

Chemical Analysis Report

SO-DIST-2021-04-30-02

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

Event Description: **2021 SMP : Collier County Cow Slough**
Request ID: **RQ-2021-03-29-64**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 18-MAY-2021 09:37

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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 group are included in this report: 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: IMKFSHCK

Collection Date/Time: 04/29/2021 09:23

Field ID: IMKFSHCK

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2244252	EPA 8276	Chlordane	5.8	U	ng/L	P397459	
		Toxaphene	35	U	ng/L	P397459	
2244253	EPA 8321B	2,4-D	0.13		ug/L	P397580	
		Acesulfame K	0.10	U	ug/L	P397538	MS
		2,4,5-T	0.0040	U	ug/L	P397580	
		AMPA	4.2		ug/L	P397538	
		Sucralose	0.010	U	ug/L	P397538	MS
		Acetaminophen	0.0080	U	ug/L	P397580	
		Acetamiprid	0.0020	U	ug/L	P397580	
		Endothall	0.25	U	ug/L	P397538	
		Glufosinate	0.10	U	ug/L	P397538	
		Glyphosate	9.9		ug/L	P397538	
		Afidopyropen	0.0020	U	ug/L	P397580	
		Bentazon	0.0039		ug/L	P397580	
		Benzovindiflupyr	0.0020	U	ug/L	P397580	
		Carbamazepine	8.0E-04	U	ug/L	P397580	
		Clothianidin	0.0020	U	ug/L	P397580	
		Dinotefuran	0.0020	U	ug/L	P397580	
		Diuron	0.0020	U	ug/L	P397580	
		Fenuron	0.016	U	ug/L	P397580	
		Fluridone	0.0022	I	ug/L	P397580	
		Imazapyr	0.020		ug/L	P397580	
		Hydrocodone	0.0020	U	ug/L	P397580	
		Ibuprofen	0.020	U	ug/L	P397580	
		Imidacloprid	0.0020	U	ug/L	P397580	
		Linuron	0.0040	U	ug/L	P397580	
		Mandestrobin	0.0020	U	ug/L	P397580	
		MCP	0.0020	U	ug/L	P397580	
		Naproxen	0.0080	U	ug/L	P397580	
		Primidone	0.0040	U	ug/L	P397580	
		Pyraclostrobin	0.0020	U	ug/L	P397580	
		Thiamethoxam	0.0020	U	ug/L	P397580	
		Tolfenpyrad	0.0020	U	ug/L	P397580	
		Triclopyr	0.0040	U	ug/L	P397580	

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.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8276

Batch ID: P397459

Component	Result	Code	Units
Chlordane	5.0	U	ng/L
Toxaphene	30	U	ng/L

Reference Method: EPA 8321B

Batch ID: P397538

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: P397580

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
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 8276
Batch ID: P397459

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlordane	96.4	94.9	P/P	56 - 117
Toxaphene	79.3	81.1	P/P	45 - 116

Reference Method: EPA 8321B
Batch ID: P397538

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	137		P	40 - 150
AMPA	98.9		P	40 - 150
Endothall	79.2		P	40 - 150
Glufosinate	111		P	40 - 150
Glyphosate	90.7		P	40 - 140
Sucralose	84.5		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P397580

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	113		P	30 - 160
2,4,5-T	119		P	30 - 160
Acetaminophen	121		P	30 - 160
Acetamiprid	77.3		P	30 - 160
Afidopyropen	69.0		P	30 - 160
Bentazon	142		P	30 - 160
Benzovindiflupyr	72.2		P	30 - 160
Carbamazepine	83.2		P	30 - 160
Clothianidin	95.3		P	30 - 160
Dinotefuran	79.5		P	30 - 160
Diuron	59.6		P	30 - 160
Fenuron	99.9		P	30 - 160
Fluridone	85.7		P	30 - 160
Hydrocodone	90.3		P	30 - 160
Ibuprofen	74.8		P	30 - 160
Imazapyr	100		P	30 - 160
Imidacloprid	101		P	30 - 160
Linuron	67.8		P	30 - 160
Mandestrobin	84.8		P	30 - 160
MCPP	115		P	30 - 160
Naproxen	67.9		P	30 - 160
Primidone	81.7		P	30 - 160
Pyraclostrobin	70.5		P	30 - 160
Thiamethoxam	90.5		P	30 - 160
Tolfenpyrad	46.4		P	30 - 160
Triclopyr	119		P	30 - 160

