

Chemical Analysis Report

NW-DIST-2022-08-03-02

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

Event Description: **Laurel Hill West**
Request ID: **RQ-2022-08-01-63**
Customer: **NW-DIST**
Project ID: **SMP**

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 19-AUG-2022 15:13

A handwritten signature in black ink, appearing to read "Liang Lin", 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 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: Oak Creek below Tommy Steele Road

Collection Date/Time: 08/02/2022 10:15

Field ID: G4NW0395

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2345701	EPA 200.7 Rev. 4.4	Calcium	1.86		mg/L	P417687	
		Iron	2.71E+03		ug/L	P417687	
		Magnesium	0.92		mg/L	P417687	
		Potassium	0.55	I	mg/L	P417687	
		Sodium	1.7	I	mg/L	P417687	
		Strontium	11.1		ug/L	P417687	
		Tin	3.0	U	ug/L	P417687	
		Titanium	1.1	I	ug/L	P417687	
		Vanadium	2.0	U	ug/L	P417687	
		Zinc	5.0	U	ug/L	P417687	
	EPA 200.8 Rev. 5.4	Aluminum	124		ug/L	P417687	
		Antimony	0.050	U	ug/L	P417687	
		Arsenic	0.62		ug/L	P417687	
		Barium	26.8		ug/L	P417687	
		Beryllium	0.111		ug/L	P417687	
		Boron	10		ug/L	P417687	
		Cadmium	0.020	U	ug/L	P417687	
		Chromium	0.40	U	ug/L	P417687	
		Cobalt	0.748		ug/L	P417687	
		Copper	0.40	U	ug/L	P417687	
		Lead	0.39	I	ug/L	P417687	
		Manganese	59.6		ug/L	P417687	
		Molybdenum	0.15	U	ug/L	P417687	
		Nickel	1.2	I	ug/L	P417687	
		Selenium	0.20	U	ug/L	P417687	
		Silver	0.010	U	ug/L	P417687	
		Thallium	0.10	U	ug/L	P417687	
	SM 2340 B-2011	Hardness	8.5		mg/L	P417687	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for potassium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for boron are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: Olive Branch below Mormon Temple Road

Collection Date/Time: 08/02/2022 10:45

Field ID: G4NW0161

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2345702	EPA 200.7 Rev. 4.4	Calcium	1.27		mg/L	P417687	
		Iron	830		ug/L	P417687	
		Magnesium	0.81		mg/L	P417687	
		Potassium	0.39	I	mg/L	P417687	
		Sodium	1.9	I	mg/L	P417687	
		Strontium	8.0		ug/L	P417687	
		Tin	3.0	U	ug/L	P417687	
		Titanium	4.9		ug/L	P417687	
		Vanadium	2.0	U	ug/L	P417687	
		Zinc	8.1	I	ug/L	P417687	
	EPA 200.8 Rev. 5.4	Aluminum	253		ug/L	P417687	
		Antimony	0.050	U	ug/L	P417687	
		Arsenic	0.31		ug/L	P417687	
		Barium	27.6		ug/L	P417687	
		Beryllium	0.116		ug/L	P417687	
		Boron	10.2		ug/L	P417687	
		Cadmium	0.023	I	ug/L	P417687	
		Chromium	0.40	U	ug/L	P417687	
		Cobalt	0.928		ug/L	P417687	
		Copper	0.40	U	ug/L	P417687	
		Lead	0.39	I	ug/L	P417687	
		Manganese	56.5		ug/L	P417687	
		Molybdenum	0.15	U	ug/L	P417687	
		Nickel	0.95	I	ug/L	P417687	
		Selenium	0.20	U	ug/L	P417687	
		Silver	0.010	U	ug/L	P417687	
		Thallium	0.10	U	ug/L	P417687	
	SM 2340 B-2011	Hardness	6.5		mg/L	P417687	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for potassium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for boron are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: Trammel Creek above CRX train tracks

