

Chemical Analysis Report

TLH-ROC-2019-08-15-01

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

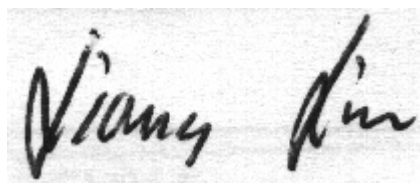
Event Description: **Run 7**
Request ID: **RQ-2019-08-19-21**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 10-SEP-2019 14:02

A handwritten signature in black ink, appearing to read "Liang Lin", 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 by the Florida Department of Health Environmental Laboratory Certification Program 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: CHIPOLA RIVER

Collection Date/Time: 08/15/2019 11:00

Field ID: G2TLHR0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2112156	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P369130	
	EPA 300.0 Rev. 2.1	Chloride	5.0	A	mg Cl/L	P369534	
		Sulfate	1.6	A	mg SO4/L	P369537	
	SM 2120 B	Color (true)	14	A	PCU	P369159	
	SM 2320 B-97	Total Alkalinity	113	A	mg CaCO3/L	P369587	
	SM 2540 C-97	TDS	127		mg/L	P369424	
	SM 2540 D-97	TSS	8	I	mg/L	P369270	
	SM 4500 F-C-97	Fluoride	0.059	I	mg F/L	P369590	
2112158	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P369695	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37		mg N/L	P369428	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.2		mg N/L	P369416	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P369311	
	SM 5310 B-00	Organic Carbon	2.6		mg C/L	P369382	
2112160	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P369187	

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: F.B-08152019

Collection Date/Time: 08/15/2019 09:00

Field ID: FIELD BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2112168	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P369212	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P369534	
		Sulfate	0.20	U	mg SO4/L	P369537	
		Color (true)	2.5	U	PCU	P369256	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P369588	
	SM 2540 C-97	TDS	15	U	mg/L	P369424	
	SM 2540 D-97	TSS	2	U	mg/L	P369270	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P369591	
2112169	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P369695	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P369430	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P369417	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P369312	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P369382	
2112170	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P369187	

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: TENMILE CREEK @ CR274

Collection Date/Time: 08/15/2019 11:40

Field ID: G2TLHR0001

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2112162	EPA 180.1 Rev. 2.0	Turbidity	6.1		NTU	P369130	
	EPA 300.0 Rev. 2.1	Chloride	3.2		mg Cl/L	P369534	
		Sulfate	0.89		mg SO4/L	P369537	
	SM 2120 B	Color (true)	240		PCU	P369159	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P369587	
	SM 2540 C-97	TDS	38		mg/L	P369424	
	SM 2540 D-97	TSS	12		mg/L	P369270	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P369590	
2112163	EPA 350.1 Rev. 2.0	Ammonia-N	0.10		mg N/L	P369695	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P369430	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.072		mg N/L	P369416	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P369311	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P369382	
2112164	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P369187	
2112181	EPA 8321B	2,4-D	0.0020	U	ug/L	P369089	
		Acesulfame K**	0.10	U	ug/L	P369340	
		AMPA**	0.10	U	ug/L	P369340	
		Sucralose**	0.096		ug/L	P369340	
		Acetaminophen**	0.0080	U	ug/L	P369089	
		Endothall**	0.25	U	ug/L	P369340	
		Acetamiprid**	0.0020	U	ug/L	P369089	
		Glufosinate**	0.10	U	ug/L	P369340	
		Glyphosate**	0.10	U	ug/L	P369340	
		Afidopyropen**	0.0020	UJ	ug/L	P369089	
		Bentazon	8.0E-04	U	ug/L	P369089	
		Benzovindiflupyr**	0.0020	UJ	ug/L	P369089	RPD
		Carbamazepine**	8.0E-04	U	ug/L	P369089	
		Clothianidin**	0.0020	U	ug/L	P369089	
		Dinotefuran**	0.0020	U	ug/L	P369089	
		Diuron	0.0020	U	ug/L	P369089	
		Fenuron	0.016	U	ug/L	P369089	
		Fluridone**	8.0E-04	U	ug/L	P369089	
		Imazapyr**	0.0040	U	ug/L	P369089	
		Hydrocodone**	0.0020	U	ug/L	P369089	
		Ibuprofen**	0.020	U	ug/L	P369089	
		Imidacloprid	0.0020	U	ug/L	P369089	
		Linuron	0.0040	U	ug/L	P369089	
		Mandestrobin**	0.0020	UJ	ug/L	P369089	
		MCP	0.0020	U	ug/L	P369089	
		Naproxen**	0.0080	U	ug/L	P369089	RPD
		Primidone**	0.0040	U	ug/L	P369089	
		Pyraclostrobin**	0.0020	U	ug/L	P369089	RPD
		Thiamethoxam**	0.0020	U	ug/L	P369089	

Field ID: G2TLHR0001

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2112181	EPA 8321B	Tolfenpyrad**	0.0020	UJ	ug/L	P369089	LCS, MS
		Triclopyr**	0.0040	U	ug/L	P369089	

Ref. Method and Comment:

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

EPA 8321B: J - second source check standards for some analytes were not available for analysis. MS accuracy for imidacloprid could not be assessed due to high concentration of parameter in the spiked sample. Matrix spike precision for tolfenpyrad is not available due to low analyte recoveries. Refer to the narrative for an explanation of QC Codes.

