

Chemical Analysis Report

SO-DIST-2017-09-01-01

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

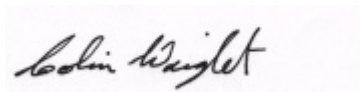
Event Description: **Lee County Tracers & Markers**
Request ID: **RQ-2017-06-19-09**
Customer: **SO-DIST**
Project ID: **SMP**

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: 28-SEP-2017 12:16

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular background.

Report Comments:
Field ID's corrected from AS51455 to AD51445 and from AD54457 to AD51457.

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: CYPRESS CREEK @ SR78;UPSTREAM SIDE **Collection Date/Time: 08/31/2017 10:51**

Field ID: AD51455

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1927322	EPA 8321B	Sucralose**	0.020	U	ug/L	P331186	MS, RPD
	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P331187	
		Diuron	8.0E-04	U	ug/L	P331187	
		Fenuron	0.0080	U	ug/L	P331187	
		Imidacloprid	0.0031	I	ug/L	P331187	MS
		Bentazon	8.0E-04	U	ug/L	P331187	MS
		Linuron	0.0040	U	ug/L	P331187	
		Acetaminophen**	0.0080	U	ug/L	P331187	
		MCP	0.0020	U	ug/L	P331187	
		Carbamazepine**	4.0E-04	U	ug/L	P331187	
		Triclopyr**	0.0040	U	ug/L	P331187	
		Primidone**	0.0040	U	ug/L	P331187	
		Fluridone**	4.0E-04	U	ug/L	P331187	

Ref. Method and Comment:
EPA 8321B: MDL elevated due to matrix interference. Results confirmed in re-extraction.

Sample Location: TELEGRAPH CREEK @ SR78;UPSTREAM SIDE **Collection Date/Time: 08/31/2017 11:17**

Field ID: AD51457

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1927323	EPA 8321B	Sucralose**	0.020	U	ug/L	P331186	MS, RPD
	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P331187	
		Diuron	8.0E-04	U	ug/L	P331187	
		Fenuron	0.0080	U	ug/L	P331187	
		Imidacloprid	0.0024	I	ug/L	P331187	MS
		Bentazon	8.0E-04	U	ug/L	P331187	MS
		Linuron	0.0040	U	ug/L	P331187	
		Acetaminophen**	0.0080	U	ug/L	P331187	
		MCP	0.0020	U	ug/L	P331187	
		Carbamazepine**	4.0E-04	U	ug/L	P331187	
		Triclopyr**	0.0040	U	ug/L	P331187	
		Primidone**	0.0040	U	ug/L	P331187	
		Fluridone**	4.0E-04	U	ug/L	P331187	

Ref. Method and Comment:
EPA 8321B: MDL elevated due to matrix interference.

Sample Location: TROUT CREEK @SR78;UPSTREAM SIDE **Collection Date/Time: 08/31/2017 11:51**

Field ID: AD51459

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1927324	EPA 8321B	Sucralose**	0.020	U	ug/L	P331186	MS, RPD
	USGS O-2060-01	2,4-D	0.023		ug/L	P331187	
		Diuron	8.0E-04	U	ug/L	P331187	
		Fenuron	0.0080	U	ug/L	P331187	
		Imidacloprid	8.4E-04	I	ug/L	P331187	MS

Field ID: AD51459

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1927324	USGS O-2060-01	Bentazon	8.0E-04	U	ug/L	P331187	MS
		Linuron	0.0040	U	ug/L	P331187	
		Acetaminophen**	0.0080	U	ug/L	P331187	
		MCP	0.0020	U	ug/L	P331187	
		Carbamazepine**	4.0E-04	U	ug/L	P331187	
		Triclopyr**	0.0040	U	ug/L	P331187	
		Primidone**	0.0040	U	ug/L	P331187	
		Fluridone**	4.0E-04	U	ug/L	P331187	

Ref. Method and Comment:
 EPA 8321B: MDL elevated due to matrix interference.

Sample Location: OWL CREEK @ SR78;UPSTREAM SIDE

Collection Date/Time: 08/31/2017 12:00

Field ID: AD51460

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1927325	EPA 8321B	Sucralose**	0.020	U	ug/L	P331186	MS, RPD
	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P331187	
		Diuron	8.0E-04	U	ug/L	P331187	
		Fenuron	0.0080	U	ug/L	P331187	
		Imidacloprid	0.0014	I	ug/L	P331187	MS
		Bentazon	8.0E-04	U	ug/L	P331187	MS
		Linuron	0.0040	U	ug/L	P331187	
		Acetaminophen**	0.0080	U	ug/L	P331187	
		MCP	0.0020	U	ug/L	P331187	
		Carbamazepine**	4.0E-04	U	ug/L	P331187	
		Triclopyr**	0.0040	U	ug/L	P331187	
		Primidone**	0.0040	U	ug/L	P331187	
		Fluridone**	4.0E-04	U	ug/L	P331187	

Ref. Method and Comment:
 EPA 8321B: MDL elevated due to matrix interference.

