

Chemical Analysis Report

SE-DIST-2018-08-03-01

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

Event Description: **SMP- Blank**
Request ID: **RQ-2018-06-11-23**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Matthew Sewell

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: Colin Wright, Program Administrator

Date Certified: 27-AUG-2018 17:15

A handwritten signature in black ink, appearing to read "Colin Wright", is shown on a light-colored background.

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: West Branch North Fork Lot @ SD Park

Collection Date/Time: 08/02/2018 11:10

Field ID: Blank_02082018

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2013645	EPA 180.1 Rev. 2.0	Turbidity	0.10	I	NTU	P349643	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P349838	
		Sulfate	0.20	U	mg SO4/L	P349839	
	SM 2120 B	Color (true)	2.5	U	PCU	P349635	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P350017	
	SM 2540 C-97	TDS	15	U	mg/L	P350057	
	SM 2540 D-97	TSS	2	U	mg/L	P349955	
	SM 4500 F-C-97	Fluoride	0.059	I	mg F/L	P350020	
2013646	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P349878	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P349719	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P349680	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P349760	
	SM 5310 B-00	Organic Carbon	0.86	I	mg C/L	P349851	
2013647	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P349693	
2013648	EPA 8321B	2,4-D	0.0020	U	ug/L	P349630	
		Sucralose**	0.010	U	ug/L	P349704	
		Bentazon	8.0E-04	U	ug/L	P349630	
		MCP	0.0020	U	ug/L	P349630	
		Triclopyr**	0.0040	U	ug/L	P349630	
		Imidacloprid	0.0020	U	ug/L	P349630	
		Diuron	0.0020	U	ug/L	P349630	
		Pyraclostrobin**	0.0020	U	ug/L	P349630	
		Primidone**	0.0040	U	ug/L	P349630	
		Linuron	0.0040	U	ug/L	P349630	
		Acetaminophen**	0.0080	U	ug/L	P349630	
		Fenuron	0.016	U	ug/L	P349630	
		Imazapyr**	0.0040	U	ug/L	P349630	
		Carbamazepine**	8.0E-04	U	ug/L	P349630	
		Fluridone**	4.0E-04	U	ug/L	P349630	
		Hydrocodone**	8.0E-04	U	ug/L	P349630	
		Glyphosate**	0.10	U	ug/L	P349704	
		AMPA**	0.10	U	ug/L	P349704	
		Endothal**	0.10	U	ug/L	P349704	RPD
		Glufosinate**	0.10	U	ug/L	P349704	
2013650	EPA 200.7 Rev. 4.4	Acesulfame K**	0.10	U	ug/L	P349704	
		Calcium	0.075	U	mg/L	P349729	
		Iron	30	U	ug/L	P349729	
		Magnesium	0.040	U	mg/L	P349729	
		Potassium	0.30	U	mg/L	P349729	
		Sodium	0.50	U	mg/L	P349729	
		Zinc	5.0	U	ug/L	P349729	
	EPA 200.8 Rev. 5.4	Arsenic	0.050	U	ug/L	P349729	
		Cadmium	0.020	U	ug/L	P349729	

Field ID: Blank_02082018

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2013650	EPA 200.8 Rev. 5.4	Chromium	0.40	U	ug/L	P349729	
		Copper	0.20	U	ug/L	P349729	
		Lead	0.050	U	ug/L	P349729	
		Nickel	0.20	U	ug/L	P349729	
		Silver	0.010	U	ug/L	P349729	

Ref. Method and Comment:
EPA 180.1 Rev. 2.0: The result was confirmed on 08/03/2018.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 4500 F-C-97: The result was confirmed on 08/14/2018.
SM 5310 B-00: The result was confirmed on 08/09/2018.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P349643

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P349729

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349729

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 300.0 Rev. 2.1
Batch ID: P349838

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349839

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349878

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349719

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349680

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349760

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349693

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

Reference Method: EPA 8321B
Batch ID: P349630

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
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: EPA 8321B
Batch ID: P349704

Component	Result	Code	Units
Acesulfame K	0.10	U	ug/L
AMPA	0.10	U	ug/L
Endothall	0.10	U	ug/L
Glufosinate	0.10	U	ug/L
Glyphosate	0.10	U	ug/L
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P349635

