

Chemical Analysis Report

SO-DIST-2021-07-20-02

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-2021-06-07-64**

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
Attn: William Mullen

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 28-JUL-2021 14:35



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: IMKFHSHCK

Collection Date/Time: 07/19/2021 10:45

Field ID: IMKFHSMCK

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2263297	EPA 8276	Chlordane	5.5	U	ng/L	P401195	
		Toxaphene	33	U	ng/L	P401195	
2263298	EPA 8321B	2,4-D	0.010		ug/L	P401218	
		Acesulfame K	0.10	U	ug/L	P401256	
		2,4,5-T	0.0040	U	ug/L	P401218	
		AMPA	1.3		ug/L	P401256	
		Acetaminophen	0.0080	U	ug/L	P401218	MS, RPD
		Acetamiprid	0.0020	U	ug/L	P401218	
		Endothall	0.25	U	ug/L	P401256	
		Glufosinate	0.10	U	ug/L	P401256	
		Glyphosate	1.2		ug/L	P401256	
		Afidopyropen	0.0020	U	ug/L	P401218	
		Bentazon	8.0E-04	U	ug/L	P401218	
		Sucralose	0.015	I	ug/L	P401256	
		Benzovindiflupyr	0.0020	U	ug/L	P401218	
		Carbamazepine	8.0E-04	U	ug/L	P401218	
		Clothianidin	0.0020	U	ug/L	P401218	
		Dinotefuran	0.0020	U	ug/L	P401218	
		Diuron	0.037		ug/L	P401218	
		Fenuron	0.016	U	ug/L	P401218	
		Fluridone	0.0033		ug/L	P401218	
		Imazapyr	0.034		ug/L	P401218	
		Hydrocodone	0.0020	U	ug/L	P401218	
		Ibuprofen	0.020	U	ug/L	P401218	
		Imidacloprid	0.0039	I	ug/L	P401218	
		Linuron	0.0040	U	ug/L	P401218	
		Mandestrobin	0.0020	U	ug/L	P401218	
		MCP	0.0020	U	ug/L	P401218	
		Naproxen	0.0080	U	ug/L	P401218	
		Primidone	0.0040	U	ug/L	P401218	
		Pyraclostrobin	0.0020	U	ug/L	P401218	
		Thiamethoxam	0.0020	U	ug/L	P401218	
		Tolfenpyrad	0.0020	U	ug/L	P401218	
		Triclopyr	0.0040	U	ug/L	P401218	

Ref. Method and Comment:

EPA 8321B: MS accuracy for 2,4-D 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: P401195

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

Reference Method: EPA 8321B

Batch ID: P401218

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

Reference Method: EPA 8321B

Batch ID: P401256

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 Laboratory Control Sample Accuracy

Reference Method: EPA 8276

Batch ID: P401195

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlordane	83.8	85.3	P/P	56 - 117
Toxaphene	72.0	73.5	P/P	45 - 116

Reference Method: EPA 8321B

Batch ID: P401218

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	121		P	30 - 160
2,4,5-T	122		P	30 - 160
Acetaminophen	86.2		P	30 - 160
Acetamiprid	85.9		P	30 - 160
Afidopyropen	70.0		P	30 - 160
Bentazon	95.0		P	30 - 160
Benzovindiflupyr	91.7		P	30 - 160
Carbamazepine	101		P	30 - 160
Clothianidin	98.6		P	30 - 160
Dinotefuran	94.6		P	30 - 160
Diuron	94.6		P	30 - 160
Fenuron	95.5		P	30 - 160
Fluridone	89.2		P	30 - 160
Hydrocodone	95.5		P	30 - 160
Ibuprofen	91.0		P	30 - 160
Imazapyr	110		P	30 - 160
Imidacloprid	95.8		P	30 - 160
Linuron	87.9		P	30 - 160
Mandestrobin	90.7		P	30 - 160
MCPP	115		P	30 - 160
Naproxen	72.0		P	30 - 160
Primidone	108		P	30 - 160
Pyraclostrobin	81.4		P	30 - 160
Thiamethoxam	95.7		P	30 - 160
Tolfenpyrad	39.8		P	30 - 160
Triclopyr	120		P	30 - 160

Reference Method: EPA 8321B

Batch ID: P401256

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	85.8		P	40 - 150
AMPA	95.8		P	40 - 150
Endothall	93.4		P	40 - 150
Glufosinate	99.6		P	40 - 150
Glyphosate	96.1		P	40 - 150
Sucralose	83.3		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8276
 Batch ID: P401195

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2262809	Chlordane	87.3	83.5	P/P	47 - 128
2262809	Toxaphene	75.4	74.3	P/P	11 - 163

