, 1948214
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1948231, 1948232, 1948233, 1948234
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1948231, 1948232, 1948233, 1948234

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	11/21/2017			11/21/2017 16:18	DeAsia Armster	1948207, 1948208, 1948209, 1948210
EPA 300.0 Rev. 2.1	11/21/2017			12/01/2017	Julia Storbeck	1948207, 1948208, 1948209, 1948210
EPA 350.1 Rev. 2.0	11/21/2017			12/04/2017	Sofia Elnemr	1948211, 1948212, 1948213, 1948214
EPA 351.2 Rev. 2.0	11/21/2017	12/01/2017	Adrian Shelby	12/04/2017	Joseph Suarez	1948211, 1948212, 1948213, 1948214
EPA 353.2 Rev. 2.0	11/21/2017			12/04/2017	Lauren Bottorf	1948211, 1948212, 1948213, 1948214
EPA 365.1 Rev. 2.0	11/21/2017	12/01/2017	Sima Feizi	12/04/2017	Lipi Saha	1948211, 1948213, 1948214
	11/21/2017	12/06/2017	Sima Feizi	12/11/2017	Beverly Y. Sanders	1948212
EPA 365.1 Rev. 2.0 dissolved	11/21/2017			11/21/2017 15:28	Megan Treadwell	1948215
	11/21/2017			11/21/2017 15:29	Megan Treadwell	1948216
	11/21/2017			11/21/2017 15:30	Megan Treadwell	1948217, 1948218
EPA 8321B	11/21/2017	11/29/2017	Juyoung Kim	11/30/2017	Juyoung Kim	1948231, 1948232, 1948233, 1948234
SM 2120 B	11/21/2017			11/22/2017 15:40	Tanya Welborn	1948207, 1948208
	11/21/2017			11/22/2017 15:41	Tanya Welborn	1948209
	11/21/2017			11/22/2017 15:43	Tanya Welborn	1948210
SM 2320 B-97	11/21/2017			12/02/2017	Dale L. Simmons	1948207, 1948208, 1948209, 1948210
SM 2540 C-97	11/21/2017			11/25/2017	Yijie Li	1948207, 1948208, 1948209, 1948210
SM 2540 D-97	11/21/2017			11/25/2017	Yijie Li	1948207, 1948208, 1948209, 1948210
SM 4500 F-C-97	11/21/2017			12/02/2017	Dale L. Simmons	1948207, 1948208, 1948209, 1948210
SM 5310 B-00	11/21/2017			11/30/2017	Ping Hua	1948211, 1948212, 1948213, 1948214
USGS O-2060-01	11/21/2017	11/22/2017	Hoor Shaik	11/24/2017	Julie Michelle Frank	1948231, 1948232, 1948233, 1948234