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8276
Batch ID: P397459

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243496	Chlordane	86.5	84.8	P/P	47 - 128
2243496	Toxaphene	77.2	72.9	P/P	11 - 163

Reference Method: EPA 8321B
Batch ID: P397538

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243842	Acesulfame K	172	168	F/F	40 - 150
2243842	AMPA	103	109	P/P	40 - 150
2243842	Endothall	117	91.8	P/P	40 - 150
2243842	Glufosinate	74.7	71.8	P/P	40 - 150
2243842	Glyphosate	88.9	117	P/P	40 - 140
2243842	Sucralose	26.7	39.0	F/F	40 - 150

Reference Method: EPA 8321B
Batch ID: P397580

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243842	2,4-D	118	113	P/P	30 - 160
2243842	2,4,5-T	99.2	107	P/P	30 - 160
2243842	Acetaminophen	88.3	90.1	P/P	30 - 160
2243842	Acetamiprid	72.6	73.5	P/P	30 - 160
2243842	Afidopyropen	77.1	78.2	P/P	30 - 160
2243842	Benzovindiflupyr	68.8	72.0	P/P	30 - 160
2243842	Carbamazepine	65.0	67.6	P/P	30 - 160
2243842	Clothianidin	100	95.6	P/P	30 - 160
2243842	Dinotefuran	98.3	101	P/P	30 - 160
2243842	Diuron	41.6	43.5	P/P	30 - 160
2243842	Fenuron	73.7	77.4	P/P	30 - 160
2243842	Hydrocodone	94.8	86.9	P/P	30 - 160
2243842	Ibuprofen	65.8	75.4	P/P	30 - 160
2243842	Imidacloprid	125	137	P/P	30 - 160
2243842	Linuron	52.2	60.4	P/P	30 - 160
2243842	Mandestrobin	73.9	81.0	P/P	30 - 160
2243842	MCPP	98.8	103	P/P	30 - 160
2243842	Naproxen	62.4	81.0	P/P	30 - 160
2243842	Primidone	94.7	93.6	P/P	30 - 160
2243842	Pyraclostrobin	67.7	75.2	P/P	30 - 160
2243842	Thiamethoxam	111	119	P/P	30 - 160
2243842	Tolfenpyrad	43.3	47.7	P/P	30 - 160
2243842	Triclopyr	104	114	P/P	30 - 160

Quality Assurance Report Precision

Reference Method: EPA 8276

Batch ID: P397459

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243496	Chlordane	1.88	Spike	P	0 - 30
2243496	Toxaphene	5.67	Spike	P	0 - 30
LFB	Chlordane	1.57	LCS	P	0 - 30
LFB	Toxaphene	2.35	LCS	P	0 - 30

Reference Method: EPA 8321B

Batch ID: P397538

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243842	Acesulfame K	2.43	Spike	P	0 - 30
2243842	AMPA	4.71	Spike	P	0 - 30
2243842	Endothall	24.5	Spike	P	0 - 30
2243842	Glufosinate	4.02	Spike	P	0 - 30
2243842	Glyphosate	23.7	Spike	P	0 - 30
2243842	Sucralose	19.3	Spike	P	0 - 30

