

Chemical Analysis Report

SO-DIST-2019-08-06-03

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

Event Description: **Collier County Tracer Study**
Request ID: **RQ-2019-03-25-23**
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: Colin Wright, Program Administrator

Date Certified: 23-AUG-2019 13:18

A handwritten signature in black ink, appearing to read "Colin Wright", is shown on a light-colored rectangular 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 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: TAMTOM

Collection Date/Time: 08/05/2019 13:58

Field ID: TAMTOM

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2108944	EPA 8321B	2,4-D	0.0045	I	ug/L	P368283	
		Acesulfame K**	0.10	U	ug/L	P368542	
		AMPA**	1.3		ug/L	P368542	
		Sucralose**	0.010	I	ug/L	P368542	
		Acetaminophen**	0.0080	U	ug/L	P368283	
		Endothall**	0.25	U	ug/L	P368542	
		Glufosinate**	0.10	U	ug/L	P368542	
		Glyphosate**	2.4		ug/L	P368542	
		Bentazon	0.076		ug/L	P368283	
		Carbamazepine**	8.0E-04	U	ug/L	P368283	
		Diuron	0.0020	U	ug/L	P368283	
		Fenuron	0.016	U	ug/L	P368283	
		Fluridone**	8.0E-04	U	ug/L	P368283	
		Imazapyr**	0.0094	I	ug/L	P368283	
		Hydrocodone**	0.0020	U	ug/L	P368283	
		Ibuprofen**	0.020	U	ug/L	P368283	
		Imidacloprid	0.015		ug/L	P368283	MS
		Linuron	0.0040	U	ug/L	P368283	
		MCPP	0.0020	U	ug/L	P368283	
		Naproxen**	0.0080	U	ug/L	P368283	
		Primidone**	0.0040	U	ug/L	P368283	
		Pyraclostrobin**	0.0020	U	ug/L	P368283	
		Triclopyr**	0.0040	U	ug/L	P368283	

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B

Batch ID: P368283

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
Acetaminophen	0.0080	U	ug/L
Bentazon	8.0E-04	U	ug/L
Carbamazepine	8.0E-04	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
MCPP	0.0020	U	ug/L
Naproxen	0.0080	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Reference Method: EPA 8321B

Batch ID: P368542

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 8321B
Batch ID: P368283

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	127		P	40 - 160
Acetaminophen	82.3		P	30 - 160
Bentazon	135		P	30 - 160
Carbamazepine	106		P	40 - 160
Diuron	91.5		P	40 - 160
Fenuron	99.2		P	40 - 160
Fluridone	88.0		P	40 - 160
Hydrocodone	95.2		P	40 - 160
Ibuprofen	88.7		P	30 - 160
Imazapyr	98.3		P	40 - 160
Imidacloprid	85.1		P	40 - 160
Linuron	77.0		P	40 - 160
MCPP	121		P	40 - 160
Naproxen	67.2		P	40 - 160
Primidone	93.6		P	40 - 160
Pyraclostrobin	58.2		P	30 - 160
Triclopyr	94.1		P	30 - 160

Reference Method: EPA 8321B
Batch ID: P368542

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	120		P	40 - 150
AMPA	127		P	40 - 150
Endothall	112		P	40 - 150
Glufosinate	101		P	40 - 150
Glyphosate	112		P	40 - 140
Sucralose	99.9		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P368283

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2108501	2,4-D	125	136	P/P	40 - 160
2108501	Acetaminophen	87.4	103	P/P	30 - 160
2108501	Bentazon	93.2	97.8	P/P	30 - 160
2108501	Carbamazepine	111	118	P/P	40 - 160
2108501	Diuron	78.7	88.7	P/P	40 - 160
2108501	Fenuron	103	105	P/P	40 - 160
2108501	Fluridone	97.8	105	P/P	40 - 160
2108501	Hydrocodone	113	117	P/P	40 - 160
2108501	Ibuprofen	86.9	88.1	P/P	30 - 160
2108501	Imazapyr	133	144	P/P	40 - 160
2108501	Imidacloprid	144	161	P/F	40 - 160
2108501	Linuron	77.8	94.4	P/P	40 - 160
2108501	MCPP	150	151	P/P	40 - 160
2108501	Naproxen	102	97.0	P/P	40 - 160
2108501	Primidone	99.5	110	P/P	40 - 160
2108501	Pyraclostrobin	73.0	91.8	P/P	30 - 160
2108501	Triclopyr	90.4	96.4	P/P	30 - 160

Reference Method: EPA 8321B
Batch ID: P368542

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2108275	Acesulfame K	85.5	83.3	P/P	40 - 150
2108275	AMPA	69.2	70.0	P/P	40 - 150
2108275	Endothall	91.9	115	P/P	40 - 150
2108275	Glufosinate	81.3	80.1	P/P	40 - 150
2108275	Glyphosate	73.1	72.0	P/P	40 - 140
2108275	Sucralose	100	97.8	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P368283

