

Chemical Analysis Report

CEN-DIST-2022-03-25-01

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

Event Description: **Run 10**
Request ID: **RQ-2022-04-04-21**
Customer: **CEN-DIST**
Project ID: **SMP**

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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 08-APR-2022 11:06



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 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: Cow Creek at OsteenMaytown Road (2952)

Collection Date/Time: 03/24/2022 11:03

Field ID: G2CE0086

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2314708	EPA 200.7 Rev. 4.4	Calcium	4.69		mg/L	P411642	
		Iron	1.57E+03		ug/L	P411642	
		Magnesium	1.0		mg/L	P411642	
		Potassium	0.30	U	mg/L	P411642	
		Sodium	8.1		mg/L	P411642	
		Strontium	25.8		ug/L	P411642	
		Tin	3.0	U	ug/L	P411642	
		Titanium	1.7	I	ug/L	P411642	
		Vanadium	2.0	U	ug/L	P411642	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P411642	
		Aluminum	403		ug/L	P411642	
		Antimony	0.059	I	ug/L	P411642	
		Arsenic	0.36		ug/L	P411642	
		Barium	7.24		ug/L	P411642	
		Beryllium	0.028	I	ug/L	P411642	
		Boron**	22.9		ug/L	P411642	
		Cadmium	0.020	U	ug/L	P411642	
		Chromium	0.55	I	ug/L	P411934	
		Cobalt	0.200		ug/L	P411642	
		Copper	0.40	U	ug/L	P411642	
		Lead	0.39	I	ug/L	P411642	
		Manganese	6.11		ug/L	P411642	
		Molybdenum	0.15	U	ug/L	P411642	
		Nickel	0.65	I	ug/L	P411642	
		Selenium	0.20	U	ug/L	P411642	
		Silver	0.010	U	ug/L	P411642	
		Thallium	0.12	I	ug/L	P411642	
	SM 2340B	Hardness	15.8		mg/L	P411642	

Sample Location: Sweetwater Creek @ US of DeLeon St

Collection Date/Time: 03/24/2022 12:16

Field ID: G2CE0119

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2314706	EPA 8321B	2,4-D	0.021		ug/L	P411659	
		Acesulfame K	0.45		ug/L	P411656	
		2,4,5-T	0.0040	U	ug/L	P411659	
		AMPA	0.48		ug/L	P411656	
		Acetaminophen	0.0080	U	ug/L	P411659	
		Acetamiprid	0.0020	U	ug/L	P411659	
		Endothall	0.25	U	ug/L	P411656	
		Glufosinate	0.10	U	ug/L	P411656	
		Glyphosate	0.91		ug/L	P411656	
		Afidopyropen	0.0020	U	ug/L	P411659	
		Bentazon	0.30		ug/L	P411659	
		Sucralose	2.6		ug/L	P411656	
		Benzovindiflupyr	0.0020	U	ug/L	P411659	
		Carbamazepine	0.013		ug/L	P411659	
		Clothianidin	0.0050	I	ug/L	P411659	
		Dinotefuran	0.0031	I	ug/L	P411659	
		Diuron	0.0026	I	ug/L	P411659	
		Fenuron	0.016	U	ug/L	P411659	
		Fluridone	0.0078		ug/L	P411659	
		Imazapyr	0.21		ug/L	P411659	
		Hydrocodone	0.0020	U	ug/L	P411659	
		Ibuprofen	0.020	U	ug/L	P411659	
		Imidacloprid	0.017	J	ug/L	P411659	MS
		Linuron	0.0040	U	ug/L	P411659	
		Mandestrobin	0.0020	U	ug/L	P411659	
		MCPP	0.0071	I	ug/L	P411659	
		Naproxen	0.0080	U	ug/L	P411659	
		Primidone	0.020		ug/L	P411659	
		Pyraclostrobin	0.0020	U	ug/L	P411659	
		Silvex	0.0040	U	ug/L	P411659	
		Thiamethoxam	0.0020	UJ	ug/L	P411659	MS
		Tolfenpyrad	0.0020	U	ug/L	P411659	
		Triclopyr	0.0040	U	ug/L	P411659	

Ref. Method and Comment:

EPA 8321B: MS accuracy for some analytes could not be assessed due to a high concentration of parameters in the spiked sample. Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: Sweetwater Creek @ 35m US of Cress Run