Sample Location: CHIPOLA RIVER @ MAGNOLIA RD

Collection Date/Time: 08/15/2019 12:20

Field ID: G2TLHR0016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2112157	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P369130	
	EPA 300.0 Rev. 2.1	Chloride	5.1		mg Cl/L	P369534	
		Sulfate	1.5		mg SO4/L	P369537	
	SM 2120 B	Color (true)	9.9	A	PCU	P369161	
	SM 2320 B-97	Total Alkalinity	120		mg CaCO3/L	P369587	
	SM 2540 C-97	TDS	143		mg/L	P369424	
	SM 2540 D-97	TSS	6	I	mg/L	P369270	
	SM 4500 F-C-97	Fluoride	0.047	I	mg F/L	P369590	
2112159	EPA 350.1 Rev. 2.0	Ammonia-N	0.034		mg N/L	P369695	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P369428	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.7		mg N/L	P369416	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P369311	
	SM 5310 B-00	Organic Carbon	2.2		mg C/L	P369382	
2112161	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P369187	

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: APALACHICOLA RIVER @ BRISTOL LANDING Collection Date/Time: 08/15/2019 13:20

Field ID: G2TLHR0043

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2112165	EPA 180.1 Rev. 2.0	Turbidity	4.5	A	NTU	P369212	
	EPA 300.0 Rev. 2.1	Chloride	5.1		mg Cl/L	P369534	
		Sulfate	6.4		mg SO4/L	P369537	
		Color (true)	13	A	PCU	P369256	
	SM 2320 B-97	Total Alkalinity	48		mg CaCO3/L	P369587	
	SM 2540 C-97	TDS	77	A	mg/L	P369634	
	SM 2540 D-97	TSS	5	IA	mg/L	P369271	
	SM 4500 F-C-97	Fluoride	0.068	I	mg F/L	P369590	
2112166	EPA 350.1 Rev. 2.0	Ammonia-N	0.040		mg N/L	P369695	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.34		mg N/L	P369430	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.42		mg N/L	P369416	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P369312	
	SM 5310 B-00	Organic Carbon	2.9		mg C/L	P369382	
2112167	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.01	I	mg P/L	P369188	
2112182	EPA 200.7 Rev. 4.4	Barium	19.8		ug/L	P369358	
		Calcium	17.0		mg/L	P369358	
		Iron	260		ug/L	P369358	
		Magnesium	2.15		mg/L	P369358	
		Potassium	1.7		mg/L	P369358	
		Sodium	7.1		mg/L	P369358	
		Zinc	5.0	U	ug/L	P369358	
	EPA 200.8 Rev. 5.4	Aluminum	158		ug/L	P369358	
		Antimony	0.054	I	ug/L	P369358	
		Arsenic	0.53		ug/L	P369358	
		Boron**	16.6		ug/L	P369358	
		Cadmium	0.020	U	ug/L	P369358	
		Chromium	0.40	U	ug/L	P369358	
		Copper	0.49	I	ug/L	P369358	
		Lead	0.20	U	ug/L	P369358	
		Nickel	0.50	U	ug/L	P369358	
		Selenium	0.20	U	ug/L	P369358	
		Silver	0.010	U	ug/L	P369358	
		Thallium	0.10	U	ug/L	P369358	

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

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369130

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369212

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P369358

Component	Result	Code	Units
Barium	1.0	U	ug/L
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: P369358

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369534

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369537

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369695

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369428

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369430

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369416

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369417

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369311

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369312

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369187

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369188

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P369089

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
Acetaminophen	0.0080	U	ug/L
Acetamiprid	0.0020	U	ug/L
Afidopyropen	0.0020	U	ug/L
Bentazon	8.0E-04	U	ug/L
Benzovindiflupyr	0.0020	U	ug/L
Carbamazepine	8.0E-04	U	ug/L
Clothianidin	0.0020	U	ug/L
Dinotefuran	0.0020	U	ug/L
Diuron	0.0020	U	ug/L
Fenuron	0.016	U	ug/L
Fluridone	8.0E-04	U	ug/L
Hydrocodone	0.0020	U	ug/L
Ibuprofen	0.020	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
Mandestrobin	0.0020	U	ug/L
MCPP	0.0020	U	ug/L
Naproxen	0.0080	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Thiamethoxam	0.0020	U	ug/L
Tolfenpyrad	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Reference Method: EPA 8321B
Batch ID: P369340

Component	Result	Code	Units
Acesulfame K	0.10	U	ug/L
AMPA	0.10	U	ug/L
Endothall	0.25	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: P369159

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P369161

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2120 B
Batch ID: P369256

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P369587

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

Reference Method: SM 2320 B-97
Batch ID: P369588

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

Reference Method: SM 2540 C-97
Batch ID: P369424

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P369634

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P369270

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P369271

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P369590

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P369591

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P369382

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: P369358

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	102		P	85 - 115
Calcium	110		P	85 - 115
Iron	106		P	85 - 115
Magnesium	112		P	85 - 115
Potassium	108		P	85 - 115
Sodium	113		P	85 - 115
Zinc	98.4		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P369358

