

Chemical Analysis Report

SO-DIST-2017-08-16-01

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

Event Description: **Collier Co Tracers & Markers**
Request ID: **RQ-2017-07-03-07**
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: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 07-SEP-2017 13:34



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: COCAT41

Collection Date/Time: 08/15/2017 11:03

Field ID: AF39357

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1921828	EPA 8321B	Sucralose**	0.19		ug/L	P330383	
	USGS O-2060-01	2,4-D	0.13		ug/L	P330253	
		Diuron	0.0064		ug/L	P330253	
		Fenuron	0.0080	U	ug/L	P330253	
		Imidacloprid	0.12		ug/L	P330253	MS
		Bentazon	0.080		ug/L	P330253	MS
		Linuron	0.0040	U	ug/L	P330253	
		Acetaminophen**	0.0080	U	ug/L	P330253	
		MCP	0.0039	I	ug/L	P330253	
		Carbamazepine**	4.4E-04	I	ug/L	P330253	
		Triclopyr**	0.0040	U	ug/L	P330253	
		Primidone**	0.0040	U	ug/L	P330253	
		Fluridone**	0.10		ug/L	P330253	

Ref. Method and Comment:

EPA 8321B: MS accuracy for sucralose 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: P330383

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: USGS O-2060-01

Batch ID: P330253

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	0.0080	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: P330383

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	125		P	40 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: USGS O-2060-01
 Batch ID: P330253

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	75.9		P	40 - 150
Acetaminophen	112		P	30 - 150
Bentazon	70.8		P	40 - 150
Carbamazepine	122		P	40 - 150
Diuron	112		P	40 - 150
Fenuron	107		P	40 - 150
Fluridone	107		P	40 - 150
Imidacloprid	96.1		P	40 - 160
Linuron	107		P	40 - 150
MCP	83.6		P	40 - 150
Primidone	109		P	40 - 150
Triclopyr	79.8		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01
 Batch ID: P330253

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1922240	2,4-D	125	105	P/P	40 - 150
1922240	Acetaminophen	120	109	P/P	30 - 150
1922240	Bentazon	38.4	34.5	F/F	40 - 150
1922240	Carbamazepine	98.6	91.9	P/P	40 - 150
1922240	Diuron	80.5	79.5	P/P	40 - 150
1922240	Fenuron	78.8	73.9	P/P	40 - 150
1922240	Fluridone	88.4	77.2	P/P	40 - 150
1922240	Imidacloprid	240	236	F/F	40 - 160
1922240	Linuron	104	99.6	P/P	40 - 150
1922240	MCP	89.3	90.3	P/P	40 - 150
1922240	Primidone	123	120	P/P	40 - 150
1922240	Triclopyr	91.4	91.6	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
 Batch ID: P330383

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1921620	Sucralose	0.491	Spike	P	0 - 30

Reference Method: USGS O-2060-01
 Batch ID: P330253

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922240	2,4-D	17.8	Spike	P	0 - 30
1922240	Acetaminophen	9.30	Spike	P	0 - 30
1922240	Bentazon	4.46	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
 Batch ID: P330253

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1922240	Carbamazepine	7.01	Spike	P	0 - 30
1922240	Diuron	1.33	Spike	P	0 - 30
1922240	Fenuron	6.34	Spike	P	0 - 30
1922240	Fluridone	13.3	Spike	P	0 - 30
1922240	Imidacloprid	1.77	Spike	P	0 - 30
1922240	Linuron	4.03	Spike	P	0 - 30
1922240	MCPP	1.09	Spike	P	0 - 30
1922240	Primidone	2.40	Spike	P	0 - 30
1922240	Triclopyr	0.218	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: 1921828
 Field Sample ID: AF39357

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	115	P	30 - 160
EPA 8321B	Carbamazepine-d10	87.4	P	30 - 160
EPA 8321B	Diuron-d6	65.7	P	30 - 160
EPA 8321B	Primidone-d5	117	P	30 - 160
EPA 8321B	Sucralose-d6	58.6	P	40 - 160
USGS O-2060-01	2,4-D-d3	120	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	115	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	87.4	P	30 - 160
USGS O-2060-01	Diuron-d6	65.7	P	30 - 160
USGS O-2060-01	Primidone-d5	117	P	30 - 160
USGS O-2060-01	Sucralose-d6	58.6	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01
 Run ID: A78655
 Included Lab Sample IDs: 1921828

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	81.1	98.8	P/P	50 - 150
Acetaminophen	104	104	P/P	60 - 150
Bentazon	112	113	P/P	50 - 150
Carbamazepine	112	114	P/P	60 - 150
Diuron	108	109	P/P	60 - 150
Fenuron	102	103	P/P	60 - 150
Fluridone	104	104	P/P	60 - 160
Imidacloprid	98.0	108	P/P	60 - 150
Linuron	104	104	P/P	60 - 150
MCPP	101	98.2	P/P	50 - 150

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01

Run ID: A78655

Included Lab Sample IDs: 1921828

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Primidone	107	99.6	P/P	60 - 150
Triclopyr	108	107	P/P	50 - 150

Reference Method: EPA 8321B

Run ID: A78750

Included Lab Sample IDs: 1921828

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	120	119	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	125				0.491
USGS O-2060-01	2,4-D	75.9	125 105			17.8
	Acetaminophen	112	120 109			9.30
	Bentazon	70.8	38.4 34.5			4.46
	Carbamazepine	122	98.6 91.9			7.01
	Diuron	112	80.5 79.5			1.33
	Fenuron	107	78.8 73.9			6.34
	Fluridone	107	88.4 77.2			13.3
	Imidacloprid	96.1	240 236			1.77
	Linuron	107	104 99.6			4.03
	MCP	83.6	89.3 90.3			1.09
	Primidone	109	123 120			2.40
	Triclopyr	79.8	91.4 91.6			0.218

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Analysis of sucralose in water matrices by HPLC/MS/MS	1921828
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1921828
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1921828

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	08/16/2017	08/24/2017	Julie Michelle Frank	08/31/2017	Julie Michelle Frank	1921828
USGS O-2060-01	08/16/2017	08/21/2017	Hoor Shaik	08/23/2017	Juyoung Kim	1921828