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P350017

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

Reference Method: SM 2540 C-97
Batch ID: P350057

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P349955

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P350020

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P349851

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: P349729

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	105		P	85 - 115
Iron	102		P	85 - 115
Magnesium	105		P	85 - 115
Potassium	100		P	85 - 115
Sodium	100		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349729

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	102		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	92.3		P	85 - 115
Copper	98.9		P	85 - 115
Lead	98.2		P	85 - 115
Nickel	101		P	85 - 115
Silver	96.7		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349838

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349839

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349878

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349719

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349680

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349760

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349693

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

Reference Method: EPA 8321B
Batch ID: P349630

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	103		P	40 - 150
Acetaminophen	91.7		P	30 - 150
Bentazon	66.8		P	30 - 150
Carbamazepine	80.0		P	40 - 150
Diuron	74.5		P	40 - 150
Fenuron	96.3		P	40 - 150
Fluridone	77.1		P	40 - 150
Hydrocodone	87.1		P	40 - 150
Imazapyr	90.6		P	40 - 150
Imidacloprid	109		P	40 - 160
Linuron	60.8		P	40 - 150
MCPP	90.9		P	40 - 150
Primidone	97.8		P	40 - 150
Pyraclostrobin	73.7		P	40 - 150
Triclopyr	89.1		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P349704

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	83.4		P	40 - 140
AMPA	101		P	40 - 140
Endothall	78.4		P	40 - 140
Glufosinate	128		P	40 - 140
Glyphosate	109		P	40 - 140
Sucralose	93.4		P	40 - 150

Reference Method: SM 2120 B
Batch ID: P349635

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.8		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P350017

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P350020

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.8		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P349851

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.3		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P349729

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2013686	Calcium	103		P	80 - 120
2013686	Iron	105	104	P/P	80 - 120
2013686	Magnesium	107	106	P/P	80 - 120
2013686	Potassium	103	102	P/P	80 - 120
2013686	Sodium	101		P	80 - 120
2013686	Zinc	104	103	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349729

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2013686	Arsenic	104	102	P/P	80 - 120
2013686	Cadmium	104	104	P/P	80 - 120
2013686	Chromium	96.3	96.2	P/P	80 - 120
2013686	Copper	96.1	95.5	P/P	80 - 120
2013686	Lead	103	105	P/P	80 - 120
2013686	Nickel	98.4	98.1	P/P	80 - 120
2013686	Silver	94.7	94.3	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349838

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2014141	Chloride	93.9		P	90 - 110
2014209	Chloride	105		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349839

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2014141	Sulfate	94.1		P	90 - 110
2014209	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349878

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2013662	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349719

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2013575	Kjeldahl Nitrogen	109	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2013625	NO2NO3-N	102		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P349760

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2013595	Total-P	100	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P349693

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2013578	O-Phosphate-P	90.6	93.4	P/P	90 - 110

Reference Method: EPA 8321B

Batch ID: P349630

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2014187	2,4-D	114	133	P/P	40 - 150
2014187	Acetaminophen	86.5	91.5	P/P	30 - 150
2014187	Bentazon	51.1	49.5	P/P	30 - 150
2014187	Carbamazepine	61.8	66.1	P/P	40 - 150
2014187	Diuron	54.3	56.3	P/P	40 - 150
2014187	Fenuron	72.8	72.7	P/P	40 - 150
2014187	Fluridone	67.8	72.4	P/P	40 - 150
2014187	Hydrocodone	75.6	74.0	P/P	40 - 150
2014187	Imazapyr	90.3	93.7	P/P	40 - 150
2014187	Imidacloprid	138	145	P/P	40 - 160
2014187	Linuron	55.3	58.4	P/P	40 - 150
2014187	MCP	112	130	P/P	40 - 150
2014187	Primidone	88.1	89.6	P/P	40 - 150
2014187	Pyraclostrobin	65.7	71.4	P/P	40 - 150
2014187	Triclopyr	141	144	P/P	40 - 150

Reference Method: EPA 8321B

Batch ID: P349704

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2014188	Acesulfame K	106	111	P/P	40 - 140
2014188	AMPA	93.3	89.0	P/P	40 - 140
2014188	Endothall	139	99.5	P/P	40 - 140
2014188	Glufosinate	130	131	P/P	40 - 140
2014188	Glyphosate	114	117	P/P	40 - 140
2014188	Sucralose	103	99.3	P/P	40 - 150