Collection Date/Time: 08/02/2022 12:50

Field ID: G4NW0383

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2345703	EPA 200.7 Rev. 4.4	Calcium	4.52		mg/L	P417687	
		Iron	890		ug/L	P417687	
		Magnesium	0.94		mg/L	P417687	
		Potassium	0.87	I	mg/L	P417687	
		Sodium	2.9		mg/L	P417687	
		Strontium	18.2		ug/L	P417687	
		Tin	3.0	U	ug/L	P417687	
		Titanium	8.0		ug/L	P417687	
		Vanadium	2.0	U	ug/L	P417687	
		Zinc	5.0	U	ug/L	P417687	
	EPA 200.8 Rev. 5.4	Aluminum	498		ug/L	P417687	
		Antimony	0.055	I	ug/L	P417687	
		Arsenic	0.52		ug/L	P417687	
		Barium	15.5		ug/L	P417687	
		Beryllium	0.022	I	ug/L	P417687	
		Boron	46.1		ug/L	P417687	
		Cadmium	0.020	U	ug/L	P417687	
		Chromium	0.45	I	ug/L	P417687	
		Cobalt	0.118		ug/L	P417687	
		Copper	0.44	I	ug/L	P417687	
		Lead	0.64		ug/L	P417687	
		Manganese	16.1		ug/L	P417687	
		Molybdenum	0.15	U	ug/L	P417687	
		Nickel	0.50	U	ug/L	P417687	
		Selenium	0.20	U	ug/L	P417687	
		Silver	0.010	U	ug/L	P417687	
		Thallium	0.10	U	ug/L	P417687	
	SM 2340 B-2011	Hardness	15.1		mg/L	P417687	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for potassium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for boron are unavailable for one of two spiked samples because of high analyte concentration in the QC sample. The lead result was confirmed in the undigested sample on 08/17/2022.

Sample Location: Wilkinson Creek upstream of Wilkinson Bluff Road

Collection Date/Time: 08/02/2022 13:15

Field ID: G4NW0357

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2345694	EPA 8321B	2,4-D	0.0020	U	ug/L	P417606	
		Acesulfame K	0.10	U	ug/L	P417520	
		2,4,5-T	0.0040	U	ug/L	P417606	
		AMPA	0.10	U	ug/L	P417520	
		Acetaminophen	0.0080	U	ug/L	P417606	
		Acetamiprid	0.0020	U	ug/L	P417606	
		Endothall	0.25	U	ug/L	P417520	
		Glufosinate	0.10	U	ug/L	P417520	
		Glyphosate	0.10	U	ug/L	P417520	
		Afidopyropen	0.0020	U	ug/L	P417606	
		Bentazon	8.0E-04	U	ug/L	P417606	
		Sucralose	0.21		ug/L	P417520	
		Benzovindiflupyr	0.0020	U	ug/L	P417606	
		Carbamazepine	8.0E-04	U	ug/L	P417606	
		Clothianidin	0.0020	U	ug/L	P417606	
		Dinotefuran	0.0020	U	ug/L	P417606	
		Diuron	0.0020	U	ug/L	P417606	
		Fenuron	0.032	U	ug/L	P417606	
		Fluridone	8.0E-04	U	ug/L	P417606	
		Imazapyr	0.0040	U	ug/L	P417606	
		Hydrocodone	0.0020	U	ug/L	P417606	
		Ibuprofen	0.080	U	ug/L	P417606	
		Imidacloprid	0.0078	I	ug/L	P417606	
		Linuron	0.0040	U	ug/L	P417606	
		Mandestrobin	0.0020	U	ug/L	P417606	
		MCPP	0.0040	U	ug/L	P417606	
		Naproxen	0.0080	U	ug/L	P417606	
		Primidone	0.0040	U	ug/L	P417606	
		Pyraclostrobin	0.0020	U	ug/L	P417606	
		Silvex	0.0040	U	ug/L	P417606	
		Thiamethoxam	0.0020	U	ug/L	P417606	
		Tolfenpyrad	0.0020	U	ug/L	P417606	
		Triclopyr	0.0040	U	ug/L	P417606	

Ref. Method and Comment:

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

EPA 8321B: MS accuracy for sucralose could not be assessed due to high concentration of parameter in the spiked sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P417687

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: P417687

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
Chromium	0.40	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 8321B

Batch ID: P417520

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: EPA 8321B

Batch ID: P417606

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B

Batch ID: P417606

Component	Result	Code	Units
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	0.032	U	ug/L
Fluridone	8.0E-04	U	ug/L
Hydrocodone	0.0020	U	ug/L
Ibuprofen	0.080	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	0.0040	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: P417687

