

Chemical Analysis Report

CEN-DIST-2017-03-09-03

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

Event Description: **Lil Econ / Lil Wekiva Canal**
Request ID: **RQ-2017-02-27-56**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

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

Certified by: Liang Lin, Environmental Administrator

Date Certified: 24-MAR-2017 11:02

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

NON-CONFORMANCE REPORT INCLUDED

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: Little Econ River

Collection Date/Time: 03/08/2017 12:39

Field ID: G2CE0061

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879038	EPA 8321B	Sucralose**	18		ug/L	P321083	
	USGS O-2060-01	2,4-D	0.065		ug/L	P321159	
		Diuron	0.0093	I	ug/L	P321159	
		2,4-DB	0.010	U	ug/L	P321159	
		Fenuron	0.0080	U	ug/L	P321159	
		2,4,5-T	0.0040	U	ug/L	P321159	
		Acifluorfen	0.010	U	ug/L	P321159	RPD
		Imidacloprid	0.053		ug/L	P321159	
		Bentazon	0.17		ug/L	P321159	
		Linuron	0.0040	U	ug/L	P321159	
		Dicamba	0.050	U	ug/L	P321159	
		Dichlorprop	0.0040	U	ug/L	P321159	
		Dinoseb	0.020	U	ug/L	P321159	MS, RPD
		MCPA	0.0040	U	ug/L	P321159	
		Acetaminophen**	0.0040	U	ug/L	P321159	
		MCPD	0.0040	U	ug/L	P321159	
		Picloram	0.050	U	ug/L	P321159	RPD
		Carbamazepine**	0.033		ug/L	P321159	
		Silvex	0.0040	U	ug/L	P321159	
		Triclopyr**	0.091		ug/L	P321159	
		Primidone**	0.035		ug/L	P321159	
		Fluridone**	0.012		ug/L	P321159	

Sample Location: Little Wekiva Canal

Collection Date/Time: 03/08/2017 13:46

Field ID: G2CE0062

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879039	EPA 8321B	Sucralose**	0.25		ug/L	P321083	
	USGS O-2060-01	2,4-D	0.035		ug/L	P321159	
		Diuron	0.0040	U	ug/L	P321159	
		2,4-DB	0.010	U	ug/L	P321159	
		Fenuron	0.0080	U	ug/L	P321159	
		2,4,5-T	0.0040	U	ug/L	P321159	
		Acifluorfen	0.010	U	ug/L	P321159	RPD
		Imidacloprid	0.0040	U	ug/L	P321159	
		Bentazon	0.29		ug/L	P321159	
		Linuron	0.0040	U	ug/L	P321159	
		Dicamba	0.050	U	ug/L	P321159	
		Dichlorprop	0.0040	U	ug/L	P321159	
		Dinoseb	0.020	U	ug/L	P321159	MS, RPD
		MCPA	0.0040	U	ug/L	P321159	
		Acetaminophen**	0.0040	U	ug/L	P321159	
		MCPD	0.0040	U	ug/L	P321159	
		Picloram	0.050	U	ug/L	P321159	RPD

Field ID: G2CE0062

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879039	USGS O-2060-01	Carbamazepine**	4.0E-04	U	ug/L	P321159	
		Silvex	0.0040	U	ug/L	P321159	
		Triclopyr**	0.010	U	ug/L	P321159	
		Primidone**	0.0080	U	ug/L	P321159	
		Fluridone**	0.031		ug/L	P321159	

Non-Conformance Report

NCR ID: 6297

Event(s)

CEN-DIST-2017-03-09-03

Job(s)

Sample(s)

Test(s)

NCR Type: SHIPPING/RECEIVING

NCR Category: Receiving

Observation: RQ-2017-02-27-56 Location Little Econ River and Little Wekiva Canal have no recorded collection times.

Resolution: Customer (Mike Linger) was contacted by phone and email. Collection times for Little Econ River and Little Wekiva Canal were provided by customer, with a copy of the email added to the scanned event file.

