

Chemical Analysis Report

WQAP-2017-12-05-04

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-2017-11-13-61**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection - SROC
2295 Victoria AVE
Suite 364
Fort Myers, FL 33901
Attn: Kirby Wolfe

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Certified by: Colin Wright, Program Administrator

Date Certified: 12-DEC-2017 14:30

A handwritten signature in black ink, appearing to read "Colin Wright", is written over 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: IMKFSHCK

Collection Date/Time: 12/04/2017 09:49

Field ID: AF45468

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1950441	EPA 8321B	Sucralose**	0.020	I	ug/L	P336172	
	USGS O-2060-01	2,4-D	0.0033	I	ug/L	P336290	
		Diuron	0.051		ug/L	P336290	
		Fenuron	0.0080	U	ug/L	P336290	
		Imidacloprid	0.049		ug/L	P336290	
		Bentazon	0.0026	I	ug/L	P336290	
		Linuron	0.0040	U	ug/L	P336290	
		Acetaminophen**	0.0080	U	ug/L	P336290	
		MCP	0.0020	U	ug/L	P336290	
		Carbamazepine**	4.0E-04	U	ug/L	P336290	
		Triclopyr**	0.0040	U	ug/L	P336290	
		Primidone**	0.0040	U	ug/L	P336290	
		Fluridone**	0.0033		ug/L	P336290	

Sample Location: IMKSLGH

Collection Date/Time: 12/04/2017 12:45

Field ID: AF45469

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1950442	EPA 8321B	Sucralose**	0.040		ug/L	P336172	
	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P336290	
		Diuron	0.0029	I	ug/L	P336290	
		Fenuron	0.0080	U	ug/L	P336290	
		Imidacloprid	0.0025	I	ug/L	P336290	
		Bentazon	0.0018	I	ug/L	P336290	
		Linuron	0.0040	U	ug/L	P336290	
		Acetaminophen**	0.0080	U	ug/L	P336290	
		MCP	0.0020	U	ug/L	P336290	
		Carbamazepine**	4.0E-04	U	ug/L	P336290	
		Triclopyr**	0.0040	U	ug/L	P336290	
		Primidone**	0.0040	U	ug/L	P336290	
		Fluridone**	4.3E-04	I	ug/L	P336290	

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
Batch ID: P336172

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: USGS O-2060-01
Batch ID: P336290

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
Acetaminophen	0.0080	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: USGS O-2060-01
Batch ID: P336290

Component	Result	Code	Units
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
MCPP	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: P336172

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	114		P	40 - 150

Reference Method: USGS O-2060-01
Batch ID: P336290

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	85.6		P	40 - 150
Acetaminophen	104		P	30 - 150
Bentazon	58.7		P	30 - 150
Carbamazepine	109		P	40 - 150
Diuron	103		P	40 - 150
Fenuron	109		P	40 - 150
Fluridone	113		P	40 - 150
Imidacloprid	108		P	40 - 160
Linuron	104		P	40 - 150
MCPP	87.8		P	40 - 150
Primidone	109		P	40 - 150
Triclopyr	83.1		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P336172

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1950024	Sucralose	78.0	81.0	P/P	40 - 150

Reference Method: USGS O-2060-01
Batch ID: P336290

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1950117	2,4-D	86.3	81.7	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01
Batch ID: P336290

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1950117	Acetaminophen	79.5	76.5	P/P	30 - 150
1950117	Bentazon	52.7	49.4	P/P	30 - 150
1950117	Carbamazepine	110	112	P/P	40 - 150
1950117	Diuron	95.5	101	P/P	40 - 150
1950117	Fenuron	104	109	P/P	40 - 150
1950117	Fluridone	96.4	103	P/P	40 - 150
1950117	Imidacloprid	141	141	P/P	40 - 160
1950117	Linuron	97.8	104	P/P	40 - 150
1950117	MCP	68.3	67.7	P/P	40 - 150
1950117	Primidone	118	121	P/P	40 - 150
1950117	Triclopyr	66.1	64.6	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P336172

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1950024	Sucralose	3.59	Spike	P	0 - 30

