

Chemical Analysis Report

SO-DIST-2017-08-22-01

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

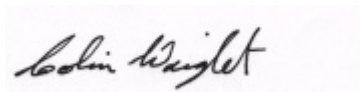
Event Description: **Lee County Tracers & Markers**
Request ID: **RQ-2017-06-19-09**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Ben Paswater

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Certified by: Colin Wright, Program Administrator

Date Certified: 13-SEP-2017 12:49

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray 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 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: Whiskey Creek Golf Course Cart Bridge,Upstream

Collection Date/Time: 08/21/2017 09:01

Field ID: WHISGR10

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1923154	EPA 8321B	Sucralose**	0.14		ug/L	P330689	
	USGS O-2060-01	2,4-D	0.0067	I	ug/L	P330679	
		Diuron	0.0079		ug/L	P330679	
		Fenuron	0.0080	U	ug/L	P330679	
		Imidacloprid	0.049		ug/L	P330679	MS
		Bentazon	0.024		ug/L	P330679	
		Linuron	0.0040	U	ug/L	P330679	
		Acetaminophen**	0.018	I	ug/L	P330679	
		MCP	0.0020	U	ug/L	P330679	
		Carbamazepine**	0.0047		ug/L	P330679	MS
		Triclopyr**	0.0040	U	ug/L	P330679	
		Primidone**	0.0040	U	ug/L	P330679	
		Fluridone**	0.087		ug/L	P330679	

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
Batch ID: P330689

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: USGS O-2060-01
Batch ID: P330679

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	4.0E-04	U	ug/L
Diuron	8.0E-04	U	ug/L
Fenuron	0.0080	U	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	8.0E-04	U	ug/L
Linuron	0.0040	U	ug/L
MCP	0.0020	U	ug/L
Primidone	0.0040	U	ug/L
Triclopyr	0.0040	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P330689

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	93.5		P	40 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: USGS O-2060-01
Batch ID: P330679

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	134		P	40 - 150
Acetaminophen	117		P	30 - 150
Bentazon	87.2		P	40 - 150
Carbamazepine	128		P	40 - 150
Diuron	141		P	40 - 150
Fenuron	144		P	40 - 150
Fluridone	126		P	40 - 150
Imidacloprid	137		P	40 - 160
Linuron	119		P	40 - 150
MCP	103		P	40 - 150
Primidone	133		P	40 - 150
Triclopyr	85.6		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P330689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1923138	Sucralose	111	106	P/P	40 - 150

Reference Method: USGS O-2060-01
Batch ID: P330679

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1923137	2,4-D	138	130	P/P	40 - 150
1923137	Acetaminophen	109	112	P/P	30 - 150
1923137	Bentazon	51.6	52.6	P/P	40 - 150
1923137	Carbamazepine	155	153	F/F	40 - 150
1923137	Diuron	113	122	P/P	40 - 150
1923137	Fenuron	113	128	P/P	40 - 150
1923137	Fluridone	94.5	110	P/P	40 - 150
1923137	Imidacloprid	220	235	F/F	40 - 160
1923137	Linuron	110	126	P/P	40 - 150
1923137	MCP	99.5	111	P/P	40 - 150
1923137	Primidone	129	145	P/P	40 - 150
1923137	Triclopyr	101	106	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P330689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1923138	Sucralose	4.46	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
Batch ID: P330679

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1923137	2,4-D	5.84	Spike	P	0 - 30
1923137	Acetaminophen	2.40	Spike	P	0 - 30
1923137	Bentazon	1.88	Spike	P	0 - 30
1923137	Carbamazepine	1.77	Spike	P	0 - 30
1923137	Diuron	7.51	Spike	P	0 - 30
1923137	Fenuron	12.6	Spike	P	0 - 30
1923137	Fluridone	14.7	Spike	P	0 - 30
1923137	Imidacloprid	6.75	Spike	P	0 - 30
1923137	Linuron	13.3	Spike	P	0 - 30
1923137	MCP	11.0	Spike	P	0 - 30
1923137	Primidone	11.3	Spike	P	0 - 30
1923137	Triclopyr	4.49	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: 1923154
Field Sample ID: WHISGR10

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	119	P	30 - 160
EPA 8321B	Carbamazepine-d10	113	P	30 - 160
EPA 8321B	Diuron-d6	89.4	P	30 - 160
EPA 8321B	Primidone-d5	114	P	30 - 160
EPA 8321B	Sucralose-d6	74.7	P	40 - 160
USGS O-2060-01	2,4-D-d3	125	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	119	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	113	P	30 - 160
USGS O-2060-01	Diuron-d6	89.4	P	30 - 160
USGS O-2060-01	Primidone-d5	114	P	30 - 160
USGS O-2060-01	Sucralose-d6	74.7	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01
Run ID: A78770
Included Lab Sample IDs: 1923154

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	107	133	P/P	50 - 150
Acetaminophen	78.9	80.9	P/P	60 - 150
Bentazon	111	91.3	P/P	50 - 150
Carbamazepine	114	115	P/P	60 - 150
Diuron	117	111	P/P	60 - 150
Fenuron	124	126	P/P	60 - 150
Fluridone	74.4	79.2	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01
 Run ID: A78770
 Included Lab Sample IDs: 1923154

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Imidacloprid	118	115	P/P	60 - 150
Linuron	105	117	P/P	60 - 150
MCP	113	109	P/P	50 - 150
Primidone	122	125	P/P	60 - 150
Triclopyr	102	86.2	P/P	50 - 160

Reference Method: EPA 8321B
 Run ID: A78774
 Included Lab Sample IDs: 1923154

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	136	137	P/P	60 - 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	LCS	Precision SMP	MS
EPA 8321B	Sucralose	93.5	111 106			4.46
USGS O-2060-01	2,4-D	134	138 130			5.84
	Acetaminophen	117	109 112			2.40
	Bentazon	87.2	51.6 52.6			1.88
	Carbamazepine	128	155 153			1.77
	Diuron	141	113 122			7.51
	Fenuron	144	113 128			12.6
	Fluridone	126	94.5 110			14.7
	Imidacloprid	137	220 235			6.75
	Linuron	119	110 126			13.3
	MCP	103	99.5 111			11.0
	Primidone	133	129 145			11.3
	Triclopyr	85.6	101 106			4.49

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Analysis of sucralose in water matrices by HPLC/MS/MS	1923154
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1923154
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1923154

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	08/22/2017	08/28/2017	Julie Michelle Frank	09/01/2017	Julie Michelle Frank	1923154
USGS O-2060-01	08/22/2017	08/24/2017	Hoor Shaik	08/26/2017	Juyoung Kim	1923154