Reference Method: EPA 8321B
 Batch ID: P401218

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2263287	2,4,5-T	122	127	P/P	30 - 160
2263287	Acetaminophen	254	110	F/P	30 - 160
2263287	Acetamiprid	88.9	101	P/P	30 - 160
2263287	Afidopyropen	79.9	91.3	P/P	30 - 160
2263287	Bentazon	78.4	82.0	P/P	30 - 160
2263287	Benzovindiflupyr	98.2	103	P/P	30 - 160
2263287	Carbamazepine	102	104	P/P	30 - 160
2263287	Clothianidin	119	120	P/P	30 - 160
2263287	Dinotefuran	121	122	P/P	30 - 160
2263287	Diuron	86.0	91.2	P/P	30 - 160
2263287	Fenuron	76.9	78.5	P/P	30 - 160
2263287	Fluridone	86.3	88.5	P/P	30 - 160
2263287	Hydrocodone	107	108	P/P	30 - 160
2263287	Ibuprofen	89.6	96.1	P/P	30 - 160
2263287	Imazapyr	136	140	P/P	30 - 160
2263287	Imidacloprid	154	156	P/P	30 - 160
2263287	Linuron	83.1	81.8	P/P	30 - 160
2263287	Mandestrobin	93.6	96.3	P/P	30 - 160
2263287	MCPP	124	127	P/P	30 - 160
2263287	Naproxen	75.4	77.7	P/P	30 - 160
2263287	Primidone	118	126	P/P	30 - 160
2263287	Pyraclostrobin	94.5	100	P/P	30 - 160
2263287	Thiamethoxam	150	152	P/P	30 - 160
2263287	Tolfenpyrad	60.0	55.9	P/P	30 - 160
2263287	Triclopyr	126	130	P/P	30 - 160

Reference Method: EPA 8321B
 Batch ID: P401256

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2263287	Acesulfame K	121	130	P/P	40 - 150
2263287	AMPA	79.5	84.1	P/P	40 - 150
2263287	Endothall	110	105	P/P	40 - 150
2263287	Glufosinate	108	109	P/P	40 - 150
2263287	Glyphosate	85.9	85.8	P/P	40 - 150
2263287	Sucralose	90.2	93.3	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8276
 Batch ID: P401195

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2262809	Chlordane	4.41	Spike	P	0 - 30
2262809	Toxaphene	1.48	Spike	P	0 - 30
LFB	Chlordane	1.81	LCS	P	0 - 30
LFB	Toxaphene	2.01	LCS	P	0 - 30

Reference Method: EPA 8321B
 Batch ID: P401218

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2263287	2,4-D	9.34	Spike	P	0 - 30
2263287	2,4,5-T	3.81	Spike	P	0 - 30
2263287	Acetaminophen	79.3	Spike	F	0 - 30
2263287	Acetamiprid	12.7	Spike	P	0 - 30
2263287	Afidopyropen	13.4	Spike	P	0 - 30
2263287	Bentazon	4.50	Spike	P	0 - 30
2263287	Benzovindiflupyr	4.71	Spike	P	0 - 30
2263287	Carbamazepine	2.13	Spike	P	0 - 30
2263287	Clothianidin	0.554	Spike	P	0 - 30
2263287	Dinotefuran	0.675	Spike	P	0 - 30
2263287	Diuron	4.96	Spike	P	0 - 30
2263287	Fenuron	2.08	Spike	P	0 - 30
2263287	Fluridone	2.59	Spike	P	0 - 30
2263287	Hydrocodone	1.09	Spike	P	0 - 30
2263287	Ibuprofen	6.97	Spike	P	0 - 30
2263287	Imazapyr	2.57	Spike	P	0 - 30
2263287	Imidacloprid	0.986	Spike	P	0 - 30
2263287	Linuron	1.57	Spike	P	0 - 30
2263287	Mandestrobin	2.83	Spike	P	0 - 30
2263287	MCPP	2.28	Spike	P	0 - 30
2263287	Naproxen	3.08	Spike	P	0 - 30
2263287	Primidone	6.12	Spike	P	0 - 30
2263287	Pyraclostrobin	5.96	Spike	P	0 - 30
2263287	Thiamethoxam	1.25	Spike	P	0 - 30
2263287	Tolfenpyrad	7.11	Spike	P	0 - 30
2263287	Triclopyr	2.72	Spike	P	0 - 30

Reference Method: EPA 8321B
 Batch ID: P401256

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2263287	Acesulfame K	7.30	Spike	P	0 - 30
2263287	AMPA	5.07	Spike	P	0 - 30
2263287	Endothall	4.58	Spike	P	0 - 30
2263287	Glufosinate	0.494	Spike	P	0 - 30
2263287	Glyphosate	0.0999	Spike	P	0 - 30
2263287	Sucralose	3.47	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2263297

Field Sample ID: IMKFSMCK

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8276	Decachlorobiphenyl	68.5	P	29 - 92.0
EPA 8276	PCNB	88.0	P	43 - 134

Lab Sample ID: 2263298

Field Sample ID: IMKFSMCK

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	135	P	30 - 160
EPA 8321B	Acetaminophen-d4	115	P	30 - 160
EPA 8321B	Carbamazepine-d10	93.5	P	30 - 160
EPA 8321B	Diuron-d6	67.4	P	30 - 160
EPA 8321B	Endothall-d6	106	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	81.0	P	30 - 160
EPA 8321B	Ibuprofen-d3	89.0	P	30 - 160
EPA 8321B	Primidone-d5	117	P	30 - 160
EPA 8321B	Sucralose-d6	90.8	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A106754
Included Lab Sample IDs: 2263298