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	104		P	85 - 115
Iron	109		P	85 - 115
Magnesium	112		P	85 - 115
Potassium	107		P	85 - 115
Sodium	97.6		P	85 - 115
Strontium	106		P	85 - 115
Tin	102		P	85 - 115
Titanium	106		P	85 - 115
Vanadium	104		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P417687

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	94.6		P	80 - 120
Antimony	100		P	80 - 120
Arsenic	97.0		P	80 - 120
Barium	102		P	80 - 120
Beryllium	91.3		P	80 - 120
Boron	95.5		P	80 - 120
Cadmium	96.4		P	80 - 120
Chromium	96.3		P	80 - 120
Cobalt	94.7		P	80 - 120
Copper	92.2		P	80 - 120
Lead	93.3		P	80 - 120
Manganese	96.6		P	80 - 120
Molybdenum	94.3		P	80 - 120
Nickel	94.8		P	80 - 120
Selenium	95.0		P	80 - 120
Silver	97.0		P	80 - 120
Thallium	93.5		P	80 - 120

Reference Method: EPA 8321B

Batch ID: P417520

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	99.6		P	40 - 150
AMPA	111		P	40 - 150
Endothall	90.8		P	40 - 150
Glufosinate	111		P	40 - 150
Glyphosate	110		P	40 - 150
Sucralose	113		P	40 - 150

Reference Method: EPA 8321B

Batch ID: P417606

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	101		P	40 - 150
2,4,5-T	100		P	40 - 150
Acetaminophen	34.6		P	30 - 150
Acetamiprid	88.1		P	40 - 150

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B

Batch ID: P417606

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Afidopyropen	76.3		P	30 - 150
Bentazon	102		P	30 - 150
Benzovindiflupyr	94.5		P	40 - 150
Carbamazepine	101		P	40 - 150
Clothianidin	98.8		P	40 - 150
Dinotefuran	102		P	40 - 150
Diuron	89.5		P	40 - 150
Fenuron	96.6		P	40 - 150
Fluridone	100		P	40 - 150
Hydrocodone	96.5		P	40 - 150
Ibuprofen	87.3		P	40 - 150
Imazapyr	114		P	40 - 150
Imidacloprid	106		P	40 - 150
Linuron	88.6		P	40 - 150
Mandestrobin	97.8		P	40 - 150
MCPP	106		P	40 - 150
Naproxen	73.4		P	40 - 150
Primidone	98.5		P	40 - 150
Pyraclostrobin	90.1		P	40 - 150
Silvex	97.5		P	40 - 150
Thiamethoxam	104		P	40 - 150
Tolfenpyrad	54.1		P	30 - 150
Triclopyr	85.0		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P417687

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2346296	Calcium	103		P	80 - 120
2346296	Iron	109	107	P/P	80 - 120
2346296	Magnesium	110	105	P/P	80 - 120
2346296	Potassium	101	96.9	P/P	80 - 120
2346296	Sodium	98.1		P	80 - 120
2346296	Strontium	101	99.6	P/P	80 - 120
2346296	Tin	103	102	P/P	80 - 120
2346296	Titanium	106	103	P/P	80 - 120
2346296	Vanadium	105	102	P/P	80 - 120
2346296	Zinc	103	100	P/P	80 - 120
2346340	Calcium	103		P	80 - 120
2346340	Iron	109		P	80 - 120
2346340	Magnesium	107		P	80 - 120
2346340	Sodium	101		P	80 - 120
2346340	Strontium	100		P	80 - 120
2346340	Tin	102		P	80 - 120
2346340	Titanium	105		P	80 - 120
2346340	Vanadium	104		P	80 - 120
2346340	Zinc	99.9		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P417687