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	103		P	85 - 115
Antimony	97.3		P	85 - 115
Arsenic	102		P	85 - 115
Boron	103		P	85 - 115
Cadmium	99.3		P	85 - 115
Chromium	96.5		P	85 - 115
Copper	98.5		P	85 - 115
Lead	96.6		P	85 - 115
Nickel	97.9		P	85 - 115
Selenium	103		P	85 - 115
Silver	98.6		P	85 - 115
Thallium	99.1		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369534

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369537

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369695

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	94.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369428

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369430

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: P369416

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369417

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369311

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	105		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369312

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	105		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369187

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369188

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

Reference Method: EPA 8321B
Batch ID: P369089

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	75.3		P	40 - 160
Acetaminophen	68.2		P	30 - 160
Acetamiprid	76.8		P	40 - 160
Afidopyropen	58.1		P	40 - 160
Bentazon	90.0		P	30 - 160
Benzovindiflupyr	80.4		P	40 - 160
Carbamazepine	80.0		P	40 - 160
Clothianidin	77.5		P	40 - 160
Dinotefuran	78.6		P	40 - 160
Diuron	84.1		P	40 - 160

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P369089

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fenuron	87.2		P	40 - 160
Fluridone	80.9		P	40 - 160
Hydrocodone	86.3		P	40 - 160
Ibuprofen	65.9		P	30 - 160
Imazapyr	91.3		P	40 - 160
Imidacloprid	82.8		P	40 - 160
Linuron	69.4		P	40 - 160
Mandestrobin	75.8		P	40 - 160
MCPP	70.2		P	40 - 160
Naproxen	66.0		P	40 - 160
Primidone	79.3		P	40 - 160
Pyraclostrobin	56.0		P	30 - 160
Thiamethoxam	85.5		P	40 - 160
Tolfenpyrad	32.2		F	40 - 160
Triclopyr	46.6		P	30 - 160

Reference Method: EPA 8321B
Batch ID: P369340

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	148		P	40 - 150
AMPA	136		P	40 - 150
Endothall	98.5		P	40 - 150
Glufosinate	115		P	40 - 150
Glyphosate	114		P	40 - 140
Sucralose	84.1		P	40 - 150

Reference Method: SM 2120 B
Batch ID: P369159

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P369161

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P369256

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P369587

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P369588

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P369590

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.3		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P369591

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.1		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P369382

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P369358

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111951	Barium	101		P	80 - 120
2111951	Calcium	109		P	80 - 120
2111951	Iron	106		P	80 - 120
2111951	Magnesium	111		P	80 - 120
2111951	Potassium	108		P	80 - 120
2111951	Sodium	103		P	80 - 120
2111951	Zinc	97.4		P	80 - 120
2112383	Barium	101	102	P/P	80 - 120
2112383	Calcium	109	109	P/P	80 - 120
2112383	Iron	105	105	P/P	80 - 120
2112383	Magnesium	110	110	P/P	80 - 120
2112383	Potassium	112	111	P/P	80 - 120
2112383	Sodium	102	102	P/P	80 - 120
2112383	Zinc	99.5	98.0	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P369358

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111951	Aluminum	103		P	80 - 120
2111951	Antimony	98.1		P	80 - 120
2111951	Arsenic	102		P	80 - 120
2111951	Boron	102		P	80 - 120
2111951	Cadmium	99.0		P	80 - 120
2111951	Chromium	99.0		P	80 - 120
2111951	Copper	99.4		P	80 - 120
2111951	Lead	99.1		P	80 - 120
2111951	Nickel	96.5		P	80 - 120
2111951	Selenium	100		P	80 - 120
2111951	Silver	99.2		P	80 - 120
2111951	Thallium	101		P	80 - 120
2112383	Aluminum	101	102	P/P	80 - 120
2112383	Antimony	96.4	97.6	P/P	80 - 120
2112383	Arsenic	101	101	P/P	80 - 120
2112383	Boron	102	104	P/P	80 - 120
2112383	Cadmium	98.0	99.1	P/P	80 - 120
2112383	Chromium	98.4	99.9	P/P	80 - 120
2112383	Copper	98.8	98.9	P/P	80 - 120
2112383	Lead	97.9	98.7	P/P	80 - 120
2112383	Nickel	98.4	99.3	P/P	80 - 120
2112383	Selenium	99.0	100	P/P	80 - 120
2112383	Silver	97.6	99.2	P/P	80 - 120
2112383	Thallium	99.4	102	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369534

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112156	Chloride	95.2		P	90 - 110
2112209	Chloride	97.3		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369537

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112156	Sulfate	99.7		P	90 - 110
2112209	Sulfate	99.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369695

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112159	Ammonia-N	106	108	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369428

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112158	Kjeldahl Nitrogen	99.9	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369430

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112166	Kjeldahl Nitrogen	104	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369416

