

Chemical Analysis Report

SO-DIST-2017-04-26-02

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

Event Description: **Lee Co Tracers & Markers**

Request ID: **RQ-2017-03-20-20**

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

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 19-MAY-2017 13:55



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: 04/25/2017 10:29

Field ID: WHISGR10

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1892490	EPA 8321B	Sucralose**	0.15		ug/L	P323999	
	USGS O-2060-01	2,4-D	0.085		ug/L	P323974	
		Diuron	0.081		ug/L	P323974	
		Fenuron	0.0040	U	ug/L	P323974	
		Imidacloprid	0.046		ug/L	P323974	MS
		Bentazon	0.018		ug/L	P323974	
		Linuron	0.0040	U	ug/L	P323974	
		Acetaminophen**	0.0080	U	ug/L	P323974	
		MCP	0.0031	I	ug/L	P323974	
		Carbamazepine**	0.0018		ug/L	P323974	
		Triclopyr**	0.0040	U	ug/L	P323974	
		Primidone**	0.0040	U	ug/L	P323974	
		Fluridone**	0.0038		ug/L	P323974	

Ref. Method and Comment:
 USGS O-2060-01: Indaziflam = 0.027 ug/L.

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
Batch ID: P323999

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: USGS O-2060-01
Batch ID: P323974

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: P323999

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	92.6		P	40 - 140

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: USGS O-2060-01
Batch ID: P323974

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	69.8		P	40 - 140
Acetaminophen	48.4		P	40 - 140
Bentazon	51.9		P	40 - 140
Carbamazepine	98.5		P	40 - 140
Diuron	94.8		P	40 - 140
Fenuron	93.6		P	40 - 140
Fluridone	89.0		P	40 - 140
Imidacloprid	93.5		P	40 - 160
Linuron	83.4		P	40 - 140
MCP	78.5		P	40 - 140
Primidone	93.4		P	40 - 140
Triclopyr	75.2		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P323999

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892232	Sucralose	84.6	87.2	P/P	40 - 140

Reference Method: USGS O-2060-01
Batch ID: P323974

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1892054	2,4-D	68.5	70.2	P/P	40 - 140
1892054	Acetaminophen	90.9	97.5	P/P	40 - 140
1892054	Bentazon	47.3	47.4	P/P	40 - 140
1892054	Carbamazepine	82.0	90.4	P/P	40 - 140
1892054	Diuron	74.8	76.8	P/P	40 - 140
1892054	Fenuron	69.9	66.1	P/P	40 - 140
1892054	Fluridone	76.0	81.2	P/P	40 - 140
1892054	Imidacloprid	166	164	F/F	40 - 160
1892054	Linuron	93.5	95.9	P/P	40 - 140
1892054	MCP	60.9	62.0	P/P	40 - 140
1892054	Primidone	101	94.9	P/P	40 - 140
1892054	Triclopyr	63.5	65.6	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P323999

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892232	Sucralose	3.03	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
Batch ID: P323974

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1892054	2,4-D	2.31	Spike	P	0 - 30
1892054	Acetaminophen	7.00	Spike	P	0 - 30
1892054	Bentazon	0.251	Spike	P	0 - 30
1892054	Carbamazepine	8.60	Spike	P	0 - 30
1892054	Diuron	2.59	Spike	P	0 - 30
1892054	Fenuron	5.65	Spike	P	0 - 30
1892054	Fluridone	6.66	Spike	P	0 - 30
1892054	Imidacloprid	1.28	Spike	P	0 - 30
1892054	Linuron	2.49	Spike	P	0 - 30
1892054	MCP	1.67	Spike	P	0 - 30
1892054	Primidone	6.25	Spike	P	0 - 30
1892054	Triclopyr	3.22	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: 1892490
Field Sample ID: WHISGR10

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	102	P	40 - 150
USGS O-2060-01	2,4-D-d3	62.5	P	30 - 150
USGS O-2060-01	Acetaminophen-d4	87.1	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	85.5	P	30 - 160
USGS O-2060-01	Diuron-d6	66.4	P	30 - 150
USGS O-2060-01	Primidone-d5	101	P	30 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A76022
Included Lab Sample IDs: 1892490

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	79.8	119	P/P	60 - 150

Reference Method: USGS O-2060-01
Run ID: A76477
Included Lab Sample IDs: 1892490

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	90.0	87.6	P/P	50 - 150
Acetaminophen	103	102	P/P	60 - 150
Bentazon	85.2	81.2	P/P	50 - 150
Carbamazepine	97.2	94.0	P/P	60 - 150
Diuron	104	108	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01
Run ID: A76477
Included Lab Sample IDs: 1892490

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fenuron	99.2	98.4	P/P	60 - 150
Fluridone	98.8	100	P/P	60 - 150
Imidacloprid	106	97.6	P/P	60 - 150
Linuron	92.4	86.4	P/P	60 - 150
MCPP	93.6	94.0	P/P	50 - 150
Primidone	102	95.6	P/P	60 - 150
Triclopyr	88.0	95.6	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 SMP	MS
EPA 8321B	Sucralose	92.6	84.6 87.2			3.03
USGS O-2060-01	2,4-D	69.8	68.5 70.2			2.31
	Acetaminophen	48.4	90.9 97.5			7.00
	Bentazon	51.9	47.3 47.4			0.251
	Carbamazepine	98.5	82.0 90.4			8.60
	Diuron	94.8	74.8 76.8			2.59
	Fenuron	93.6	69.9 66.1			5.65
	Fluridone	89.0	76.0 81.2			6.66
	Imidacloprid	93.5	166 164			1.28
	Linuron	83.4	93.5 95.9			2.49
	MCPP	78.5	60.9 62.0			1.67
	Primidone	93.4	101 94.9			6.25
	Triclopyr	75.2	63.5 65.6			3.22

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1892490
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1892490
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1892490

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	04/26/2017	04/26/2017	Mohammad Ghaffari	04/26/2017	Mohammad Ghaffari	1892490
USGS O-2060-01	04/26/2017	04/29/2017	Hoor Shaik	05/13/2017	Juyoung Kim	1892490