Authorised by/Date: Ramsey K. White 3/22/2017

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
 Please address questions to:

Chemistry Colin Wright (850) 245-8085
 Biology Cheryl Swanson (850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B

Batch ID: P321083

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: USGS O-2060-01

Batch ID: P321159

Component	Result	Code	Units
2,4,5-T	0.0040	U	ug/L
2,4-D	0.0040	U	ug/L
2,4-DB	0.010	U	ug/L
Acetaminophen	0.0040	U	ug/L
Acifluorfen	0.010	U	ug/L
Bentazon	0.0040	U	ug/L
Carbamazepine	4.0E-04	U	ug/L
Dicamba	0.050	U	ug/L
Dichlorprop	0.0040	U	ug/L
Dinoseb	0.020	U	ug/L
Diuron	0.0040	U	ug/L
Fenuron	0.0080	U	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	0.0040	U	ug/L
Linuron	0.0040	U	ug/L
MCPA	0.0040	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: USGS O-2060-01
 Batch ID: P321159

Component	Result	Code	Units
MCPP	0.0040	U	ug/L
Picloram	0.050	U	ug/L
Primidone	0.0080	U	ug/L
Silvex	0.0040	U	ug/L
Triclopyr	0.010	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
 Batch ID: P321083

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	99.0		P	40 - 140

Reference Method: USGS O-2060-01
 Batch ID: P321159

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4,5-T	83.2		P	40 - 140
2,4-D	96.4		P	40 - 140
2,4-DB	72.0		P	40 - 140
Acetaminophen	94.0		P	40 - 140
Acifluorfen	46.4		P	40 - 140
Bentazon	126		P	40 - 140
Carbamazepine	97.6		P	40 - 140
Dicamba	85.2		P	40 - 140
Dichlorprop	107		P	40 - 140
Dinoseb	66.8		P	40 - 140
Diuron	65.6		P	40 - 140
Fenuron	82.4		P	40 - 140
Fluridone	86.4		P	40 - 140
Imidacloprid	76.4		P	40 - 160
Linuron	67.6		P	40 - 140
MCPA	85.2		P	40 - 140
MCPP	94.8		P	40 - 140
Picloram	79.2		P	40 - 140
Primidone	62.4		P	40 - 140
Silvex	104		P	40 - 140
Triclopyr	123		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
 Batch ID: P321083

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1878109	Sucralose	108	123	P/P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01

Batch ID: P321159

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1878905	2,4,5-T	74.8	82.4	P/P	40 - 140
1878905	2,4-D	84.4	90.8	P/P	40 - 140
1878905	2,4-DB	68.0	74.8	P/P	40 - 140
1878905	Acetaminophen	92.8	89.6	P/P	40 - 140
1878905	Acifluorfen	44.8	66.8	P/P	40 - 140
1878905	Bentazon	129	137	P/P	40 - 140
1878905	Carbamazepine	86.4	87.6	P/P	40 - 140
1878905	Dicamba	68.4	89.2	P/P	40 - 140
1878905	Dichlorprop	88.0	83.6	P/P	40 - 140
1878905	Dinoseb	93.6	6.76	P/F	40 - 140
1878905	Diuron	61.6	62.0	P/P	40 - 140
1878905	Fenuron	63.2	72.4	P/P	40 - 140
1878905	Fluridone	75.6	77.6	P/P	40 - 140
1878905	Imidacloprid	83.6	74.4	P/P	40 - 160
1878905	Linuron	66.4	64.8	P/P	40 - 140
1878905	MCPA	87.2	92.4	P/P	40 - 140
1878905	MCPP	92.0	93.2	P/P	40 - 140
1878905	Picloram	49.6	106	P/P	40 - 140
1878905	Primidone	62.8	67.6	P/P	40 - 140
1878905	Silvex	108	105	P/P	40 - 140
1878905	Triclopyr	112	120	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 8321B

Batch ID: P321083

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1878109	Sucralose	12.2	Spike	P	0 - 30

Reference Method: USGS O-2060-01

Batch ID: P321159

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1878905	2,4,5-T	9.67	Spike	P	0 - 30
1878905	2,4-D	7.31	Spike	P	0 - 30
1878905	2,4-DB	9.52	Spike	P	0 - 30
1878905	Acetaminophen	3.51	Spike	P	0 - 30
1878905	Acifluorfen	39.4	Spike	F	0 - 30
1878905	Bentazon	6.32	Spike	P	0 - 30
1878905	Carbamazepine	1.38	Spike	P	0 - 30
1878905	Dicamba	26.4	Spike	P	0 - 30
1878905	Dichlorprop	5.13	Spike	P	0 - 30
1878905	Dinoseb	173	Spike	F	0 - 30
1878905	Diuron	0.647	Spike	P	0 - 30
1878905	Fenuron	13.6	Spike	P	0 - 30
1878905	Fluridone	2.61	Spike	P	0 - 30
1878905	Imidacloprid	11.6	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
Batch ID: P321159