Collection Date/Time: 03/24/2022 12:25

Field ID: G2CE0139

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2314707	EPA 8321B	2,4-D	0.20		ug/L	P411659	
		Acesulfame K	0.41		ug/L	P411656	
		2,4,5-T	0.0040	U	ug/L	P411659	
		AMPA	0.69		ug/L	P411656	
		Acetaminophen	0.0080	U	ug/L	P411659	
		Acetamiprid	0.0020	U	ug/L	P411659	
		Endothall	0.25	U	ug/L	P411656	
		Glufosinate	0.10	U	ug/L	P411656	
		Glyphosate	3.0		ug/L	P411656	
		Afidopyropen	0.0020	U	ug/L	P411659	
		Bentazon	0.70		ug/L	P411659	
		Sucralose	2.3		ug/L	P411656	
		Benzovindiflupyr	0.0020	U	ug/L	P411659	
		Carbamazepine	0.011		ug/L	P411659	
		Clothianidin	0.0054	I	ug/L	P411659	
		Dinotefuran	0.0030	I	ug/L	P411659	
		Diuron	0.0031	I	ug/L	P411659	
		Fenuron	0.016	U	ug/L	P411659	
		Fluridone	0.0083		ug/L	P411659	
		Imazapyr	0.18		ug/L	P411659	
		Hydrocodone	0.0020	U	ug/L	P411659	
		Ibuprofen	0.020	U	ug/L	P411659	
		Imidacloprid	0.023		ug/L	P411659	MS
		Linuron	0.0040	U	ug/L	P411659	
		Mandestrobin	0.0020	U	ug/L	P411659	
		MCPP	0.0091		ug/L	P411659	
		Naproxen	0.0080	U	ug/L	P411659	
		Primidone	0.015	I	ug/L	P411659	
		Pyraclostrobin	0.0020	U	ug/L	P411659	
		Silvex	0.0040	U	ug/L	P411659	
		Thiamethoxam	0.0020	U	ug/L	P411659	MS
		Tolfenpyrad	0.0020	U	ug/L	P411659	
		Triclopyr	0.0040	U	ug/L	P411659	

Ref. Method and Comment:

EPA 8321B: MS accuracy for some analytes could not be assessed due to a high concentration of parameters in the spiked sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P411642

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
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P411642

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	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 200.8 Rev. 5.4

Batch ID: P411934

Component	Result	Code	Units
Chromium	0.40	U	ug/L

Reference Method: EPA 8321B

Batch ID: P411656

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B

Batch ID: P411659

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
2,4,5-T	0.0040	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
Silvex	0.0040	U	ug/L
Thiamethoxam	0.0020	U	ug/L
Tolfenpyrad	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P411642

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	103		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	102		P	85 - 115
Sodium	99.2		P	85 - 115
Strontium	100		P	85 - 115
Tin	102		P	85 - 115
Titanium	99.3		P	85 - 115
Vanadium	94.1		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P411642

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	98.4		P	85 - 115
Arsenic	101		P	85 - 115
Barium	101		P	85 - 115
Beryllium	93.7		P	85 - 115
Boron	103		P	85 - 115
Cadmium	97.2		P	85 - 115
Cobalt	99.9		P	85 - 115
Copper	98.4		P	85 - 115
Lead	98.3		P	85 - 115
Manganese	94.7		P	85 - 115
Molybdenum	99.4		P	85 - 115
Nickel	101		P	85 - 115
Selenium	98.6		P	85 - 115
Silver	102		P	85 - 115
Thallium	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P411934

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chromium	95.7		P	85 - 115

Reference Method: EPA 8321B

Batch ID: P411656

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	109		P	40 - 150
AMPA	111		P	40 - 150
Endothall	80.1		P	40 - 150
Glufosinate	137		P	40 - 150
Glyphosate	129		P	40 - 150
Sucralose	111		P	40 - 150

