

Chemical Analysis Report

SO-DIST-2017-05-03-02

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

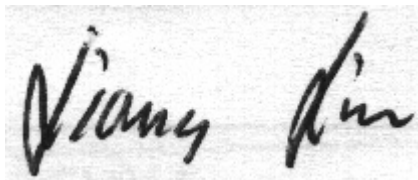
Event Description: **Lee County Tracers & Markers**
Request ID: **RQ-2017-04-17-08**
Customer: **SO-DIST**
Project ID: **SMP**

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

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 24-MAY-2017 11:17

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored 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: Cypress Creek @ SR78, Upstream Side

Collection Date/Time: 05/01/2017 09:55

Field ID: CYPRESSGR

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1895766	EPA 8321B	Sucralose**	0.070		ug/L	P324384	
	USGS O-2060-01	2,4-D	0.0030	I	ug/L	P324481	
		Diuron	0.0070		ug/L	P324481	
		Fenuron	0.0040	U	ug/L	P324481	
		Imidacloprid	0.0049		ug/L	P324481	MS
		Bentazon	0.0054		ug/L	P324481	
		Linuron	0.0040	U	ug/L	P324481	
		Acetaminophen**	0.018	I	ug/L	P324481	
		MCP	8.0E-04	U	ug/L	P324481	
		Carbamazepine**	4.0E-04	U	ug/L	P324481	
		Triclopyr**	0.0040	U	ug/L	P324481	
		Primidone**	0.0040	U	ug/L	P324481	
		Fluridone**	0.0023		ug/L	P324481	MS

Ref. Method and Comment:

USGS O-2060-01: MS accuracy and precision for bentazon could not be assessed due to high concentration of parameter in the spiked sample.

Sample Location: Telegraph Creek @ SR78, Upstream Side

Collection Date/Time: 05/01/2017 10:20

Field ID: 29-8GR

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1895767	EPA 8321B	Sucralose**	0.22		ug/L	P324384	
	USGS O-2060-01	2,4-D	0.0049		ug/L	P324481	
		Diuron	0.0024	I	ug/L	P324481	
		Fenuron	0.0040	U	ug/L	P324481	
		Imidacloprid	0.0042		ug/L	P324481	MS
		Bentazon	0.0049		ug/L	P324481	
		Linuron	0.0040	U	ug/L	P324481	
		Acetaminophen**	0.0080	U	ug/L	P324481	
		MCP	8.0E-04	U	ug/L	P324481	
		Carbamazepine**	4.0E-04	I	ug/L	P324481	
		Triclopyr**	0.0040	U	ug/L	P324481	
		Primidone**	0.0040	U	ug/L	P324481	
		Fluridone**	0.0034		ug/L	P324481	MS

Ref. Method and Comment:

USGS O-2060-01: MS accuracy and precision for bentazon could not be assessed due to high concentration of parameter in the spiked sample.

Sample Location: Trout Creek @ SR78; Upstream Side

Collection Date/Time: 05/01/2017 10:56

Field ID: 27-6GR

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1895768	EPA 8321B	Sucralose**	0.25		ug/L	P324384	
	USGS O-2060-01	2,4-D	8.0E-04	U	ug/L	P324481	
		Diuron	0.0025	I	ug/L	P324481	
		Fenuron	0.0040	U	ug/L	P324481	
		Imidacloprid	0.0029	I	ug/L	P324481	MS

Field ID: 27-6GR

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1895768	USGS O-2060-01	Bentazon	0.0021	I	ug/L	P324481	
		Linuron	0.0040	U	ug/L	P324481	
		Acetaminophen**	0.0080	U	ug/L	P324481	
		MCP	8.0E-04	U	ug/L	P324481	
		Carbamazepine**	6.4E-04	I	ug/L	P324481	
		Triclopyr**	0.0040	U	ug/L	P324481	
		Primidone**	0.0040	U	ug/L	P324481	
		Fluridone**	8.0E-04	I	ug/L	P324481	MS

Ref. Method and Comment:

USGS O-2060-01: MS accuracy and precision for bentazon could not be assessed due to high concentration of parameter in the spiked sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B

Batch ID: P324384

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: USGS O-2060-01

Batch ID: P324481

Component	Result	Code	Units
2,4-D	8.0E-04	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	0.0040	U	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	8.0E-04	U	ug/L
Linuron	0.0040	U	ug/L
MCP	8.0E-04	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: P324384

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	112		P	40 - 140

Reference Method: USGS O-2060-01

Batch ID: P324481

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	72.6		P	40 - 140
Acetaminophen	97.6		P	40 - 140
Bentazon	73.0		P	40 - 140

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: USGS O-2060-01
 Batch ID: P324481

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Carbamazepine	99.2		P	40 - 140
Diuron	105		P	40 - 140
Fenuron	105		P	40 - 140
Fluridone	90.9		P	40 - 140
Imidacloprid	109		P	40 - 160
Linuron	89.8		P	40 - 140
MCPP	70.0		P	40 - 140
Primidone	110		P	40 - 140
Triclopyr	63.2		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
 Batch ID: P324384

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1895472	Sucralose	109	96.7	P/P	40 - 140