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1878905	Linuron	2.44	Spike	P	0 - 30
1878905	MCPA	5.79	Spike	P	0 - 30
1878905	MCPP	1.30	Spike	P	0 - 30
1878905	Picloram	72.2	Spike	F	0 - 30
1878905	Primidone	7.36	Spike	P	0 - 30
1878905	Silvex	3.01	Spike	P	0 - 30
1878905	Triclopyr	6.92	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: 1879038
Field Sample ID: G2CE0061

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	80.0	P	40 - 150
USGS O-2060-01	2,4-D-d3	92.6	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	53.0	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	55.8	P	40 - 160
USGS O-2060-01	Diuron-d6	51.4	P	40 - 150
USGS O-2060-01	Primidone-d5	71.8	P	40 - 150

Lab Sample ID: 1879039
Field Sample ID: G2CE0062

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	93.0	P	40 - 150
USGS O-2060-01	2,4-D-d3	93.0	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	73.4	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	59.2	P	40 - 160
USGS O-2060-01	Diuron-d6	54.8	P	40 - 150
USGS O-2060-01	Primidone-d5	78.4	P	40 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A75044
Included Lab Sample IDs: 1879038, 1879039

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	114	103	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01

Run ID: A75047

Included Lab Sample IDs: 1879038, 1879039

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4,5-T	100	73.6	P/P	50 - 150
2,4-D	112	116	P/P	50 - 150
2,4-DB	89.6	99.8	P/P	50 - 150
Acifluorfen	87.0	77.0	P/P	50 - 150
Bentazon	102	104	P/P	50 - 150
Dicamba	117	104	P/P	50 - 150
Dichlorprop	113	115	P/P	50 - 150
Dinoseb	109	98.2	P/P	50 - 150
MCPA	107	113	P/P	50 - 150
MCPP	111	108	P/P	50 - 150
Picloram	123	106	P/P	50 - 150
Silvex	92.4	99.8	P/P	50 - 150
Triclopyr	114	108	P/P	50 - 150

Reference Method: USGS O-2060-01

Run ID: A75078

Included Lab Sample IDs: 1879038, 1879039

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	88.8	89.2	P/P	60 - 150
Carbamazepine	124	125	P/P	60 - 150
Diuron	88.8	84.0	P/P	60 - 150
Fenuron	100	101	P/P	60 - 150
Fluridone	98.0	99.6	P/P	60 - 150
Imidacloprid	94.0	90.8	P/P	60 - 150
Linuron	113	100	P/P	60 - 150
Primidone	94.8	99.2	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	99.0	108	123		12.2
USGS O-2060-01	2,4,5-T	83.2	74.8	82.4		9.67
	2,4-D	96.4	84.4	90.8		7.31
	2,4-DB	72.0	68.0	74.8		9.52
	Acetaminophen	94.0	92.8	89.6		3.51
	Acifluorfen	46.4	44.8	66.8		39.4
	Bentazon	126	129	137		6.32
	Carbamazepine	97.6	86.4	87.6		1.38
	Dicamba	85.2	68.4	89.2		26.4
	Dichlorprop	107	88.0	83.6		5.13
	Dinoseb	66.8	93.6	6.76		173
	Diuron	65.6	61.6	62.0		0.647
	Fenuron	82.4	63.2	72.4		13.6

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision SMP	MS
			LCS			
USGS O-2060-01	Fluridone	86.4	75.6	77.6		2.61
	Imidacloprid	76.4	83.6	74.4		11.6
	Linuron	67.6	66.4	64.8		2.44
	MCPA	85.2	87.2	92.4		5.79
	MCPP	94.8	92.0	93.2		1.30
	Picloram	79.2	49.6	106		72.2
	Primidone	62.4	62.8	67.6		7.36
	Silvex	104	108	105		3.01
	Triclopyr	123	112	120		6.92

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1879038, 1879039
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1879038, 1879039
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1879038, 1879039

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	03/09/2017	03/09/2017	Mohammad Ghaffari	03/10/2017	Mohammad Ghaffari	1879038, 1879039
USGS O-2060-01	03/09/2017	03/10/2017	Hoor Shaik	03/11/2017	Juyoung Kim	1879038, 1879039
	03/09/2017	03/10/2017	Hoor Shaik	03/12/2017	Juyoung Kim	1879038, 1879039