Reference Method: SM 4500 F-C-97

Batch ID: P350020

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012921	Fluoride	97.8	97.8	P/P	91 - 105

Reference Method: SM 5310 B-00

Batch ID: P349851

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2013574	Organic Carbon	93.6	93.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P349643

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2013529	Turbidity	1.12	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P349729

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2013686	Calcium	0.339	Spike	P	0 - 20
2013686	Iron	0.762	Spike	P	0 - 20
2013686	Magnesium	0.605	Spike	P	0 - 20
2013686	Potassium	0.533	Spike	P	0 - 20
2013686	Sodium	0.413	Spike	P	0 - 20
2013686	Zinc	0.600	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349729

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2013686	Arsenic	1.51	Spike	P	0 - 20
2013686	Cadmium	0.468	Spike	P	0 - 20
2013686	Chromium	0.0849	Spike	P	0 - 20
2013686	Copper	0.477	Spike	P	0 - 20
2013686	Lead	2.09	Spike	P	0 - 20
2013686	Nickel	0.296	Spike	P	0 - 20
2013686	Silver	0.402	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349838

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2014141	Chloride	3.51	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349839

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2014141	Sulfate	3.23	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349878

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2013662	Ammonia-N	0.815	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349719

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2013575	Kjeldahl Nitrogen	1.49	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2013625	NO2NO3-N	0.234	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349760

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2013595	Total-P	0.588	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349693

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2013578	O-Phosphate-P	3.04	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P349630

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2014187	2,4-D	15.2	Spike	P	0 - 30
2014187	Acetaminophen	5.64	Spike	P	0 - 30
2014187	Bentazon	3.09	Spike	P	0 - 30
2014187	Carbamazepine	6.67	Spike	P	0 - 30
2014187	Diuron	3.55	Spike	P	0 - 30
2014187	Fenuron	0.173	Spike	P	0 - 30
2014187	Fluridone	6.58	Spike	P	0 - 30
2014187	Hydrocodone	2.18	Spike	P	0 - 30
2014187	Imazapyr	3.70	Spike	P	0 - 30
2014187	Imidacloprid	5.38	Spike	P	0 - 30
2014187	Linuron	5.47	Spike	P	0 - 30
2014187	MCP	14.3	Spike	P	0 - 30
2014187	Primidone	1.73	Spike	P	0 - 30
2014187	Pyraclostrobin	8.43	Spike	P	0 - 30
2014187	Triclopyr	2.08	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P349704

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2014188	Acesulfame K	4.35	Spike	P	0 - 30
2014188	AMPA	4.65	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P349704

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2014188	Endothall	33.3	Spike	F	0 - 30
2014188	Glufosinate	0.810	Spike	P	0 - 30
2014188	Glyphosate	2.73	Spike	P	0 - 30
2014188	Sucralose	3.49	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P349635

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2013556	Color (true)	1.92	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P350017

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012921	Total Alkalinity	0.485	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P350057

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012875	TDS	3.42	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P350020

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012921	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P349851

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2013574	Organic Carbon	0.198	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: 2013648

Field Sample ID: Blank_02082018

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	61.9	P	30 - 160
EPA 8321B	Acetaminophen-d4	107	P	30 - 160
EPA 8321B	Carbamazepine-d10	88.5	P	30 - 160
EPA 8321B	Diuron-d6	80.0	P	30 - 160
EPA 8321B	Endothall-d6	80.2	P	40 - 160
EPA 8321B	Endothall-d6	80.2	P	40 - 160
EPA 8321B	Glyphosate 13C 15N	127	P	40 - 160
EPA 8321B	Glyphosate 13C 15N	127	P	40 - 160
EPA 8321B	Primidone-d5	101	P	30 - 160
EPA 8321B	Sucralose-d6	101	P	40 - 160
EPA 8321B	Sucralose-d6	101	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A85684
Included Lab Sample IDs: 2013645

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.8	99.9	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A85690
Included Lab Sample IDs: 2013645

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: A85702
Included Lab Sample IDs: 2013646