Reference Method: USGS O-2060-01
 Batch ID: P324481

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1895708	2,4-D	67.9	68.7	P/P	40 - 140
1895708	Acetaminophen	92.2	101	P/P	40 - 140
1895708	Carbamazepine	85.4	79.5	P/P	40 - 140
1895708	Diuron	73.5	70.2	P/P	40 - 140
1895708	Fenuron	64.6	69.4	P/P	40 - 140
1895708	Fluridone	38.4	27.6	F/F	40 - 140
1895708	Imidacloprid	151	162	P/F	40 - 160
1895708	Linuron	75.5	67.2	P/P	40 - 140
1895708	MCPP	56.3	58.6	P/P	40 - 140
1895708	Primidone	84.5	90.3	P/P	40 - 140
1895708	Triclopyr	52.1	53.3	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 8321B
 Batch ID: P324384

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1895472	Sucralose	11.7	Spike	P	0 - 30

Reference Method: USGS O-2060-01
 Batch ID: P324481

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1895708	2,4-D	0.954	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
Batch ID: P324481

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1895708	Acetaminophen	9.39	Spike	P	0 - 30
1895708	Carbamazepine	7.18	Spike	P	0 - 30
1895708	Diuron	4.45	Spike	P	0 - 30
1895708	Fenuron	7.28	Spike	P	0 - 30
1895708	Fluridone	29.6	Spike	P	0 - 30
1895708	Imidacloprid	5.93	Spike	P	0 - 30
1895708	Linuron	11.6	Spike	P	0 - 30
1895708	MCP	3.78	Spike	P	0 - 30
1895708	Primidone	6.68	Spike	P	0 - 30
1895708	Triclopyr	2.35	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: 1895766
Field Sample ID: CYPRESSGR

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	103	P	40 - 150
USGS O-2060-01	2,4-D-d3	62.6	P	30 - 150
USGS O-2060-01	Acetaminophen-d4	96.3	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	73.3	P	30 - 160
USGS O-2060-01	Diuron-d6	70.8	P	30 - 150
USGS O-2060-01	Primidone-d5	74.8	P	30 - 150

Lab Sample ID: 1895767
Field Sample ID: 29-8GR

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	79.0	P	40 - 150
USGS O-2060-01	2,4-D-d3	71.0	P	30 - 150
USGS O-2060-01	Acetaminophen-d4	111	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	86.1	P	30 - 160
USGS O-2060-01	Diuron-d6	81.6	P	30 - 150
USGS O-2060-01	Primidone-d5	94.4	P	30 - 150

Lab Sample ID: 1895768
Field Sample ID: 27-6GR

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	142	P	40 - 150
USGS O-2060-01	2,4-D-d3	69.6	P	30 - 150
USGS O-2060-01	Acetaminophen-d4	103	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	95.0	P	30 - 160
USGS O-2060-01	Diuron-d6	88.4	P	30 - 150
USGS O-2060-01	Primidone-d5	94.1	P	30 - 150

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01

Run ID: A76477

Included Lab Sample IDs: 1895766, 1895767, 1895768

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	88.0	99.0	P/P	50 - 150
Acetaminophen	117	122	P/P	60 - 150
Bentazon	86.0	91.0	P/P	50 - 150
Carbamazepine	91.0	105	P/P	60 - 150
Diuron	117	118	P/P	60 - 150
Fenuron	102	113	P/P	60 - 150
Fluridone	101	119	P/P	60 - 150
Imidacloprid	96.0	117	P/P	60 - 150
Linuron	92.0	112	P/P	60 - 150
MCP	99.0	98.0	P/P	50 - 150
Primidone	86.0	92.0	P/P	60 - 150
Triclopyr	96.0	93.0	P/P	50 - 150

Reference Method: EPA 8321B

Run ID: A76559

Included Lab Sample IDs: 1895766, 1895767, 1895768

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	75.2	145	P/P	60 - 150
Sucralose	78.0	61.2	P/P	60 - 150
Sucralose	87.2	89.4	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		Precision SMP	MS
			LCS			
EPA 8321B	Sucralose	112	109	96.7		11.7
USGS O-2060-01	2,4-D	72.6	67.9	68.7		0.954
	Acetaminophen	97.6	92.2	101		9.39
	Bentazon	73.0				
	Carbamazepine	99.2	85.4	79.5		7.18
	Diuron	105	73.5	70.2		4.45
	Fenuron	105	64.6	69.4		7.28
	Fluridone	90.9	38.4	27.6		29.6
	Imidacloprid	109	151	162		5.93
	Linuron	89.8	75.5	67.2		11.6
	MCP	70.0	56.3	58.6		3.78
	Primidone	110	84.5	90.3		6.68
	Triclopyr	63.2	52.1	53.3		2.35

Reference Method Descriptions

Method / DoH Cert #

EPA 8321B / E31780

Description

Water soluble organic compounds by HPLC/MS/MS

Associated Samples

1895766, 1895767, 1895768

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1895766, 1895767, 1895768
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1895766, 1895767, 1895768

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	05/03/2017	05/17/2017	Mohammad Ghaffari	05/18/2017	Mohammad Ghaffari	1895766, 1895767
	05/03/2017	05/17/2017	Mohammad Ghaffari	05/19/2017	Mohammad Ghaffari	1895768
USGS O-2060-01	05/03/2017	05/08/2017	Fe-Val Siddell	05/16/2017	Juyoung Kim	1895766, 1895767, 1895768