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2108501	2,4-D	8.08	Spike	P	0 - 30
2108501	Acetaminophen	13.7	Spike	P	0 - 30
2108501	Bentazon	4.37	Spike	P	0 - 30
2108501	Carbamazepine	6.53	Spike	P	0 - 30
2108501	Diuron	10.1	Spike	P	0 - 30
2108501	Fenuron	1.76	Spike	P	0 - 30
2108501	Fluridone	6.06	Spike	P	0 - 30
2108501	Hydrocodone	3.53	Spike	P	0 - 30
2108501	Ibuprofen	1.43	Spike	P	0 - 30
2108501	Imazapyr	7.76	Spike	P	0 - 30
2108501	Imidacloprid	6.99	Spike	P	0 - 30
2108501	Linuron	19.3	Spike	P	0 - 30
2108501	MCPP	0.712	Spike	P	0 - 30
2108501	Naproxen	5.24	Spike	P	0 - 30
2108501	Primidone	10.3	Spike	P	0 - 30
2108501	Pyraclostrobin	22.8	Spike	P	0 - 30
2108501	Triclopyr	6.43	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P368542

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2108275	Acesulfame K	2.65	Spike	P	0 - 30
2108275	AMPA	0.769	Spike	P	0 - 30
2108275	Endothall	22.7	Spike	P	0 - 30
2108275	Glufosinate	1.56	Spike	P	0 - 30
2108275	Glyphosate	0.786	Spike	P	0 - 30
2108275	Sucralose	2.41	Spike	P	0 - 30

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Surrogates

Lab Sample ID: 2108944
Field Sample ID: TANTOM

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	146	P	30 - 160
EPA 8321B	Acetaminophen-d4	82.8	P	30 - 160
EPA 8321B	Carbamazepine-d10	103	P	30 - 160
EPA 8321B	Diuron-d6	97.1	P	30 - 160
EPA 8321B	Endothall-d6	148	P	30 - 160
EPA 8321B	Endothall-d6	148	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	96.5	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	96.5	P	30 - 160
EPA 8321B	Ibuprofen-d3	107	P	30 - 160
EPA 8321B	Primidone-d5	91.3	P	30 - 160
EPA 8321B	Sucralose-d6	88.4	P	30 - 160
EPA 8321B	Sucralose-d6	88.4	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A93389
Included Lab Sample IDs: 2108944

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	120	122	P/P	60 - 160
Glufosinate	105	102	P/P	60 - 160
Glyphosate	111	99.2	P/P	60 - 160

Reference Method: EPA 8321B
Run ID: A93390
Included Lab Sample IDs: 2108944

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	117	112	P/P	60 - 160
Endothall	123	121	P/P	60 - 160

Reference Method: EPA 8321B
Run ID: A93483
Included Lab Sample IDs: 2108944

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	117	96.4	P/P	50 - 150
Acetaminophen	103	94.7	P/P	60 - 160
Bentazon	93.6	82.0	P/P	50 - 160
Carbamazepine	104	99.8	P/P	60 - 150
Diuron	109	95.4	P/P	60 - 150
Fenuron	106	101	P/P	60 - 150
Fluridone	109	94.4	P/P	60 - 160
Hydrocodone	105	95.8	P/P	60 - 150
Ibuprofen	85.9	94.0	P/P	50 - 160
Imazapyr	88.4	103	P/P	50 - 150
Imidacloprid	89.4	107	P/P	60 - 150
Linuron	91.3	92.6	P/P	60 - 150
MCPP	102	103	P/P	50 - 150
Naproxen	140	86.1	P/P	50 - 160
Primidone	101	98.6	P/P	60 - 150
Pyraclostrobin	98.8	94.4	P/P	60 - 150
Triclopyr	92.0	86.6	P/P	50 - 150

Reference Method: EPA 8321B
Run ID: A93638
Included Lab Sample IDs: 2108944

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	99.6	82.7	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		Precision LCS	SMP	MS
EPA 8321B	2,4-D	127	125	136			8.08
	Acesulfame K	120	85.5	83.3			2.65
	Acetaminophen	82.3	87.4	103			13.7
	AMPA	127	69.2	70.0			0.769
	Bentazon	135	93.2	97.8			4.37
	Carbamazepine	106	111	118			6.53
	Diuron	91.5	78.7	88.7			10.1
	Endothall	112	91.9	115			22.7
	Fenuron	99.2	103	105			1.76
	Fluridone	88.0	97.8	105			6.06
	Glufosinate	101	81.3	80.1			1.56
	Glyphosate	112	73.1	72.0			0.786
	Hydrocodone	95.2	113	117			3.53
	Ibuprofen	88.7	86.9	88.1			1.43
	Imazapyr	98.3	133	144			7.76
	Imidacloprid	85.1	144	161			6.99
	Linuron	77.0	77.8	94.4			19.3
	MCPP	121	150	151			0.712
	Naproxen	67.2	102	97.0			5.24
	Primidone	93.6	99.5	110			10.3
	Pyraclostrobin	58.2	73.0	91.8			22.8
	Sucralose	99.9	100	97.8			2.41
	Triclopyr	94.1	90.4	96.4			6.43

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2108944
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	2108944

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	08/06/2019	08/07/2019 09:30	Rebecca Ware	08/07/2019 14:12	Rebecca Ware	2108944
	08/06/2019	08/07/2019 09:30	Rebecca Ware	08/07/2019 19:39	Rebecca Ware	2108944
	08/06/2019	08/07/2019 09:30	Rebecca Ware	08/19/2019 16:09	Rebecca Ware	2108944
	08/06/2019	08/09/2019 10:00	Fe-Val Siddell	08/13/2019 09:23	Juyoung Kim	2108944