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	99.6	94.5	P/P	60 - 160
Glufosinate	102	96.5	P/P	60 - 160
Glyphosate	98.4	99.0	P/P	60 - 160

Reference Method: EPA 8321B
Run ID: A106768
Included Lab Sample IDs: 2263298

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	98.7	95.7	P/P	50 - 150
2,4,5-T	98.4	100	P/P	50 - 150
Acetaminophen	108	109	P/P	60 - 160
Acetamiprid	105	104	P/P	50 - 150
Afidopyropen	119	101	P/P	50 - 150
Bentazon	102	102	P/P	50 - 160
Benzovindiflupyr	115	110	P/P	50 - 160
Carbamazepine	106	106	P/P	60 - 150
Clothianidin	107	109	P/P	60 - 150
Dinotefuran	105	104	P/P	50 - 150
Diuron	119	119	P/P	60 - 160
Fenuron	107	106	P/P	60 - 150
Fluridone	102	102	P/P	60 - 160
Hydrocodone	111	108	P/P	60 - 150
Ibuprofen	106	103	P/P	50 - 160
Imazapyr	108	112	P/P	50 - 160
Imidacloprid	101	99.6	P/P	60 - 150
Linuron	110	110	P/P	60 - 150
Mandestrobin	108	108	P/P	50 - 150
MCPP	95.4	97.8	P/P	50 - 150
Naproxen	87.7	89.9	P/P	50 - 160
Primidone	109	110	P/P	60 - 150
Pyraclostrobin	110	104	P/P	60 - 150
Thiamethoxam	104	104	P/P	50 - 150
Tolfenpyrad	105	103	P/P	60 - 150
Triclopyr	101	103	P/P	50 - 150

Reference Method: EPA 8276
Run ID: A106792
Included Lab Sample IDs: 2263297

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chlordane	96.8		P	80 - 120
Toxaphene	82.3		P	80 - 120

Reference Method: EPA 8321B
Run ID: A106812
Included Lab Sample IDs: 2263298

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	86.4	98.5	P/P	60 - 160
Endothall	90.1	95.5	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A106812
Included Lab Sample IDs: 2263298

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	82.8	85.2	P/P	60 - 160

* 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	MS
							SMP	
EPA 8276	Chlordane	83.8	85.3	87.3	83.5	1.81		4.41
	Toxaphene	72.0	73.5	75.4	74.3	2.01		1.48
EPA 8321B	2,4-D	121						9.34
	2,4,5-T	122		122	127			3.81
	Acesulfame K	85.8		121	130			7.30
	Acetaminophen	86.2		254	110			79.3
	Acetamiprid	85.9		88.9	101			12.7
	Afidopyropen	70.0		79.9	91.3			13.4
	AMPA	95.8		79.5	84.1			5.07
	Bentazon	95.0		78.4	82.0			4.50
	Benzovindiflupyr	91.7		98.2	103			4.71
	Carbamazepine	101		102	104			2.13
	Clothianidin	98.6		119	120			0.554
	Dinotefuran	94.6		121	122			0.675
	Diuron	94.6		86.0	91.2			4.96
	Endothall	93.4		110	105			4.58
	Fenuron	95.5		76.9	78.5			2.08
	Fluridone	89.2		86.3	88.5			2.59
	Glufosinate	99.6		108	109			0.494
	Glyphosate	96.1		85.9	85.8			0.0999
	Hydrocodone	95.5		107	108			1.09
	Ibuprofen	91.0		89.6	96.1			6.97
	Imazapyr	110		136	140			2.57
	Imidacloprid	95.8		154	156			0.986
	Linuron	87.9		83.1	81.8			1.57
	Mandestrobin	90.7		93.6	96.3			2.83
	MCPP	115		124	127			2.28
	Naproxen	72.0		75.4	77.7			3.08
	Primidone	108		118	126			6.12
	Pyraclostrobin	81.4		94.5	100			5.96
	Sucralose	83.3		90.2	93.3			3.47
	Thiamethoxam	95.7		150	152			1.25
	Tolfenpyrad	39.8		60.0	55.9			7.11
	Triclopyr	120		126	130			2.72

Reference Method Descriptions

Method	Description	Associated Samples
EPA 8276	Organochlorine pesticides in water matrices by GC/MS with Negative Chemical Ionization	2263297
EPA 8321B	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2263298

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8276	07/20/2021	07/21/2021 08:00	Fe-Val Siddell	07/23/2021 08:50	Julie Wi	2263297
EPA 8321B	07/20/2021	07/21/2021 09:00	Hoor Shaik	07/22/2021 05:26	Juyoung Kim	2263298
	07/20/2021	07/21/2021 09:00	Juyoung Kim	07/21/2021 13:30	Juyoung Kim	2263298
	07/20/2021	07/21/2021 09:00	Juyoung Kim	07/23/2021 12:02	Pramila Ghimire	2263298