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2346296	Aluminum	95.7	95.3	P/P	80 - 120
2346296	Antimony	101	102	P/P	80 - 120
2346296	Arsenic	98.6	98.7	P/P	80 - 120
2346296	Barium	102	101	P/P	80 - 120
2346296	Beryllium	94.4	93.1	P/P	80 - 120
2346296	Boron	96.5	95.6	P/P	80 - 120
2346296	Cadmium	97.4	96.5	P/P	80 - 120
2346296	Chromium	97.5	98.2	P/P	80 - 120
2346296	Cobalt	94.7	94.8	P/P	80 - 120
2346296	Copper	94.3	95.3	P/P	80 - 120
2346296	Lead	93.7	93.2	P/P	80 - 120
2346296	Manganese	97.6	97.9	P/P	80 - 120
2346296	Molybdenum	95.1	94.2	P/P	80 - 120
2346296	Nickel	93.7	94.8	P/P	80 - 120
2346296	Selenium	95.4	95.1	P/P	80 - 120
2346296	Silver	95.2	95.2	P/P	80 - 120
2346296	Thallium	96.1	95.9	P/P	80 - 120
2346340	Aluminum	99.2		P	80 - 120
2346340	Antimony	104		P	80 - 120
2346340	Arsenic	100		P	80 - 120
2346340	Barium	103		P	80 - 120
2346340	Beryllium	91.2		P	80 - 120
2346340	Cadmium	99.9		P	80 - 120
2346340	Chromium	100		P	80 - 120
2346340	Cobalt	97.7		P	80 - 120
2346340	Copper	94.2		P	80 - 120
2346340	Lead	95.5		P	80 - 120
2346340	Manganese	100		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P417687

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2346340	Molybdenum	99.3		P	80 - 120
2346340	Nickel	95.5		P	80 - 120
2346340	Selenium	97.2		P	80 - 120
2346340	Silver	96.6		P	80 - 120
2346340	Thallium	97.5		P	80 - 120

Reference Method: EPA 8321B

Batch ID: P417520

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2345138	Acesulfame K	82.1	84.5	P/P	40 - 150
2345138	AMPA	45.2	43.7	P/P	40 - 150
2345138	Endothall	94.2	97.1	P/P	40 - 150
2345138	Glufosinate	50.5	48.2	P/P	40 - 150
2345138	Glyphosate	64.2	68.3	P/P	40 - 150

Reference Method: EPA 8321B

Batch ID: P417606

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2345138	2,4-D	86.4	81.9	P/P	40 - 150
2345138	2,4,5-T	72.1	70.0	P/P	40 - 150
2345138	Acetaminophen	34.7	40.0	P/P	30 - 150
2345138	Acetamiprid	75.5	86.4	P/P	40 - 150
2345138	Afidopyropen	85.9	92.4	P/P	30 - 150
2345138	Benzovindiflupyr	94.4	96.5	P/P	40 - 150
2345138	Clothianidin	105	90.5	P/P	40 - 150
2345138	Diuron	72.0	80.8	P/P	40 - 150
2345138	Fenuron	88.1	86.2	P/P	40 - 150
2345138	Fluridone	101	94.4	P/P	40 - 150
2345138	Hydrocodone	104	99.8	P/P	40 - 150
2345138	Ibuprofen	89.7	96.0	P/P	40 - 150
2345138	Imazapyr	64.5	59.9	P/P	40 - 150
2345138	Linuron	121	124	P/P	40 - 150
2345138	Mandestrobin	94.8	92.2	P/P	40 - 150
2345138	MCPP	88.0	81.3	P/P	40 - 150
2345138	Naproxen	53.4	65.6	P/P	40 - 150
2345138	Pyraclostrobin	94.0	92.0	P/P	40 - 150
2345138	Silvex	98.1	90.4	P/P	40 - 150
2345138	Thiamethoxam	134	141	P/P	40 - 150
2345138	Tolfenpyrad	59.7	56.4	P/P	30 - 150
2345138	Triclopyr	75.0	69.9	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P417687

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2346296	Calcium	3.17	Spike	P	0 - 20
2346296	Iron	1.74	Spike	P	0 - 20
2346296	Magnesium	2.86	Spike	P	0 - 20
2346296	Potassium	2.56	Spike	P	0 - 20
2346296	Sodium	3.36	Spike	P	0 - 20
2346296	Strontium	1.87	Spike	P	0 - 20
2346296	Tin	1.45	Spike	P	0 - 20
2346296	Titanium	2.43	Spike	P	0 - 20
2346296	Vanadium	2.71	Spike	P	0 - 20
2346296	Zinc	2.57	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P417687