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112017	NO2NO3-N	90.5	92.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369417

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112219	NO2NO3-N	99.8	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369311

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112018	Total-P	105	109	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369312

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112166	Total-P	110	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369187

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112160	O-Phosphate-P	93.8	96.9	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P369188

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112167	O-Phosphate-P	97.0	97.6	P/P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P369089

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111008	2,4-D	160	140	P/P	40 - 160
2111008	Acetaminophen	79.6	74.0	P/P	30 - 160
2111008	Acetamiprid	96.9	85.2	P/P	40 - 160
2111008	Afidopyropen	79.2	68.1	P/P	40 - 160
2111008	Bentazon	63.4	50.6	P/P	30 - 160
2111008	Benzovindiflupyr	46.4	90.4	P/P	40 - 160
2111008	Carbamazepine	93.6	76.7	P/P	40 - 160
2111008	Clothianidin	96.2	74.9	P/P	40 - 160
2111008	Dinotefuran	104	94.2	P/P	40 - 160
2111008	Diuron	91.6	81.2	P/P	40 - 160
2111008	Fenuron	89.0	82.8	P/P	40 - 160
2111008	Fluridone	75.5	76.1	P/P	40 - 160
2111008	Hydrocodone	101	97.9	P/P	40 - 160
2111008	Ibuprofen	82.8	83.5	P/P	30 - 160
2111008	Imazapyr	103	83.9	P/P	40 - 160
2111008	Linuron	71.3	64.7	P/P	40 - 160
2111008	Mandestrobin	80.7	76.4	P/P	40 - 160
2111008	MCP	160	152	P/P	40 - 160
2111008	Naproxen	110	74.4	P/P	40 - 160
2111008	Primidone	105	86.6	P/P	40 - 160
2111008	Pyraclostrobin	32.7	72.5	P/P	30 - 160
2111008	Thiamethoxam	140	133	P/P	40 - 160
2111008	Tolfenpyrad	0.0	54.8	F/P	40 - 160
2111008	Triclopyr	119	114	P/P	30 - 160

Reference Method: EPA 8321B
 Batch ID: P369340

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112181	Acesulfame K	148	145	P/P	40 - 150
2112181	AMPA	106	115	P/P	40 - 150
2112181	Endothall	75.3	76.4	P/P	40 - 150
2112181	Glufosinate	84.7	92.1	P/P	40 - 150
2112181	Glyphosate	82.9	89.3	P/P	40 - 140
2112181	Sucralose	74.5	74.2	P/P	40 - 150

Reference Method: SM 4500 F-C-97
 Batch ID: P369590

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112156	Fluoride	94.9	96.5	P/P	89 - 106

Reference Method: SM 4500 F-C-97
 Batch ID: P369591

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P369591

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112212	Fluoride	95.0	95.0	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P369382

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112158	Organic Carbon	92.1	92.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369130

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112031	Turbidity	6.15	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369212

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112165	Turbidity	7.36	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P369358

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112383	Barium	0.0122	Spike	P	0 - 20
2112383	Calcium	0.0511	Spike	P	0 - 20
2112383	Iron	0.172	Spike	P	0 - 20
2112383	Magnesium	0.0475	Spike	P	0 - 20
2112383	Potassium	0.298	Spike	P	0 - 20
2112383	Sodium	0.0534	Spike	P	0 - 20
2112383	Zinc	1.54	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P369358

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112383	Aluminum	0.921	Spike	P	0 - 20
2112383	Antimony	1.25	Spike	P	0 - 20
2112383	Arsenic	0.231	Spike	P	0 - 20
2112383	Boron	1.94	Spike	P	0 - 20
2112383	Cadmium	1.07	Spike	P	0 - 20
2112383	Chromium	1.51	Spike	P	0 - 20
2112383	Copper	0.0758	Spike	P	0 - 20
2112383	Lead	0.773	Spike	P	0 - 20
2112383	Nickel	0.921	Spike	P	0 - 20
2112383	Selenium	1.01	Spike	P	0 - 20
2112383	Silver	1.66	Spike	P	0 - 20
2112383	Thallium	2.81	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369534

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112156	Chloride	0.178	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112156	Sulfate	0.816	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369695

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112159	Ammonia-N	1.28	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369428

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112158	Kjeldahl Nitrogen	1.61	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369430

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112166	Kjeldahl Nitrogen	4.48	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369416

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112017	NO2NO3-N	1.64	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369417

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112219	NO2NO3-N	0.557	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369311

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112018	Total-P	3.38	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369312

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112166	Total-P	2.44	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369187

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112160	O-Phosphate-P	2.98	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369188

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112167	O-Phosphate-P	0.562	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P369089