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
Batch ID: P331186

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: USGS O-2060-01
Batch ID: P331187

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

Quality Assurance Report Method Blank Results

Reference Method: USGS O-2060-01
 Batch ID: P331187

Component	Result	Code	Units
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: P331186

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	96.6		P	40 - 150

Reference Method: USGS O-2060-01
 Batch ID: P331187

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	53.0		P	40 - 150
Acetaminophen	134		P	30 - 150
Bentazon	41.4		P	40 - 150
Carbamazepine	124		P	40 - 150
Diuron	103		P	40 - 150
Fenuron	114		P	40 - 150
Fluridone	68.5		P	40 - 150
Imidacloprid	94.9		P	40 - 160
Linuron	86.9		P	40 - 150
MCP	52.9		P	40 - 150
Primidone	111		P	40 - 150
Triclopyr	54.0		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
 Batch ID: P331186

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1927171	Sucralose	34.7	9.82	F/F	40 - 150

Reference Method: USGS O-2060-01
 Batch ID: P331187

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1927171	2,4-D	58.1	60.9	P/P	40 - 150
1927171	Acetaminophen	64.5	63.0	P/P	30 - 150
1927171	Bentazon	30.9	29.1	F/F	40 - 150
1927171	Carbamazepine	100	98.5	P/P	40 - 150
1927171	Diuron	80.4	79.7	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01
Batch ID: P331187

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1927171	Fenuron	89.9	91.9	P/P	40 - 150
1927171	Fluridone	54.5	54.6	P/P	40 - 150
1927171	Imidacloprid	228	228	F/F	40 - 160
1927171	Linuron	95.7	94.0	P/P	40 - 150
1927171	MCP	51.0	51.3	P/P	40 - 150
1927171	Primidone	111	107	P/P	40 - 150
1927171	Triclopyr	48.6	50.6	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P331186

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1927171	Sucralose	39.6	Spike	F	0 - 30

Reference Method: USGS O-2060-01
Batch ID: P331187

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1927171	2,4-D	3.87	Spike	P	0 - 30
1927171	Acetaminophen	2.42	Spike	P	0 - 30
1927171	Bentazon	5.87	Spike	P	0 - 30
1927171	Carbamazepine	1.73	Spike	P	0 - 30
1927171	Diuron	0.775	Spike	P	0 - 30
1927171	Fenuron	2.22	Spike	P	0 - 30
1927171	Fluridone	0.257	Spike	P	0 - 30
1927171	Imidacloprid	0.0876	Spike	P	0 - 30
1927171	Linuron	1.86	Spike	P	0 - 30
1927171	MCP	0.743	Spike	P	0 - 30
1927171	Primidone	3.77	Spike	P	0 - 30
1927171	Triclopyr	4.03	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: 1927322
Field Sample ID: AD51455

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	50.8	P	30 - 160
EPA 8321B	Carbamazepine-d10	59.6	P	30 - 160
EPA 8321B	Diuron-d6	49.5	P	30 - 160
EPA 8321B	Primidone-d5	78.7	P	30 - 160
EPA 8321B	Sucralose-d6	78.6	P	40 - 160

Quality Assurance Report Surrogates

Lab Sample ID: 1927322
Field Sample ID: AD51455

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
USGS O-2060-01	2,4-D-d3	46.1	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	50.8	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	59.6	P	30 - 160
USGS O-2060-01	Diuron-d6	49.5	P	30 - 160
USGS O-2060-01	Primidone-d5	78.7	P	30 - 160
USGS O-2060-01	Sucralose-d6	78.6	P	40 - 160

Lab Sample ID: 1927323
Field Sample ID: AD51457

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	60.2	P	30 - 160
EPA 8321B	Carbamazepine-d10	65.3	P	30 - 160
EPA 8321B	Diuron-d6	50.7	P	30 - 160
EPA 8321B	Primidone-d5	75.1	P	30 - 160
EPA 8321B	Sucralose-d6	60.7	P	40 - 160
USGS O-2060-01	2,4-D-d3	53.1	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	60.2	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	65.3	P	30 - 160
USGS O-2060-01	Diuron-d6	50.7	P	30 - 160
USGS O-2060-01	Primidone-d5	75.1	P	30 - 160
USGS O-2060-01	Sucralose-d6	60.7	P	40 - 160