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2346296	Aluminum	0.438	Spike	P	0 - 20
2346296	Antimony	1.14	Spike	P	0 - 20
2346296	Arsenic	0.0924	Spike	P	0 - 20
2346296	Barium	0.332	Spike	P	0 - 20
2346296	Beryllium	1.29	Spike	P	0 - 20
2346296	Boron	0.652	Spike	P	0 - 20
2346296	Cadmium	0.950	Spike	P	0 - 20
2346296	Chromium	0.642	Spike	P	0 - 20
2346296	Cobalt	0.0197	Spike	P	0 - 20
2346296	Copper	1.11	Spike	P	0 - 20
2346296	Lead	0.480	Spike	P	0 - 20
2346296	Manganese	0.299	Spike	P	0 - 20
2346296	Molybdenum	0.928	Spike	P	0 - 20
2346296	Nickel	1.13	Spike	P	0 - 20
2346296	Selenium	0.282	Spike	P	0 - 20
2346296	Silver	0.0216	Spike	P	0 - 20
2346296	Thallium	0.275	Spike	P	0 - 20

Reference Method: EPA 8321B

Batch ID: P417520

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2345138	Acesulfame K	2.96	Spike	P	0 - 30
2345138	AMPA	3.37	Spike	P	0 - 30
2345138	Endothall	3.04	Spike	P	0 - 30
2345138	Glufosinate	4.69	Spike	P	0 - 30
2345138	Glyphosate	6.08	Spike	P	0 - 30
2345138	Sucralose	3.64	Spike	P	0 - 30

Reference Method: EPA 8321B

Batch ID: P417606

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

Reference Method: EPA 8321B
Batch ID: P417606

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2345138	2,4-D	4.33	Spike	P	0 - 30
2345138	2,4,5-T	2.92	Spike	P	0 - 30
2345138	Acetaminophen	14.3	Spike	P	0 - 30
2345138	Acetamiprid	11.8	Spike	P	0 - 30
2345138	Afidopyropen	7.31	Spike	P	0 - 30
2345138	Bentazon	8.17	Spike	P	0 - 30
2345138	Benzovindiflupyr	2.26	Spike	P	0 - 30
2345138	Carbamazepine	0.0370	Spike	P	0 - 30
2345138	Clothianidin	10.3	Spike	P	0 - 30
2345138	Dinotefuran	2.10	Spike	P	0 - 30
2345138	Diuron	7.73	Spike	P	0 - 30
2345138	Fenuron	2.16	Spike	P	0 - 30
2345138	Fluridone	5.98	Spike	P	0 - 30
2345138	Hydrocodone	4.05	Spike	P	0 - 30
2345138	Ibuprofen	6.79	Spike	P	0 - 30
2345138	Imazapyr	4.66	Spike	P	0 - 30
2345138	Imidacloprid	3.20	Spike	P	0 - 30
2345138	Linuron	2.34	Spike	P	0 - 30
2345138	Mandestrobin	2.84	Spike	P	0 - 30
2345138	MCPP	7.82	Spike	P	0 - 30
2345138	Naproxen	20.5	Spike	P	0 - 30
2345138	Primidone	3.82	Spike	P	0 - 30
2345138	Pyraclostrobin	2.08	Spike	P	0 - 30
2345138	Silvex	8.17	Spike	P	0 - 30
2345138	Thiamethoxam	5.22	Spike	P	0 - 30
2345138	Tolfenpyrad	5.75	Spike	P	0 - 30
2345138	Triclopyr	7.03	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2345694

Field Sample ID: G4NW0357

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	93.1	P	30 - 160
EPA 8321B	Acetaminophen-d4	50.7	P	30 - 160
EPA 8321B	Carbamazepine-d10	109	P	30 - 160
EPA 8321B	Diuron-d6	97.2	P	30 - 160
EPA 8321B	Endothall-d6	106	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	116	P	30 - 160
EPA 8321B	Ibuprofen-d3	73.9	P	30 - 160
EPA 8321B	Primidone-d5	110	P	30 - 160
EPA 8321B	Sucralose-d6	111	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A113922
Included Lab Sample IDs: 2345694