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111008	2,4-D	10.3	Spike	P	0 - 30
2111008	Acetaminophen	7.26	Spike	P	0 - 30
2111008	Acetamiprid	12.4	Spike	P	0 - 30
2111008	Afidopyropen	15.0	Spike	P	0 - 30
2111008	Bentazon	9.63	Spike	P	0 - 30
2111008	Benzovindiflupyr	64.4	Spike	F	0 - 30
2111008	Carbamazepine	13.1	Spike	P	0 - 30
2111008	Clothianidin	19.3	Spike	P	0 - 30
2111008	Dinotefuran	9.46	Spike	P	0 - 30
2111008	Diuron	11.5	Spike	P	0 - 30
2111008	Fenuron	7.24	Spike	P	0 - 30
2111008	Fluridone	0.503	Spike	P	0 - 30
2111008	Hydrocodone	2.95	Spike	P	0 - 30
2111008	Ibuprofen	0.847	Spike	P	0 - 30
2111008	Imazapyr	10.9	Spike	P	0 - 30
2111008	Imidacloprid	8.13	Spike	P	0 - 30
2111008	Linuron	9.59	Spike	P	0 - 30
2111008	Mandestrobin	5.46	Spike	P	0 - 30
2111008	MCP	4.55	Spike	P	0 - 30
2111008	Naproxen	38.9	Spike	F	0 - 30
2111008	Primidone	16.5	Spike	P	0 - 30
2111008	Pyraclostrobin	75.7	Spike	F	0 - 30
2111008	Thiamethoxam	3.76	Spike	P	0 - 30
2111008	Triclopyr	4.21	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P369340

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112181	Acesulfame K	2.61	Spike	P	0 - 30
2112181	AMPA	8.66	Spike	P	0 - 30
2112181	Endothall	1.42	Spike	P	0 - 30
2112181	Glufosinate	8.36	Spike	P	0 - 30
2112181	Glyphosate	7.41	Spike	P	0 - 30
2112181	Sucralose	0.324	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P369159

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112156	Color (true)	1.77	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P369161

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112157	Color (true)	6.75	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P369256

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112165	Color (true)	6.22	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P369587

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112156	Total Alkalinity	0.0854	Sample	P	0 - 2.8

Reference Method: SM 2320 B-97
Batch ID: P369588

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112212	Total Alkalinity	0.586	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P369424

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112031	TDS	7.32	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P369634

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112165	TDS	7.79	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P369590

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112156	Fluoride	1.47	Spike	P	0 - 2.5

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P369591

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112212	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P369382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112158	Organic Carbon	0.143	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: 2112181

Field Sample ID: G2TLHR0001

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	141	P	30 - 160
EPA 8321B	Acetaminophen-d4	77.3	P	30 - 160
EPA 8321B	Carbamazepine-d10	88.0	P	30 - 160
EPA 8321B	Diuron-d6	84.9	P	30 - 160
EPA 8321B	Endothall-d6	66.3	P	30 - 160
EPA 8321B	Endothall-d6	66.3	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	99.0	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	99.0	P	30 - 160
EPA 8321B	Ibuprofen-d3	87.7	P	30 - 160
EPA 8321B	Primidone-d5	101	P	30 - 160
EPA 8321B	Sucralose-d6	84.8	P	30 - 160
EPA 8321B	Sucralose-d6	84.8	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A93540

Included Lab Sample IDs: 2112156, 2112157, 2112162

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

Reference Method: SM 2120 B

Run ID: A93558

Included Lab Sample IDs: 2112156

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	90 - 115

Reference Method: SM 2120 B

Run ID: A93559

Included Lab Sample IDs: 2112157, 2112162

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A93570

Included Lab Sample IDs: 2112160, 2112161, 2112164, 2112167, 2112170

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.4	98.8	P/P	90 - 110
O-Phosphate-P	98.8	97.3	P/P	90 - 110
O-Phosphate-P	99.2	98.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A93576

Included Lab Sample IDs: 2112165, 2112168

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	102	P/P	95 - 105

Reference Method: EPA 8321B

Run ID: A93592

Included Lab Sample IDs: 2112181

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	110	97.8	P/P	50 - 150
Acetaminophen	86.4	83.0	P/P	60 - 160
Acetamiprid	106	106	P/P	50 - 150
Afidopyropen	89.6	84.5	P/P	50 - 150
Bentazon	105	103	P/P	50 - 160
Benzovindiflupyr	108	108	P/P	50 - 150
Carbamazepine	96.6	93.5	P/P	60 - 150
Clothianidin	92.7	101	P/P	60 - 150
Dinotefuran	86.9	81.0	P/P	50 - 150
Diuron	101	100	P/P	60 - 150
Fenuron	71.8	70.6	P/P	60 - 150
Fluridone	98.3	96.6	P/P	60 - 160
Hydrocodone	99.5	96.3	P/P	60 - 150
Ibuprofen	94.4	90.5	P/P	50 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A93592

Included Lab Sample IDs: 2112181

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Imazapyr	117	108	P/P	50 - 150
Imidacloprid	85.5	85.5	P/P	60 - 150
Linuron	86.0	85.3	P/P	60 - 150
Mandestrobin	99.2	96.8	P/P	50 - 150
MCPP	87.5	93.8	P/P	50 - 150
Naproxen	123	116	P/P	50 - 160
Primidone	89.3	82.4	P/P	60 - 150
Pyraclostrobin	93.8	94.5	P/P	60 - 150
Thiamethoxam	93.7	94.9	P/P	50 - 150
Tolfenpyrad	97.0	94.7	P/P	60 - 150
Triclopyr	91.1	85.9	P/P	50 - 150