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B

Batch ID: P411659

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	128		P	30 - 160
2,4,5-T	85.1		P	30 - 160
Acetaminophen	86.3		P	30 - 150
Acetamiprid	106		P	30 - 160
Afidopyropen	84.1		P	30 - 160
Bentazon	39.6		P	30 - 150
Benzovindiflupyr	105		P	30 - 160
Carbamazepine	106		P	30 - 160
Clothianidin	105		P	30 - 160
Dinotefuran	101		P	30 - 160
Diuron	92.8		P	30 - 160
Fenuron	101		P	30 - 160
Fluridone	97.6		P	30 - 160
Hydrocodone	94.5		P	30 - 160
Ibuprofen	82.7		P	30 - 160
Imazapyr	127		P	30 - 160
Imidacloprid	94.9		P	30 - 160
Linuron	85.0		P	30 - 160
Mandestrobin	98.6		P	30 - 160
MCPP	103		P	30 - 160
Naproxen	74.3		P	30 - 160
Primidone	107		P	30 - 160
Pyraclostrobin	88.1		P	30 - 160
Silvex	72.6		P	30 - 160
Thiamethoxam	101		P	30 - 160
Tolfenpyrad	56.4		P	30 - 160
Triclopyr	96.1		P	30 - 160

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P411642

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2314301	Calcium	98.7		P	80 - 120
2314301	Iron	104		P	80 - 120
2314301	Magnesium	98.5		P	80 - 120
2314301	Potassium	101		P	80 - 120
2314301	Sodium	98.9		P	80 - 120
2314301	Strontium	101		P	80 - 120
2314301	Tin	102		P	80 - 120
2314301	Titanium	101		P	80 - 120
2314301	Vanadium	95.4		P	80 - 120
2314301	Zinc	100		P	80 - 120
2314495	Calcium	99.4		P	80 - 120
2314495	Iron	105	104	P/P	80 - 120
2314495	Magnesium	104	102	P/P	80 - 120
2314495	Potassium	97.6	101	P/P	80 - 120
2314495	Sodium	98.7		P	80 - 120
2314495	Strontium	99.6	99.7	P/P	80 - 120
2314495	Tin	102	102	P/P	80 - 120
2314495	Titanium	99.5	100	P/P	80 - 120
2314495	Vanadium	95.3	96.1	P/P	80 - 120
2314495	Zinc	103	104	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P411642

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2314301	Aluminum	102		P	80 - 120
2314301	Antimony	104		P	80 - 120
2314301	Arsenic	99.8		P	80 - 120
2314301	Barium	103		P	80 - 120
2314301	Beryllium	93.0		P	80 - 120
2314301	Boron	106		P	80 - 120
2314301	Cadmium	101		P	80 - 120
2314301	Cobalt	98.2		P	80 - 120
2314301	Copper	96.3		P	80 - 120
2314301	Lead	98.4		P	80 - 120
2314301	Manganese	98.5		P	80 - 120
2314301	Molybdenum	98.1		P	80 - 120
2314301	Nickel	93.2		P	80 - 120
2314301	Selenium	98.2		P	80 - 120
2314301	Silver	102		P	80 - 120
2314301	Thallium	103		P	80 - 120
2314495	Aluminum	100	101	P/P	80 - 120
2314495	Antimony	101	102	P/P	80 - 120
2314495	Arsenic	101	103	P/P	80 - 120
2314495	Barium	102	103	P/P	80 - 120
2314495	Beryllium	96.3	95.1	P/P	80 - 120
2314495	Boron	105	106	P/P	80 - 120
2314495	Cadmium	99.2	101	P/P	80 - 120
2314495	Cobalt	101	102	P/P	80 - 120
2314495	Copper	98.8	99.7	P/P	80 - 120
2314495	Lead	99.6	100	P/P	80 - 120
2314495	Manganese	97.9	98.6	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P411642

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2314495	Molybdenum	103	103	P/P	80 - 120
2314495	Nickel	103	102	P/P	80 - 120
2314495	Selenium	101	101	P/P	80 - 120
2314495	Silver	102	102	P/P	80 - 120
2314495	Thallium	103	105	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P411934

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2314456	Chromium	94.5		P	80 - 120
2314614	Chromium	93.7	91.1	P/P	80 - 120

Reference Method: EPA 8321B

Batch ID: P411656

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2314412	Acesulfame K	139	132	P/P	40 - 150
2314412	AMPA	108	103	P/P	40 - 150
2314412	Endothall	129	114	P/P	40 - 150
2314412	Glufosinate	114	101	P/P	40 - 150
2314412	Glyphosate	105	102	P/P	40 - 150
2314412	Sucralose	116	98.4	P/P	40 - 150