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	99.5	95.1	P/P	50 - 150
2,4,5-T	94.3	100	P/P	50 - 150
Acetaminophen	101	98.0	P/P	60 - 160
Acetamiprid	88.1	100	P/P	50 - 150
Afidopyropen	91.4	96.3	P/P	50 - 150
Bentazon	99.3	93.6	P/P	50 - 160
Benzovindiflupyr	98.4	95.1	P/P	50 - 150
Carbamazepine	104	110	P/P	60 - 150
Clothianidin	108	96.3	P/P	60 - 150
Dinotefuran	102	101	P/P	50 - 150
Diuron	112	96.9	P/P	60 - 160
Fenuron	98.3	96.3	P/P	60 - 150
Fluridone	112	104	P/P	60 - 160
Hydrocodone	101	101	P/P	60 - 150
Ibuprofen	78.2	74.7	P/P	50 - 160
Imazapyr	110	115	P/P	50 - 150
Imidacloprid	99.1	94.7	P/P	60 - 150
Linuron	95.6	88.5	P/P	60 - 150
Mandestrobin	105	99.9	P/P	50 - 150
MCPP	104	97.5	P/P	50 - 150
Naproxen	68.4	75.2	P/P	50 - 160
Primidone	96.4	104	P/P	60 - 150
Pyraclostrobin	102	103	P/P	60 - 150
Silvex	89.1	87.7	P/P	50 - 150
Thiamethoxam	102	100	P/P	50 - 150
Tolfenpyrad	96.4	95.9	P/P	60 - 150
Triclopyr	78.8	81.1	P/P	50 - 150

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A113942
Included Lab Sample IDs: 2345701, 2345702, 2345703

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	104	102	P/P	90 - 110
Iron	105	103	P/P	90 - 110
Magnesium	106	104	P/P	90 - 110
Potassium	104	100	P/P	90 - 110
Sodium	101	98.5	P/P	90 - 110
Strontium	101	97.5	P/P	90 - 110
Tin	98.8	99.0	P/P	90 - 110
Titanium	101	101	P/P	90 - 110
Vanadium	101	100	P/P	90 - 110
Zinc	97.4	97.8	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A113947
Included Lab Sample IDs: 2345694

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	98.3	102	P/P	60 - 160
Sucralose	116	114	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A113950

Included Lab Sample IDs: 2345694

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	124	123	P/P	60 - 160
Endothall	96.2	91.8	P/P	60 - 160
Glufosinate	117	103	P/P	60 - 160
Glyphosate	110	117	P/P	60 - 160