Reference Method: SM 2120 B

Run ID: A93598

Included Lab Sample IDs: 2112165, 2112168

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.9	100	P/P	90 - 115

Reference Method: SM 5310 B-00

Run ID: A93659

Included Lab Sample IDs: 2112158, 2112159, 2112163, 2112166, 2112169

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	99.2	P/P	90 - 110
Organic Carbon	99.2	91.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A93679

Included Lab Sample IDs: 2112158, 2112159, 2112163, 2112166, 2112169

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A93684

Included Lab Sample IDs: 2112158, 2112159, 2112163, 2112166, 2112169

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	101	P/P	90 - 110
NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A93697

Included Lab Sample IDs: 2112182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	101	P/P	90 - 110
Calcium	102	102	P/P	90 - 110
Iron	102	102	P/P	90 - 110
Magnesium	103	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A93697

Included Lab Sample IDs: 2112182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Potassium	100	101	P/P	90 - 110
Sodium	103	104	P/P	90 - 110
Zinc	98.5	97.9	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A93708

Included Lab Sample IDs: 2112181

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	115	152	P/P	60 - 160
Endothall	76.5	91.3	P/P	60 - 160

Reference Method: EPA 8321B

Run ID: A93710

Included Lab Sample IDs: 2112181

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	133	124	P/P	60 - 160
Glufosinate	103	92.6	P/P	60 - 160
Glyphosate	102	101	P/P	60 - 160

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A93717

Included Lab Sample IDs: 2112156, 2112157, 2112162, 2112165, 2112168

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.4	97.9	P/P	90 - 110
Sulfate	104	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93722

Included Lab Sample IDs: 2112158, 2112159, 2112163, 2112166, 2112169

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

Reference Method: SM 2320 B-97

Run ID: A93749

Included Lab Sample IDs: 2112156, 2112157, 2112162, 2112165, 2112168

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	104	P/P	90 - 110
Total Alkalinity	104	101	P/P	90 - 110
Total Alkalinity	104	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A93749

Included Lab Sample IDs: 2112156, 2112157, 2112162, 2112165, 2112168

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

Reference Method: SM 4500 F-C-97

Run ID: A93749

Included Lab Sample IDs: 2112156, 2112157, 2112162, 2112165, 2112168

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.1	99.5	P/P	90 - 110
Fluoride	98.1	99.5	P/P	90 - 110
Fluoride	99.5	98.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A93798

Included Lab Sample IDs: 2112158, 2112159, 2112163, 2112166, 2112169

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	106	P/P	90 - 110
Ammonia-N	105	102	P/P	90 - 110
Ammonia-N	106	106	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A93859

Included Lab Sample IDs: 2112181

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	76.0	77.7	P/P	60 - 160

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A93990

Included Lab Sample IDs: 2112182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	99.7	P/P	90 - 110
Antimony	94.3	94.8	P/P	90 - 110
Arsenic	99.9	99.1	P/P	90 - 110
Boron	102	96.3	P/P	90 - 110
Cadmium	97.6	97.3	P/P	90 - 110
Chromium	97.5	97.6	P/P	90 - 110
Copper	99.3	99.4	P/P	90 - 110
Lead	98.0	97.8	P/P	90 - 110
Selenium	98.7	98.7	P/P	90 - 110
Thallium	95.9	96.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A94047

Included Lab Sample IDs: 2112182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Nickel	97.3	96.9	P/P	90 - 110
Silver	99.2	99.7	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						6.15	
	Turbidity						7.36	
EPA 200.7 Rev. 4.4	Barium	102	101	101	102			0.0122
	Calcium	110	109	109	109			0.0511
	Iron	106	106	105	105			0.172
	Magnesium	112	111	110	110			0.0475
	Potassium	108	108	112	111			0.298
	Sodium	113	103	102	102			0.0534
	Zinc	98.4	97.4	99.5	98.0			1.54
EPA 200.8 Rev. 5.4	Aluminum	103	103	101	102			0.921
	Antimony	97.3	98.1	96.4	97.6			1.25
	Arsenic	102	102	101	101			0.231
	Boron	103	102	102	104			1.94
	Cadmium	99.3	99.0	98.0	99.1			1.07
	Chromium	96.5	99.0	98.4	99.9			1.51
	Copper	98.5	99.4	98.8	98.9			0.0758
	Lead	96.6	99.1	97.9	98.7			0.773
	Nickel	97.9	96.5	98.4	99.3			0.921
	Selenium	103	100	99.0	100			1.01
	Silver	98.6	99.2	97.6	99.2			1.66
	Thallium	99.1	101	99.4	102			2.81
EPA 300.0 Rev. 2.1	Chloride	97.9	95.2	97.3			0.178	
	Sulfate	101	99.7	99.2			0.816	
EPA 350.1 Rev. 2.0	Ammonia-N	94.5	106	108				1.28
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.2	99.9	102				1.61
	Kjeldahl Nitrogen	102	104	98.2				4.48
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	90.5	92.0				1.64
	NO ₂ NO ₃ -N	100	99.8	101				0.557
EPA 365.1 Rev. 2.0	Total-P	105	105	109				3.38
	Total-P	105	110	107				2.44
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.7	93.8	96.9				2.98
	O-Phosphate-P	97.5	97.0	97.6				0.562
EPA 8321B	2,4-D	75.3	160	140				10.3
	Acesulfame K	148	148	145				2.61
	Acetaminophen	68.2	79.6	74.0				7.26
	Acetamiprid	76.8	96.9	85.2				12.4
	Afidopyropen	58.1	79.2	68.1				15.0
	AMPA	136	106	115				8.66
	Bentazon	90.0	63.4	50.6				9.63
	Benzovindiflupyr	80.4	46.4	90.4				64.4
	Carbamazepine	80.0	93.6	76.7				13.1
	Clothianidin	77.5	96.2	74.9				19.3
	Dinotefuran	78.6	104	94.2				9.46
	Diuron	84.1	91.6	81.2				11.5
	Endothall	98.5	75.3	76.4				1.42
	Fenuron	87.2	89.0	82.8				7.24
	Fluridone	80.9	75.5	76.1				0.503
	Glufosinate	115	84.7	92.1				8.36
	Glyphosate	114	82.9	89.3				7.41
	Hydrocodone	86.3	101	97.9				2.95
	Ibuprofen	65.9	82.8	83.5				0.847
	Imazapyr	91.3	103	83.9				10.9
	Imidacloprid	82.8						8.13
	Linuron	69.4	71.3	64.7				9.59