Reference Method: EPA 8321B

Batch ID: P411659

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2314706	2,4-D	100	117	P/P	30 - 160
2314706	2,4,5-T	72.1	73.5	P/P	30 - 160
2314706	Acetaminophen	101	97.3	P/P	30 - 150
2314706	Acetamiprid	117	122	P/P	30 - 160
2314706	Afidopyropen	75.0	77.5	P/P	30 - 160
2314706	Benzovindiflupyr	92.7	94.5	P/P	30 - 160
2314706	Carbamazepine	86.1	99.4	P/P	30 - 160
2314706	Clothianidin	123	131	P/P	30 - 160
2314706	Dinotefuran	129	135	P/P	30 - 160
2314706	Diuron	78.3	86.4	P/P	30 - 160
2314706	Fenuron	82.8	88.8	P/P	30 - 160
2314706	Fluridone	81.5	99.0	P/P	30 - 160
2314706	Hydrocodone	97.2	98.1	P/P	30 - 160
2314706	Ibuprofen	53.1	70.0	P/P	30 - 160
2314706	Imidacloprid	171	189	F/F	30 - 160
2314706	Linuron	77.5	70.7	P/P	30 - 160
2314706	Mandestrobin	94.2	101	P/P	30 - 160
2314706	MCCPP	91.2	94.9	P/P	30 - 160
2314706	Naproxen	73.2	62.7	P/P	30 - 160
2314706	Primidone	106	112	P/P	30 - 160
2314706	Pyraclostrobin	79.9	83.3	P/P	30 - 160
2314706	Silvex	75.5	82.4	P/P	30 - 160
2314706	Thiamethoxam	152	164	P/F	30 - 160
2314706	Tolfenpyrad	54.5	51.6	P/P	30 - 160

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P411659

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2314706	Triclopyr	84.7	75.8	P/P	30 - 160

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P411642

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2314495	Calcium	0.810	Spike	P	0 - 20
2314495	Iron	1.38	Spike	P	0 - 20
2314495	Magnesium	1.11	Spike	P	0 - 20
2314495	Potassium	1.95	Spike	P	0 - 20
2314495	Sodium	1.09	Spike	P	0 - 20
2314495	Strontium	0.0447	Spike	P	0 - 20
2314495	Tin	0.216	Spike	P	0 - 20
2314495	Titanium	0.607	Spike	P	0 - 20
2314495	Vanadium	0.836	Spike	P	0 - 20
2314495	Zinc	0.968	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P411642

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2314495	Aluminum	1.11	Spike	P	0 - 20
2314495	Antimony	0.927	Spike	P	0 - 20
2314495	Arsenic	1.54	Spike	P	0 - 20
2314495	Barium	0.717	Spike	P	0 - 20
2314495	Beryllium	1.32	Spike	P	0 - 20
2314495	Boron	0.875	Spike	P	0 - 20
2314495	Cadmium	1.64	Spike	P	0 - 20
2314495	Cobalt	0.275	Spike	P	0 - 20
2314495	Copper	0.746	Spike	P	0 - 20
2314495	Lead	0.439	Spike	P	0 - 20
2314495	Manganese	0.592	Spike	P	0 - 20
2314495	Molybdenum	0.0746	Spike	P	0 - 20
2314495	Nickel	0.894	Spike	P	0 - 20
2314495	Selenium	0.363	Spike	P	0 - 20
2314495	Silver	0.0672	Spike	P	0 - 20
2314495	Thallium	1.51	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P411934

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2314614	Chromium	2.76	Spike	P	0 - 20

Reference Method: EPA 8321B

Batch ID: P411656

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2314412	Acesulfame K	4.90	Spike	P	0 - 30
2314412	AMPA	4.01	Spike	P	0 - 30
2314412	Endothall	12.1	Spike	P	0 - 30
2314412	Glufosinate	11.5	Spike	P	0 - 30
2314412	Glyphosate	3.49	Spike	P	0 - 30
2314412	Sucralose	15.4	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P411659