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A85705
Included Lab Sample IDs: 2013647

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A85712
Included Lab Sample IDs: 2013645

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.6	101	P/P	90 - 110
Sulfate	96.4	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85742
Included Lab Sample IDs: 2013646

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A85746
Included Lab Sample IDs: 2013646

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A85761
Included Lab Sample IDs: 2013650

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A85761

Included Lab Sample IDs: 2013650

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	102	102	P/P	90 - 110
Magnesium	101	102	P/P	90 - 110
Potassium	99.9	100	P/P	90 - 110
Sodium	99.7	101	P/P	90 - 110
Zinc	101	105	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A85764

Included Lab Sample IDs: 2013648

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	94.2	100	P/P	60 - 150
Glufosinate	114	139	P/P	60 - 150
Glyphosate	123	123	P/P	60 - 150

Reference Method: EPA 8321B

Run ID: A85765

Included Lab Sample IDs: 2013648

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	117	88.2	P/P	60 - 150
Endothall	85.8	90.6	P/P	60 - 150

Reference Method: SM 5310 B-00

Run ID: A85775

Included Lab Sample IDs: 2013646

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	96.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A85788

Included Lab Sample IDs: 2013646

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A85796

Included Lab Sample IDs: 2013650

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	102	103	P/P	90 - 110
Cadmium	99.3	101	P/P	90 - 110
Copper	101	102	P/P	90 - 110
Lead	101	102	P/P	90 - 110
Nickel	101	102	P/P	90 - 110
Silver	92.6	92.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A85813
Included Lab Sample IDs: 2013648

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	90.9	91.6	P/P	60 - 160

Reference Method: EPA 8321B
Run ID: A85823
Included Lab Sample IDs: 2013648

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	109	123	P/P	50 - 150
Bentazon	78.5	103	P/P	50 - 160
MCP	80.0	101	P/P	50 - 150
Triclopyr	70.5	113	P/P	50 - 160

Reference Method: SM 2320 B-97
Run ID: A85838
Included Lab Sample IDs: 2013645

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A85838
Included Lab Sample IDs: 2013645

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A85844
Included Lab Sample IDs: 2013650

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	93.0	92.7	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A85967
Included Lab Sample IDs: 2013648

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	107	105	P/P	60 - 150
Carbamazepine	111	110	P/P	60 - 150
Diuron	98.0	102	P/P	60 - 150
Fenuron	107	103	P/P	60 - 150
Fluridone	98.6	101	P/P	60 - 160
Hydrocodone	100	98.8	P/P	60 - 150
Imazapyr	91.7	85.6	P/P	50 - 150
Imidacloprid	112	110	P/P	60 - 150
Linuron	98.9	94.3	P/P	60 - 150
Primidone	106	94.0	P/P	60 - 150
Pyraclostrobin	99.9	96.8	P/P	60 - 150

Quality Assurance Report

Calibration Verification

* 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					1.12	
EPA 200.7 Rev. 4.4	Calcium	105	103				0.339
	Iron	102	105	104			0.762
	Magnesium	105	107	106			0.605
	Potassium	100	103	102			0.533
	Sodium	100	101				0.413
	Zinc	104	104	103			0.600
EPA 200.8 Rev. 5.4	Arsenic	102	104	102			1.51
	Cadmium	103	104	104			0.468
	Chromium	92.3	96.3	96.2			0.0849
	Copper	98.9	96.1	95.5			0.477
	Lead	98.2	103	105			2.09
	Nickel	101	98.4	98.1			0.296
	Silver	96.7	94.7	94.3			0.402
EPA 300.0 Rev. 2.1	Chloride	97.2	93.9	105		3.51	
	Sulfate	96.3	94.1	102		3.23	
EPA 350.1 Rev. 2.0	Ammonia-N	104	102	103			0.815
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	109	106			1.49
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102				0.234
EPA 365.1 Rev. 2.0	Total-P	94.9	100	99.0			0.588
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104	90.6	93.4			3.04
EPA 8321B	2,4-D	103	114	133			15.2
	Acesulfame K	83.4	106	111			4.35
	Acetaminophen	91.7	86.5	91.5			5.64
	AMPA	101	93.3	89.0			4.65
	Bentazon	66.8	51.1	49.5			3.09
	Carbamazepine	80.0	61.8	66.1			6.67
	Diuron	74.5	54.3	56.3			3.55
	Endothall	78.4	139	99.5			33.3
	Fenuron	96.3	72.8	72.7			0.173
	Fluridone	77.1	67.8	72.4			6.58
	Glufosinate	128	130	131			0.810
	Glyphosate	109	114	117			2.73
	Hydrocodone	87.1	75.6	74.0			2.18
	Imazapyr	90.6	90.3	93.7			3.70
	Imidacloprid	109	138	145			5.38
	Linuron	60.8	55.3	58.4			5.47
	MCPP	90.9	112	130			14.3
	Primidone	97.8	88.1	89.6			1.73
	Pyraclostrobin	73.7	65.7	71.4			8.43
	Sucralose	93.4	103	99.3			3.49
	Triclopyr	89.1	141	144			2.08
SM 2120 B	Color (true)	99.8				1.92	
SM 2320 B-97	Total Alkalinity	103				0.485	
SM 2540 C-97	TDS					3.42	
SM 4500 F-C-97	Fluoride	97.8	97.8	97.8			0.0
SM 5310 B-00	Organic Carbon	96.3	93.6	93.8			0.198