Reference Method: EPA 8321B

Batch ID: P397580

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243842	2,4-D	3.56	Spike	P	0 - 30
2243842	2,4,5-T	7.20	Spike	P	0 - 30
2243842	Acetaminophen	1.93	Spike	P	0 - 30
2243842	Acetamiprid	1.31	Spike	P	0 - 30
2243842	Afidopyropen	1.37	Spike	P	0 - 30
2243842	Bentazon	14.1	Spike	P	0 - 30
2243842	Benzovindiflupyr	4.52	Spike	P	0 - 30
2243842	Carbamazepine	3.44	Spike	P	0 - 30
2243842	Clothianidin	4.47	Spike	P	0 - 30
2243842	Dinotefuran	2.16	Spike	P	0 - 30
2243842	Diuron	3.88	Spike	P	0 - 30
2243842	Fenuron	4.81	Spike	P	0 - 30
2243842	Fluridone	11.7	Spike	P	0 - 30
2243842	Hydrocodone	8.60	Spike	P	0 - 30
2243842	Ibuprofen	13.6	Spike	P	0 - 30
2243842	Imazapyr	2.18	Spike	P	0 - 30
2243842	Imidacloprid	8.69	Spike	P	0 - 30
2243842	Linuron	14.6	Spike	P	0 - 30
2243842	Mandestrobin	9.17	Spike	P	0 - 30
2243842	MCPP	4.07	Spike	P	0 - 30
2243842	Naproxen	26.0	Spike	P	0 - 30
2243842	Primidone	1.11	Spike	P	0 - 30
2243842	Pyraclostrobin	10.6	Spike	P	0 - 30
2243842	Thiamethoxam	6.90	Spike	P	0 - 30
2243842	Tolfenpyrad	9.73	Spike	P	0 - 30
2243842	Triclopyr	9.46	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2244252

Field Sample ID: IMKF5HCK

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8276	Decachlorobiphenyl	51.9	P	29 - 92.0
EPA 8276	PCNB	78.4	P	43 - 134

Lab Sample ID: 2244253

Field Sample ID: IMKF5HCK

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	110	P	30 - 160
EPA 8321B	Acetaminophen-d4	94.8	P	30 - 160
EPA 8321B	Carbamazepine-d10	63.3	P	30 - 160
EPA 8321B	Diuron-d6	50.4	P	30 - 160
EPA 8321B	Endothall-d6	149	P	40 - 160
EPA 8321B	Endothall-d6	149	P	40 - 160
EPA 8321B	Glyphosate 13C 15N	97.0	P	40 - 160
EPA 8321B	Glyphosate 13C 15N	97.0	P	40 - 160
EPA 8321B	Ibuprofen-d3	76.4	P	30 - 160
EPA 8321B	Primidone-d5	89.4	P	30 - 160
EPA 8321B	Sucralose-d6	93.2	P	30 - 160
EPA 8321B	Sucralose-d6	93.2	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
 Run ID: A105159
 Included Lab Sample IDs: 2244253

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	108	91.5	P/P	40 - 160
AMPA	81.0	79.7	P/P	40 - 160
Endothall	91.5	90.4	P/P	40 - 160
Glufosinate	75.2	80.3	P/P	40 - 160
Glyphosate	103	115	P/P	40 - 160

Reference Method: EPA 8321B
 Run ID: A105241
 Included Lab Sample IDs: 2244253

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	87.0	91.3	P/P	60 - 160

Reference Method: EPA 8276
 Run ID: A105262
 Included Lab Sample IDs: 2244252

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chlordane	99.0		P	80 - 120
Toxaphene	89.7		P	80 - 120