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2314706	2,4-D	12.5	Spike	P	0 - 30
2314706	2,4,5-T	1.84	Spike	P	0 - 30
2314706	Acetaminophen	4.00	Spike	P	0 - 30
2314706	Acetamiprid	4.02	Spike	P	0 - 30
2314706	Afidopyropen	3.28	Spike	P	0 - 30
2314706	Bentazon	3.25	Spike	P	0 - 30
2314706	Benzovindiflupyr	1.90	Spike	P	0 - 30
2314706	Carbamazepine	8.53	Spike	P	0 - 30
2314706	Clothianidin	6.29	Spike	P	0 - 30
2314706	Dinotefuran	4.51	Spike	P	0 - 30
2314706	Diuron	9.44	Spike	P	0 - 30
2314706	Fenuron	6.94	Spike	P	0 - 30
2314706	Fluridone	13.5	Spike	P	0 - 30
2314706	Hydrocodone	0.908	Spike	P	0 - 30
2314706	Ibuprofen	27.6	Spike	P	0 - 30
2314706	Imazapyr	14.4	Spike	P	0 - 30
2314706	Imidacloprid	8.86	Spike	P	0 - 30
2314706	Linuron	9.19	Spike	P	0 - 30
2314706	Mandestrobin	6.58	Spike	P	0 - 30
2314706	MCPP	3.61	Spike	P	0 - 30
2314706	Naproxen	15.4	Spike	P	0 - 30
2314706	Primidone	4.85	Spike	P	0 - 30
2314706	Pyraclostrobin	4.13	Spike	P	0 - 30
2314706	Silvex	8.80	Spike	P	0 - 30
2314706	Thiamethoxam	7.61	Spike	P	0 - 30
2314706	Tolfenpyrad	5.44	Spike	P	0 - 30
2314706	Triclopyr	11.2	Spike	P	0 - 30

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Surrogates

Lab Sample ID: 2314706

Field Sample ID: G2CE0119

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	96.9	P	30 - 160
EPA 8321B	Acetaminophen-d4	98.8	P	30 - 160
EPA 8321B	Carbamazepine-d10	105	P	30 - 160
EPA 8321B	Diuron-d6	77.6	P	30 - 160
EPA 8321B	Endothall-d6	87.2	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	91.0	P	30 - 160
EPA 8321B	Ibuprofen-d3	58.5	P	30 - 160
EPA 8321B	Primidone-d5	118	P	30 - 160
EPA 8321B	Sucralose-d6	98.2	P	30 - 160

Lab Sample ID: 2314707

Field Sample ID: G2CE0139

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	95.6	P	30 - 160
EPA 8321B	Acetaminophen-d4	103	P	30 - 160
EPA 8321B	Carbamazepine-d10	105	P	30 - 160
EPA 8321B	Diuron-d6	80.7	P	30 - 160
EPA 8321B	Endothall-d6	91.2	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	91.3	P	30 - 160
EPA 8321B	Ibuprofen-d3	88.7	P	30 - 160
EPA 8321B	Primidone-d5	121	P	30 - 160
EPA 8321B	Sucralose-d6	98.4	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A111216

Included Lab Sample IDs: 2314708

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	99.4	100	P/P	90 - 110
Iron	102	101	P/P	90 - 110
Magnesium	102	101	P/P	90 - 110
Potassium	103	102	P/P	90 - 110
Sodium	99.5	100	P/P	90 - 110
Strontium	96.9	95.3	P/P	90 - 110
Tin	99.4	96.7	P/P	90 - 110
Titanium	97.3	95.5	P/P	90 - 110
Vanadium	97.9	96.0	P/P	90 - 110
Zinc	103	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A111218

Included Lab Sample IDs: 2314708

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	105	105	P/P	90 - 110
Antimony	102	99.8	P/P	90 - 110
Arsenic	101	100	P/P	90 - 110
Barium	101	101	P/P	90 - 110
Beryllium	97.6	96.7	P/P	90 - 110
Boron	109	106	P/P	90 - 110
Cadmium	103	102	P/P	90 - 110
Cobalt	100	99.0	P/P	90 - 110
Copper	99.5	98.7	P/P	90 - 110
Lead	99.7	98.8	P/P	90 - 110
Manganese	101	99.3	P/P	90 - 110
Molybdenum	101	99.6	P/P	90 - 110
Nickel	99.2	98.5	P/P	90 - 110
Selenium	103	101	P/P	90 - 110
Silver	102	101	P/P	90 - 110
Thallium	103	103	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A111227

Included Lab Sample IDs: 2314706, 2314707

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	93.7	95.1	P/P	60 - 160
Endothall	74.4	102	P/P	60 - 160
Sucralose	101	108	P/P	60 - 160