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2013645

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2013650
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2013650
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2013645
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2013645
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2013646
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2013646
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2013646
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2013646
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2013647
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2013648
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	2013648
SM 2120 B / E31780	True Color measured at 450 nm	2013645
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2013645
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2013645
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2013645
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2013645
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2013646

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	08/03/2018			08/03/2018 18:30	William L. Brown IV	2013645
EPA 200.7 Rev. 4.4	08/03/2018	08/07/2018 13:45	Elliott D. Healy	08/08/2018 15:31	Betina Topolski	2013650
EPA 200.8 Rev. 5.4	08/03/2018	08/07/2018 13:45	Elliott D. Healy	08/09/2018 19:54	Allison Taylor	2013650
	08/03/2018	08/07/2018 13:45	Elliott D. Healy	08/13/2018 15:36	Allison Taylor	2013650
EPA 300.0 Rev. 2.1	08/03/2018			08/08/2018 15:47	Lipi Saha	2013645
EPA 350.1 Rev. 2.0	08/03/2018			08/09/2018 12:22	Adrian Shelby	2013646
EPA 351.2 Rev. 2.0	08/03/2018	08/07/2018 15:30	Adrian Shelby	08/08/2018 10:52	Joseph Suarez	2013646
EPA 353.2 Rev. 2.0	08/03/2018			08/06/2018 15:19	Lauren Bottorf	2013646
EPA 365.1 Rev. 2.0	08/03/2018	08/07/2018 12:35	Sima Feizi	08/08/2018 12:43	Beverly Y. Sanders	2013646
EPA 365.1 Rev. 2.0 dissolved	08/03/2018			08/03/2018 18:17	Julia Storbeck	2013647
EPA 8321B	08/03/2018	08/08/2018 09:00	Mohammad Ghaffari	08/08/2018 10:31	Mohammad Ghaffari	2013648
	08/03/2018	08/08/2018 09:00	Mohammad Ghaffari	08/08/2018 15:53	Mohammad Ghaffari	2013648
	08/03/2018	08/08/2018 09:00	Mohammad Ghaffari	08/10/2018 18:34	Mohammad Ghaffari	2013648
	08/03/2018	08/09/2018 09:00	Hoor Shaik	08/12/2018 01:53	Juyoung Kim	2013648
	08/03/2018	08/09/2018 09:00	Hoor Shaik	08/14/2018 01:31	Juyoung Kim	2013648
SM 2120 B	08/03/2018			08/03/2018 18:07	Tanya Welborn	2013645
SM 2320 B-97	08/03/2018			08/10/2018 13:34	Dale L. Simmons	2013645
SM 2540 C-97	08/03/2018			08/08/2018 15:01	Yijie Li	2013645
SM 2540 D-97	08/03/2018			08/08/2018 15:01	Yijie Li	2013645
SM 4500 F-C-97	08/03/2018			08/10/2018 13:34	Dale L. Simmons	2013645
SM 5310 B-00	08/03/2018			08/08/2018 08:43	Julia Storbeck	2013646