Reference Method: EPA 8321B
 Run ID: A105376
 Included Lab Sample IDs: 2244253

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	104	116	P/P	50 - 150
2,4,5-T	98.6	124	P/P	50 - 150
Acetaminophen	88.5	98.9	P/P	60 - 160
Acetamiprid	97.1	106	P/P	50 - 150
Afidopyropen	109	119	P/P	50 - 150
Bentazon	87.3	158	P/P	50 - 160
Benzovindiflupyr	96.6	122	P/P	50 - 160
Carbamazepine	99.0	101	P/P	60 - 150
Clothianidin	109	107	P/P	60 - 150
Dinotefuran	93.7	86.6	P/P	50 - 150
Diuron	104	108	P/P	60 - 160
Fenuron	106	109	P/P	60 - 150
Fluridone	122	133	P/P	60 - 160
Hydrocodone	101	108	P/P	60 - 150
Ibuprofen	89.9	103	P/P	50 - 160
Imazapyr	90.5	118	P/P	50 - 160
Imidacloprid	93.1	98.1	P/P	60 - 150
Linuron	104	110	P/P	60 - 150
Mandestrobin	108	129	P/P	50 - 150
MCPP	110	129	P/P	50 - 150
Naproxen	92.1	147	P/P	50 - 160
Primidone	89.8	87.0	P/P	60 - 150
Pyraclostrobin	110	122	P/P	60 - 150
Thiamethoxam	99.6	97.2	P/P	50 - 150
Tolfenpyrad	96.2	114	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A105376
Included Lab Sample IDs: 2244253

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Triclopyr	114	122	P/P	50 - 150

* 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	
						LCS	MS
EPA 8276	Chlordane	96.4	94.9	86.5	84.8	1.57	1.88
	Toxaphene	79.3	81.1	77.2	72.9	2.35	5.67
EPA 8321B	2,4-D	113		118	113		3.56
	2,4,5-T	119		99.2	107		7.20
	Acesulfame K	137		172	168		2.43
	Acetaminophen	121		88.3	90.1		1.93
	Acetamiprid	77.3		72.6	73.5		1.31
	Afidopyropen	69.0		77.1	78.2		1.37
	AMPA	98.9		103	109		4.71
	Bentazon	142					14.1
	Benzovindiflupyr	72.2		68.8	72.0		4.52
	Carbamazepine	83.2		65.0	67.6		3.44
	Clothianidin	95.3		100	95.6		4.47
	Dinotefuran	79.5		98.3	101		2.16
	Diuron	59.6		41.6	43.5		3.88
	Endothall	79.2		117	91.8		24.5
	Fenuron	99.9		73.7	77.4		4.81
	Fluridone	85.7					11.7
	Glufosinate	111		74.7	71.8		4.02
	Glyphosate	90.7		88.9	117		23.7
	Hydrocodone	90.3		94.8	86.9		8.60
	Ibuprofen	74.8		65.8	75.4		13.6
	Imazapyr	100					2.18
	Imidacloprid	101		125	137		8.69
	Linuron	67.8		52.2	60.4		14.6
	Mandestrobin	84.8		73.9	81.0		9.17
	MCPP	115		98.8	103		4.07
	Naproxen	67.9		62.4	81.0		26.0
	Primidone	81.7		94.7	93.6		1.11
	Pyraclostrobin	70.5		67.7	75.2		10.6
	Sucralose	84.5		26.7	39.0		19.3
	Thiamethoxam	90.5		111	119		6.90
	Tolfenpyrad	46.4		43.3	47.7		9.73
	Triclopyr	119		104	114		9.46

Reference Method Descriptions

Method	Description	Associated Samples
EPA 8276	Organochlorine pesticides in water matrices by GC/MS with Negative Chemical Ionization	2244252
EPA 8321B	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2244253
EPA 8321B	Water soluble organic compounds by HPLC/MS/MS	2244253

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8276	04/30/2021	05/03/2021 08:00	Fe-Val Siddell	05/08/2021 09:22	Arthur Maknenko	2244252
EPA 8321B	04/30/2021	05/03/2021 12:15	Rebecca Ware	05/03/2021 20:04	Rebecca Ware	2244253
	04/30/2021	05/03/2021 12:15	Rebecca Ware	05/06/2021 12:59	Rebecca Ware	2244253
	04/30/2021	05/05/2021 09:00	Hoor Shaik	05/06/2021 06:03	Juyoung Kim	2244253