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 8321B	Mandestrobin	75.8	80.7	76.4		5.46
	MCPP	70.2	160	152		4.55
	Naproxen	66.0	110	74.4		38.9
	Primidone	79.3	105	86.6		16.5
	Pyraclostrobin	56.0	32.7	72.5		75.7
	Sucralose	84.1	74.5	74.2		0.324
	Thiamethoxam	85.5	140	133		3.76
	Tolfenpyrad	32.2	0.0	54.8		
	Triclopyr	46.6	119	114		4.21
SM 2120 B	Color (true)	101			1.77	
	Color (true)	101			6.75	
	Color (true)	102			6.22	
SM 2320 B-97	Total Alkalinity	103			0.0854	
	Total Alkalinity	103			0.586	
SM 2540 C-97	TDS				7.32	
	TDS				7.79	
SM 4500 F-C-97	Fluoride	95.3	94.9	96.5		1.47
	Fluoride	98.1	95.0	95.0		0.0
SM 5310 B-00	Organic Carbon	94.4	92.1	92.0		0.143

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2112156, 2112157, 2112162, 2112165, 2112168
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2112182
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2112182
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2112156, 2112157, 2112162, 2112165, 2112168
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2112156, 2112157, 2112162, 2112165, 2112168
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2112158, 2112159, 2112163, 2112166, 2112169
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2112158, 2112159, 2112163, 2112166, 2112169
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2112158, 2112159, 2112163, 2112166, 2112169
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2112158, 2112159, 2112163, 2112166, 2112169
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2112160, 2112161, 2112164, 2112167, 2112170
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2112181
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	2112181
SM 2120 B / E31780	True Color measured at 450 nm	2112156, 2112157, 2112162, 2112165, 2112168
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2112156, 2112157, 2112162, 2112165, 2112168
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2112156, 2112157, 2112162, 2112165, 2112168
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2112156, 2112157, 2112162, 2112165, 2112168
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2112156, 2112157, 2112162, 2112165, 2112168

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2112158, 2112159, 2112163, 2112166, 2112169