Reference Method: USGS O-2060-01
Batch ID: P336290

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1950117	2,4-D	5.32	Spike	P	0 - 30
1950117	Acetaminophen	2.93	Spike	P	0 - 30
1950117	Bentazon	2.80	Spike	P	0 - 30
1950117	Carbamazepine	1.60	Spike	P	0 - 30
1950117	Diuron	5.30	Spike	P	0 - 30
1950117	Fenuron	4.15	Spike	P	0 - 30
1950117	Fluridone	4.52	Spike	P	0 - 30
1950117	Imidacloprid	0.0721	Spike	P	0 - 30
1950117	Linuron	5.99	Spike	P	0 - 30
1950117	MCP	0.952	Spike	P	0 - 30
1950117	Primidone	2.27	Spike	P	0 - 30
1950117	Triclopyr	2.33	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: 1950441
Field Sample ID: AF45468

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	102	P	30 - 160

Quality Assurance Report Surrogates

Lab Sample ID: 1950441
 Field Sample ID: AF45468

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Carbamazepine-d10	90.1	P	30 - 160
EPA 8321B	Diuron-d6	93.5	P	30 - 160
EPA 8321B	Primidone-d5	96.5	P	30 - 160
EPA 8321B	Sucralose-d6	64.2	P	40 - 160
USGS O-2060-01	2,4-D-d3	87.4	P	30 - 160
USGS O-2060-01	Acetaminophen-d4	102	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	90.1	P	30 - 160
USGS O-2060-01	Diuron-d6	93.5	P	30 - 160
USGS O-2060-01	Primidone-d5	96.5	P	30 - 160
USGS O-2060-01	Sucralose-d6	64.2	P	40 - 160

Lab Sample ID: 1950442
 Field Sample ID: AF45469

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	88.7	P	30 - 160
EPA 8321B	Carbamazepine-d10	97.9	P	30 - 160
EPA 8321B	Diuron-d6	95.5	P	30 - 160
EPA 8321B	Primidone-d5	111	P	30 - 160
EPA 8321B	Sucralose-d6	66.4	P	40 - 160
USGS O-2060-01	2,4-D-d3	70.5	P	30 - 160
USGS O-2060-01	Acetaminophen-d4	88.7	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	97.9	P	30 - 160
USGS O-2060-01	Diuron-d6	95.5	P	30 - 160
USGS O-2060-01	Primidone-d5	111	P	30 - 160
USGS O-2060-01	Sucralose-d6	66.4	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01
 Run ID: A80693
 Included Lab Sample IDs: 1950441, 1950442

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	86.8	88.4	P/P	50 - 150
Bentazon	102	90.0	P/P	50 - 150
MCP	95.6	106	P/P	50 - 150
Triclopyr	92.4	100	P/P	50 - 150

Reference Method: EPA 8321B
 Run ID: A80747
 Included Lab Sample IDs: 1950441, 1950442

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	96.4	88.5	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01

Run ID: A80824

Included Lab Sample IDs: 1950441, 1950442

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	101	99.2	P/P	60 - 150
Carbamazepine	109	110	P/P	60 - 150
Diuron	98.6	105	P/P	60 - 150
Fenuron	102	106	P/P	60 - 150
Fluridone	113	109	P/P	60 - 160
Imidacloprid	98.0	96.0	P/P	60 - 150
Linuron	106	116	P/P	60 - 150
Primidone	101	99.1	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	114	78.0 81.0			3.59
USGS O-2060-01	2,4-D	85.6	86.3 81.7			5.32
	Acetaminophen	104	79.5 76.5			2.93
	Bentazon	58.7	52.7 49.4			2.80
	Carbamazepine	109	110 112			1.60
	Diuron	103	95.5 101			5.30
	Fenuron	109	104 109			4.15
	Fluridone	113	96.4 103			4.52
	Imidacloprid	108	141 141			0.0721
	Linuron	104	97.8 104			5.99
	MCP	87.8	68.3 67.7			0.952
	Primidone	109	118 121			2.27
	Triclopyr	83.1	66.1 64.6			2.33

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Analysis of sucralose in water matrices by HPLC/MS/MS	1950441, 1950442
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1950441, 1950442
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1950441, 1950442

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	12/05/2017	12/06/2017	Juyoung Kim	12/07/2017	Juyoung Kim	1950441, 1950442
USGS O-2060-01	12/05/2017	12/06/2017	Hoor Shaik	12/07/2017	Julie Michelle Frank	1950441, 1950442
	12/05/2017	12/06/2017	Hoor Shaik	12/08/2017	Julie Michelle Frank	1950441, 1950442