Reference Method: EPA 8321B

Run ID: A111231

Included Lab Sample IDs: 2314706, 2314707

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	102	119	P/P	60 - 160
Glufosinate	93.3	105	P/P	60 - 160
Glyphosate	118	120	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A111346

Included Lab Sample IDs: 2314706, 2314707

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	104	104	P/P	50 - 150
2,4-D	104	109	P/P	50 - 150
2,4,5-T	83.4	86.1	P/P	50 - 150
2,4,5-T	86.1	87.3	P/P	50 - 150
Acetaminophen	88.6	91.0	P/P	60 - 160
Acetaminophen	91.0	91.2	P/P	60 - 160
Acetamiprid	112	113	P/P	50 - 150
Acetamiprid	113	112	P/P	50 - 150
Afidopyropen	101	99.0	P/P	50 - 150
Afidopyropen	98.1	101	P/P	50 - 150
Bentazon	90.3	98.2	P/P	50 - 160
Benzovindiflupyr	107	91.9	P/P	50 - 150
Benzovindiflupyr	99.3	107	P/P	50 - 150
Carbamazepine	103	104	P/P	60 - 150
Carbamazepine	104	101	P/P	60 - 150
Clothianidin	119	110	P/P	60 - 150
Clothianidin	93.0	119	P/P	60 - 150
Dinotefuran	104	105	P/P	50 - 150
Dinotefuran	105	103	P/P	50 - 150
Diuron	110	98.7	P/P	60 - 160
Diuron	99.2	110	P/P	60 - 160
Fenuron	96.8	99.5	P/P	60 - 150
Fenuron	99.5	99.7	P/P	60 - 150
Fluridone	97.0	99.1	P/P	60 - 160
Fluridone	99.1	100	P/P	60 - 160
Hydrocodone	95.8	99.0	P/P	60 - 150
Hydrocodone	99.0	101	P/P	60 - 150
Ibuprofen	133	95.4	P/P	50 - 160
Ibuprofen	89.6	133	P/P	50 - 160
Imazapyr	136	139	P/P	50 - 150
Imazapyr	139	124	P/P	50 - 150
Imidacloprid	93.8	96.5	P/P	60 - 150
Imidacloprid	98.3	93.8	P/P	60 - 150
Linuron	81.3	92.1	P/P	60 - 150
Linuron	93.6	81.3	P/P	60 - 150
Mandestrobin	109	112	P/P	50 - 150
Mandestrobin	95.2	109	P/P	50 - 150
MCPP	87.0	93.7	P/P	50 - 150
MCPP	93.7	92.1	P/P	50 - 150
Naproxen	124	95.0	P/P	50 - 160
Naproxen	92.0	124	P/P	50 - 160
Primidone	101	90.5	P/P	60 - 150
Primidone	90.5	104	P/P	60 - 150
Pyraclostrobin	102	105	P/P	60 - 150
Pyraclostrobin	105	94.8	P/P	60 - 150
Silvex	86.1	91.8	P/P	50 - 150
Silvex	86.5	86.1	P/P	50 - 150
Thiamethoxam	103	105	P/P	50 - 150
Thiamethoxam	105	105	P/P	50 - 150
Tolfenpyrad	94.6	99.7	P/P	60 - 150
Tolfenpyrad	99.7	90.3	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A111346

Included Lab Sample IDs: 2314706, 2314707

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Triclopyr	103	96.5	P/P	50 - 150
Triclopyr	92.0	103	P/P	50 - 150