Lab Sample ID: 1927324
Field Sample ID: AD51459

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	52.0	P	30 - 160
EPA 8321B	Carbamazepine-d10	72.4	P	30 - 160
EPA 8321B	Diuron-d6	53.8	P	30 - 160
EPA 8321B	Primidone-d5	81.7	P	30 - 160
EPA 8321B	Sucralose-d6	85.3	P	40 - 160
USGS O-2060-01	2,4-D-d3	55.7	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	52.0	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	72.4	P	30 - 160
USGS O-2060-01	Diuron-d6	53.8	P	30 - 160
USGS O-2060-01	Primidone-d5	81.7	P	30 - 160
USGS O-2060-01	Sucralose-d6	85.3	P	40 - 160

Lab Sample ID: 1927325
Field Sample ID: AD51460

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	57.4	P	30 - 160
EPA 8321B	Carbamazepine-d10	68.1	P	30 - 160
EPA 8321B	Diuron-d6	51.1	P	30 - 160
EPA 8321B	Primidone-d5	75.6	P	30 - 160
EPA 8321B	Sucralose-d6	69.5	P	40 - 160
USGS O-2060-01	2,4-D-d3	51.2	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	57.4	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	68.1	P	30 - 160
USGS O-2060-01	Diuron-d6	51.1	P	30 - 160

Quality Assurance Report Surrogates

Lab Sample ID: 1927325
 Field Sample ID: AD51460

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
USGS O-2060-01	Primidone-d5	75.6	P	30 - 160
USGS O-2060-01	Sucralose-d6	69.5	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
 Run ID: A78859
 Included Lab Sample IDs: 1927322, 1927323, 1927324, 1927325

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	97.4	97.1	P/P	60 - 150

Reference Method: USGS O-2060-01
 Run ID: A79030
 Included Lab Sample IDs: 1927322, 1927323, 1927324, 1927325

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	91.8	92.3	P/P	50 - 150
2,4-D	92.3	106	P/P	50 - 150
Acetaminophen	103	102	P/P	60 - 150
Acetaminophen	104	103	P/P	60 - 150
Bentazon	100	110	P/P	50 - 150
Bentazon	96.8	100	P/P	50 - 150
Carbamazepine	116	121	P/P	60 - 150
Carbamazepine	117	116	P/P	60 - 150
Diuron	103	98.8	P/P	60 - 150
Diuron	98.8	108	P/P	60 - 150
Fenuron	101	100	P/P	60 - 150
Fenuron	100	102	P/P	60 - 150
Fluridone	102	102	P/P	60 - 160
Fluridone	102	109	P/P	60 - 160
Imidacloprid	95.1	98.5	P/P	60 - 150
Imidacloprid	96.9	95.1	P/P	60 - 150
Linuron	100	91.6	P/P	60 - 150
Linuron	91.6	109	P/P	60 - 150
MCPP	88.5	91.6	P/P	50 - 150
MCPP	91.6	99.5	P/P	50 - 150
Primidone	94.6	97.7	P/P	60 - 150
Primidone	97.7	106	P/P	60 - 150
Triclopyr	101	96.3	P/P	50 - 150
Triclopyr	92.6	101	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		LCS	Precision	MS
						SMP	
EPA 8321B	Sucralose	96.6	34.7	9.82			39.6
USGS O-2060-01	2,4-D	53.0	58.1	60.9			3.87
	Acetaminophen	134	64.5	63.0			2.42
	Bentazon	41.4	30.9	29.1			5.87
	Carbamazepine	124	100	98.5			1.73
	Diuron	103	80.4	79.7			0.775
	Fenuron	114	89.9	91.9			2.22
	Fluridone	68.5	54.5	54.6			0.257
	Imidacloprid	94.9	228	228			0.0876
	Linuron	86.9	95.7	94.0			1.86
	MCPP	52.9	51.0	51.3			0.743
	Primidone	111	111	107			3.77
	Triclopyr	54.0	48.6	50.6			4.03

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Analysis of sucralose in water matrices by HPLC/MS/MS	1927322, 1927323, 1927324, 1927325
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1927322, 1927323, 1927324, 1927325
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1927322, 1927323, 1927324, 1927325

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	09/01/2017	09/06/2017	Hoor Shaik	09/07/2017	Julie Michelle Frank	1927322, 1927323, 1927324, 1927325
USGS O-2060-01	09/01/2017	09/06/2017	Hoor Shaik	09/19/2017	Julie Michelle Frank	1927322, 1927323, 1927324, 1927325