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	08/15/2019			08/15/2019 16:59	Rosalyn Ballman	2112156, 2112157, 2112162
	08/15/2019			08/16/2019 16:33	Samantha Davila	2112165, 2112168
EPA 200.7 Rev. 4.4	08/15/2019	08/20/2019 16:10	Elliott D. Healy	08/21/2019 16:29	Alexander Thompson	2112182
EPA 200.8 Rev. 5.4	08/15/2019	08/20/2019 16:10	Elliott D. Healy	09/04/2019 22:04	Robert K Palmer	2112182
	08/15/2019	08/20/2019 16:10	Elliott D. Healy	09/07/2019 00:52	Robert K Palmer	2112182
EPA 300.0 Rev. 2.1	08/15/2019			08/22/2019 02:35	Julia Storbeck	2112156
	08/15/2019			08/22/2019 03:23	Julia Storbeck	2112157
	08/15/2019			08/22/2019 03:35	Julia Storbeck	2112162
	08/15/2019			08/22/2019 03:47	Julia Storbeck	2112165
	08/15/2019			08/22/2019 04:00	Julia Storbeck	2112168
EPA 350.1 Rev. 2.0	08/15/2019			08/26/2019 13:05	Ping Hua	2112159
	08/15/2019			08/26/2019 13:17	Ping Hua	2112158
	08/15/2019			08/26/2019 13:20	Ping Hua	2112163
	08/15/2019			08/26/2019 13:21	Ping Hua	2112166
	08/15/2019			08/26/2019 13:33	Ping Hua	2112169
EPA 351.2 Rev. 2.0	08/15/2019	08/21/2019 13:20	Jhamieka S. Greenwood	08/22/2019 12:30	Joseph Suarez	2112158
	08/15/2019	08/21/2019 13:20	Jhamieka S. Greenwood	08/22/2019 12:35	Joseph Suarez	2112159
	08/15/2019	08/21/2019 13:20	Jhamieka S. Greenwood	08/22/2019 12:42	Joseph Suarez	2112163
	08/15/2019	08/21/2019 13:20	Jhamieka S. Greenwood	08/22/2019 12:47	Joseph Suarez	2112166
	08/15/2019	08/21/2019 13:20	Jhamieka S. Greenwood	08/22/2019 12:52	Joseph Suarez	2112169
EPA 353.2 Rev. 2.0	08/15/2019			08/21/2019 10:32	Beverly Y. Sanders	2112166
	08/15/2019			08/21/2019 12:21	Beverly Y. Sanders	2112158
	08/15/2019			08/21/2019 12:22	Beverly Y. Sanders	2112159
	08/15/2019			08/21/2019 12:24	Beverly Y. Sanders	2112163
	08/15/2019			08/21/2019 12:36	Beverly Y. Sanders	2112169
EPA 365.1 Rev. 2.0	08/15/2019	08/20/2019 12:45	Lipi Saha	08/21/2019 12:48	Lipi Saha	2112158
	08/15/2019	08/20/2019 12:45	Lipi Saha	08/21/2019 12:49	Lipi Saha	2112159
	08/15/2019	08/20/2019 12:45	Lipi Saha	08/21/2019 12:50	Lipi Saha	2112163
	08/15/2019	08/20/2019 12:45	Lipi Saha	08/21/2019 12:52	Lipi Saha	2112166
	08/15/2019	08/20/2019 12:45	Lipi Saha	08/21/2019 12:53	Lipi Saha	2112169
EPA 365.1 Rev. 2.0 dissolved	08/15/2019			08/16/2019 11:06	Jhamieka S. Greenwood	2112160
	08/15/2019			08/16/2019 11:18	Jhamieka S. Greenwood	2112167
	08/15/2019			08/16/2019 11:30	Jhamieka S. Greenwood	2112170
	08/15/2019			08/16/2019 11:34	Jhamieka S. Greenwood	2112161
	08/15/2019			08/16/2019 11:35	Jhamieka S. Greenwood	2112164
EPA 8321B	08/15/2019	08/16/2019 09:30	Fe-Val Siddell	08/18/2019 14:50	Juyoung Kim	2112181
	08/15/2019	08/21/2019 10:00	Rebecca Ware	08/21/2019 11:31	Rebecca Ware	2112181
	08/15/2019	08/21/2019 10:00	Rebecca Ware	08/21/2019 18:57	Rebecca Ware	2112181
	08/15/2019	08/21/2019 10:00	Rebecca Ware	08/28/2019 11:48	Rebecca Ware	2112181
SM 2120 B	08/15/2019			08/16/2019 10:31	Madeline Funaro	2112156

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2120 B	08/15/2019			08/16/2019 11:14	Madeline Funaro	2112157
	08/15/2019			08/16/2019 11:19	Madeline Funaro	2112162
	08/15/2019			08/16/2019 16:59	Madeline Funaro	2112165
	08/15/2019			08/16/2019 17:00	Madeline Funaro	2112168
SM 2320 B-97	08/15/2019			08/22/2019 23:09	Dale L. Simmons	2112156
	08/15/2019			08/23/2019 03:15	Dale L. Simmons	2112157
	08/15/2019			08/23/2019 03:25	Dale L. Simmons	2112162
	08/15/2019			08/23/2019 03:38	Dale L. Simmons	2112165
SM 2540 C-97	08/15/2019			08/23/2019 06:01	Dale L. Simmons	2112168
	08/15/2019			08/16/2019 17:15	Rosalyn Ballman	2112156, 2112157, 2112162, 2112168
	08/15/2019			08/21/2019 15:36	Rosalyn Ballman	2112165
	08/15/2019			08/16/2019 17:15	Rosalyn Ballman	2112156, 2112157, 2112162, 2112165, 2112168
SM 4500 F-C-97	08/15/2019			08/22/2019 22:59	Dale L. Simmons	2112156
	08/15/2019			08/23/2019 03:15	Dale L. Simmons	2112157
	08/15/2019			08/23/2019 03:25	Dale L. Simmons	2112162
	08/15/2019			08/23/2019 03:38	Dale L. Simmons	2112165
SM 5310 B-00	08/15/2019			08/23/2019 06:01	Dale L. Simmons	2112168
	08/15/2019			08/20/2019 04:01	Madeline Funaro	2112158
	08/15/2019			08/20/2019 04:59	Madeline Funaro	2112166
	08/15/2019			08/20/2019 05:43	Madeline Funaro	2112159
	08/15/2019			08/20/2019 06:31	Madeline Funaro	2112163
	08/15/2019			08/20/2019 06:44	Madeline Funaro	2112169