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A114134

Included Lab Sample IDs: 2345701, 2345702, 2345703

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	100	96.4	P/P	90 - 110
Antimony	99.7	99.7	P/P	90 - 110
Arsenic	102	99.7	P/P	90 - 110
Barium	99.4	98.6	P/P	90 - 110
Beryllium	94.0	94.4	P/P	90 - 110
Boron	101	96.8	P/P	90 - 110
Cadmium	102	102	P/P	90 - 110
Chromium	101	99.5	P/P	90 - 110
Cobalt	98.3	98.0	P/P	90 - 110
Copper	97.9	96.5	P/P	90 - 110
Lead	94.1	93.0	P/P	90 - 110
Manganese	101	100	P/P	90 - 110
Molybdenum	97.0	95.8	P/P	90 - 110
Nickel	97.3	96.9	P/P	90 - 110
Selenium	102	98.6	P/P	90 - 110
Silver	97.7	96.8	P/P	90 - 110
Thallium	98.6	97.0	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 200.7 Rev. 4.4	Calcium	104	103	103				3.17
	Iron	109	109	107	109			1.74
	Magnesium	112	110	105	107			2.86
	Potassium	107	101	96.9				2.56
	Sodium	97.6	98.1	101				3.36
	Strontium	106	101	99.6	100			1.87
	Tin	102	103	102	102			1.45
	Titanium	106	106	103	105			2.43
	Vanadium	104	105	102	104			2.71
	Zinc	101	103	100	99.9			2.57
EPA 200.8 Rev. 5.4	Aluminum	94.6	95.7	95.3	99.2			0.438
	Antimony	100	101	102	104			1.14
	Arsenic	97.0	98.6	98.7	100			0.0924
	Barium	102	102	101	103			0.332
	Beryllium	91.3	94.4	93.1	91.2			1.29
	Boron	95.5	96.5	95.6				0.652
	Cadmium	96.4	97.4	96.5	99.9			0.950
	Chromium	96.3	97.5	98.2	100			0.642
	Cobalt	94.7	94.7	94.8	97.7			0.0197
	Copper	92.2	94.3	95.3	94.2			1.11
	Lead	93.3	93.7	93.2	95.5			0.480
	Manganese	96.6	97.6	97.9	100			0.299
	Molybdenum	94.3	95.1	94.2	99.3			0.928
	Nickel	94.8	93.7	94.8	95.5			1.13
	Selenium	95.0	95.4	95.1	97.2			0.282
	Silver	97.0	95.2	95.2	96.6			0.0216
	Thallium	93.5	97.5	96.1	95.9			0.275
EPA 8321B	2,4-D	101	86.4	81.9				4.33
	2,4,5-T	100	72.1	70.0				2.92
	Acesulfame K	99.6	82.1	84.5				2.96
	Acetaminophen	34.6	34.7	40.0				14.3
	Acetamiprid	88.1	75.5	86.4				11.8
	Afidopyropen	76.3	85.9	92.4				7.31
	AMPA	111	45.2	43.7				3.37
	Bentazon	102						8.17
	Benzovindiflupyr	94.5	94.4	96.5				2.26
	Carbamazepine	101						0.0370
	Clothianidin	98.8	105	90.5				10.3
	Dinotefuran	102						2.10
	Diuron	89.5	72.0	80.8				7.73
	Endothall	90.8	94.2	97.1				3.04
	Fenuron	96.6	88.1	86.2				2.16
	Fluridone	100	101	94.4				5.98
	Glufosinate	111	50.5	48.2				4.69
	Glyphosate	110	64.2	68.3				6.08
	Hydrocodone	96.5	104	99.8				4.05
	Ibuprofen	87.3	89.7	96.0				6.79
	Imazapyr	114	64.5	59.9				4.66
	Imidacloprid	106						3.20
	Linuron	88.6	121	124				2.34
	Mandestrobin	97.8	94.8	92.2				2.84
	MCPP	106	88.0	81.3				7.82
	Naproxen	73.4	53.4	65.6				20.5
	Primidone	98.5						3.82

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision SMP	MS
			LCS			
EPA 8321B	Pyraclostrobin	90.1	94.0	92.0		2.08
	Silvex	97.5	98.1	90.4		8.17
	Sucralose	113				3.64
	Thiamethoxam	104	134	141		5.22
	Tolfenpyrad	54.1	59.7	56.4		5.75
	Triclopyr	85.0	75.0	69.9		7.03

Reference Method Descriptions

Method	Description	Associated Samples
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2345701, 2345702, 2345703
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2345701, 2345702, 2345703
EPA 8321B	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2345694
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2345701, 2345702, 2345703

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	08/03/2022	08/05/2022 09:45	Mackenzie Hunt	08/05/2022 21:27	McKinley C Carter	2345701
	08/03/2022	08/05/2022 09:45	Mackenzie Hunt	08/05/2022 21:31	McKinley C Carter	2345702
	08/03/2022	08/05/2022 09:45	Mackenzie Hunt	08/05/2022 21:36	McKinley C Carter	2345703
EPA 200.8 Rev. 5.4	08/03/2022	08/05/2022 09:45	Mackenzie Hunt	08/16/2022 17:48	Emily M Philpot	2345701
	08/03/2022	08/05/2022 09:45	Mackenzie Hunt	08/16/2022 17:57	Emily M Philpot	2345702
	08/03/2022	08/05/2022 09:45	Mackenzie Hunt	08/16/2022 18:06	Emily M Philpot	2345703
EPA 8321B	08/03/2022	08/04/2022 13:00	Hoor Shaik	08/05/2022 15:11	Juyoung Kim	2345694
	08/03/2022	08/05/2022 09:10	Umesh Chiluwal	08/05/2022 14:40	Umesh Chiluwal	2345694
	08/03/2022	08/05/2022 09:10	Umesh Chiluwal	08/06/2022 06:32	Umesh Chiluwal	2345694
SM 2340 B-2011	08/03/2022			08/05/2022 21:27	McKinley C Carter	2345701
	08/03/2022			08/05/2022 21:31	McKinley C Carter	2345702
	08/03/2022			08/05/2022 21:36	McKinley C Carter	2345703