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A111351

Included Lab Sample IDs: 2314708

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	96.6	95.3	P/P	90 - 110

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 200.7 Rev. 4.4	Calcium	101	98.7	99.4			0.810
	Iron	103	104	105	104		1.38
	Magnesium	104	98.5	104	102		1.11
	Potassium	102	101	97.6	101		1.95
	Sodium	99.2	98.9	98.7			1.09
	Strontium	100	101	99.6	99.7		0.0447
	Tin	102	102	102	102		0.216
	Titanium	99.3	101	99.5	100		0.607
	Vanadium	94.1	95.4	95.3	96.1		0.836
	Zinc	102	100	103	104		0.968
EPA 200.8 Rev. 5.4	Aluminum	102	100	101	102		1.11
	Antimony	98.4	101	102	104		0.927
	Arsenic	101	101	103	99.8		1.54
	Barium	101	102	103	103		0.717
	Beryllium	93.7	96.3	95.1	93.0		1.32
	Boron	103	105	106	106		0.875
	Cadmium	97.2	99.2	101	101		1.64
	Chromium	95.7	93.7	91.1	94.5		2.76
	Cobalt	99.9	101	102	98.2		0.275
	Copper	98.4	98.8	99.7	96.3		0.746
	Lead	98.3	99.6	100	98.4		0.439
	Manganese	94.7	97.9	98.6	98.5		0.592
	Molybdenum	99.4	103	103	98.1		0.0746
	Nickel	101	103	102	93.2		0.894
	Selenium	98.6	101	101	98.2		0.363
	Silver	102	102	102	102		0.0672
	Thallium	101	103	105	103		1.51
EPA 8321B	2,4-D	128	100	117			12.5
	2,4,5-T	85.1	72.1	73.5			1.84
	Acesulfame K	109	139	132			4.90
	Acetaminophen	86.3	101	97.3			4.00
	Acetamiprid	106	117	122			4.02
	Afidopyropen	84.1	75.0	77.5			3.28
	AMPA	111	108	103			4.01
	Bentazon	39.6					3.25
	Benzovindiflupyr	105	92.7	94.5			1.90
	Carbamazepine	106	86.1	99.4			8.53
	Clothianidin	105	123	131			6.29
	Dinotefuran	101	129	135			4.51
	Diuron	92.8	78.3	86.4			9.44
	Endothall	80.1	129	114			12.1
	Fenuron	101	82.8	88.8			6.94
	Fluridone	97.6	81.5	99.0			13.5
	Glufosinate	137	114	101			11.5
	Glyphosate	129	105	102			3.49
	Hydrocodone	94.5	97.2	98.1			0.908
	Ibuprofen	82.7	53.1	70.0			27.6
	Imazapyr	127					14.4
	Imidacloprid	94.9	171	189			8.86
	Linuron	85.0	77.5	70.7			9.19
	Mandestrobin	98.6	94.2	101			6.58
	MCPP	103	91.2	94.9			3.61
	Naproxen	74.3	73.2	62.7			15.4
	Primidone	107	106	112			4.85

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision SMP	MS
			LCS	MS		
EPA 8321B	Pyraclostrobin	88.1	79.9	83.3		4.13
	Silvex	72.6	75.5	82.4		8.80
	Sucralose	111	116	98.4		15.4
	Thiamethoxam	101	152	164		7.61
	Tolfenpyrad	56.4	54.5	51.6		5.44
	Triclopyr	96.1	84.7	75.8		11.2

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2314708
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2314708
EPA 8321B	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2314706, 2314707
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2314708

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 200.7 Rev. 4.4	03/25/2022	03/28/2022 10:42	Megan Whitefoot	03/29/2022 20:36	Josef B Mick	2314708
EPA 200.8 Rev. 5.4	03/25/2022	03/28/2022 10:42	Megan Whitefoot	03/29/2022 17:35	Emily M Philpot	2314708
EPA 8321B	03/25/2022	04/05/2022 10:26	Emily M Philpot	04/06/2022 14:12	Alexander Thompson	2314708
	03/25/2022	03/29/2022 14:00	Hoor Shaik	04/01/2022 03:50	Juyoung Kim	2314706
	03/25/2022	03/29/2022 14:00	Hoor Shaik	04/01/2022 06:09	Juyoung Kim	2314707
	03/25/2022	03/29/2022 14:00	Hoor Shaik	04/01/2022 15:23	Juyoung Kim	2314706
	03/25/2022	03/29/2022 14:00	Hoor Shaik	04/01/2022 15:57	Juyoung Kim	2314707
	03/25/2022	03/29/2022 14:00	Manjita Shrestha	03/29/2022 18:08	Manjita Shrestha	2314706
	03/25/2022	03/29/2022 14:00	Manjita Shrestha	03/29/2022 18:20	Manjita Shrestha	2314707
	03/25/2022	03/29/2022 14:00	Manjita Shrestha	03/30/2022 05:34	Manjita Shrestha	2314706
SM 2340B	03/25/2022	03/29/2022 14:00	Manjita Shrestha	03/30/2022 05:49	Manjita Shrestha	2314707
	03/25/2022			03/29/2022 20:36	Josef B Mick	2314708