Chemical Analysis Report

CEN-DIST-2017-03-28-03

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

Event Description: **Long Branch / Crane Strand / Crane Strand Drain**
Request ID: **RQ-2017-03-27-45**
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: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 10-APR-2017 11:08

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: Pipe into CS Drain ~.1 mi US of University on W Bank **Collection Date/Time: 03/27/2017 13:10**

Field ID: 26011105 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883626	EPA 8321B	Sucralose**	0.26		ug/L	P322291	
	USGS O-2060-01	2,4-D	0.19		ug/L	P322144	MS
		Diuron	0.022	I	ug/L	P322144	
		Fenuron	0.016	U	ug/L	P322144	
		2,4,5-T	0.0040	U	ug/L	P322144	
		Acifluorfen	0.010	U	ug/L	P322144	
		Imidacloprid	0.031	I	ug/L	P322144	
		Bentazon	0.18		ug/L	P322144	
		Linuron	0.0080	U	ug/L	P322144	RPD
		Acetaminophen**	0.010	U	ug/L	P322144	
		Carbamazepine**	4.0E-04	U	ug/L	P322144	
		Silvex	0.0040	U	ug/L	P322144	MS
		Primidone**	0.0080	U	ug/L	P322144	
		Fluridone**	0.040		ug/L	P322144	

Ref. Method and Comment:
USGS O-2060-01: MCPP = 0.022 ug/L. MS accuracy for bentazon and triclopyr could not be assessed due to high concentration of parameter in the spiked sample.
USGS O-2060-01: MDL's for some parameters elevated due to matrix interference.

Sample Location: Crane Strand at Econ Trail **Collection Date/Time: 03/27/2017 12:30**

Field ID: 20010382 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883627	EPA 8321B	Sucralose**	0.64		ug/L	P322291	
	USGS O-2060-01	2,4-D	0.018	J	ug/L	P322144	MS
		Diuron	0.0040	U	ug/L	P322144	
		Fenuron	0.0080	U	ug/L	P322144	
		2,4,5-T	0.0040	U	ug/L	P322144	
		Acifluorfen	0.010	U	ug/L	P322144	
		Imidacloprid	0.0040	U	ug/L	P322144	
		Bentazon	0.24		ug/L	P322144	
		Linuron	0.0040	UJ	ug/L	P322144	RPD
		Acetaminophen**	0.010	U	ug/L	P322144	
		Carbamazepine**	0.0012	I	ug/L	P322144	
		Silvex	0.0040	UJ	ug/L	P322144	MS
		Primidone**	0.0080	U	ug/L	P322144	
		Fluridone**	0.020		ug/L	P322144	

Ref. Method and Comment:
USGS O-2060-01: Triclopyr = 0.34 ug/L. MS accuracy for bentazon and triclopyr could not be assessed due to high concentration of parameter in the spiked sample. Refer to the narrative for an explanation of QC Codes.
USGS O-2060-01: Refer to the narrative for an explanation of QC Codes.

Quality Assurance Report
Method Blank Results

Quality Assurance Report
Method Blank Results

Reference Method: EPA 8321B
Batch ID: P322291

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: USGS O-2060-01
Batch ID: P322144

Component	Result	Code	Units
2,4,5-T	0.0040	U	ug/L
2,4-D	0.0040	U	ug/L
Acetaminophen	0.010	U	ug/L
Acifluorfen	0.010	U	ug/L
Bentazon	0.0040	U	ug/L
Carbamazepine	4.0E-04	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
Primidone	0.0080	U	ug/L
Silvex	0.0040	U	ug/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P322291

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	94.3		P	40 - 140

Reference Method: USGS O-2060-01
Batch ID: P322144

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4,5-T	86.4		P	40 - 140
2,4-D	105		P	40 - 140
Acetaminophen	66.4		P	40 - 140
Acifluorfen	68.8		P	40 - 140
Bentazon	125		P	40 - 140
Carbamazepine	111		P	40 - 140
Diuron	78.4		P	40 - 140
Fenuron	85.2		P	40 - 140
Fluridone	78.0		P	40 - 140
Imidacloprid	83.6		P	40 - 160
Linuron	82.8		P	40 - 140
Primidone	86.0		P	40 - 140
Silvex	122		P	40 - 140

Quality Assurance Report
Matrix Spike Accuracy

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P322291

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
18833597	Sucralose	100	107	P/P	40 - 140

Reference Method: USGS O-2060-01
Batch ID: P322144

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883627	2,4,5-T	114	101	P/P	40 - 140
1883627	2,4-D	156	122	F/P	40 - 140
1883627	Acetaminophen	80.4	76.8	P/P	40 - 140
1883627	Acifluorfen	120	118	P/P	40 - 140
1883627	Carbamazepine	59.6	50.8	P/P	40 - 140
1883627	Diuron	47.2	48.4	P/P	40 - 140
1883627	Fenuron	52.0	47.2	P/P	40 - 140
1883627	Fluridone	40.8	48.8	P/P	40 - 140
1883627	Imidacloprid	109	94.8	P/P	40 - 160
1883627	Linuron	54.4	80.4	P/P	40 - 140
1883627	Primidone	60.0	66.4	P/P	40 - 140
1883627	Silvex	168	151	F/F	40 - 140

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P322291

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
18833597	Sucralose	6.76	Spike	P	0 - 30

Reference Method: USGS O-2060-01
Batch ID: P322144

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883627	2,4,5-T	11.9	Spike	P	0 - 30
1883627	2,4-D	22.1	Spike	P	0 - 30
1883627	Acetaminophen	4.58	Spike	P	0 - 30
1883627	Acifluorfen	1.01	Spike	P	0 - 30
1883627	Bentazon	8.87	Spike	P	0 - 30
1883627	Carbamazepine	15.6	Spike	P	0 - 30
1883627	Diuron	2.51	Spike	P	0 - 30
1883627	Fenuron	9.68	Spike	P	0 - 30
1883627	Fluridone	12.4	Spike	P	0 - 30
1883627	Imidacloprid	14.1	Spike	P	0 - 30
1883627	Linuron	38.6	Spike	F	0 - 30
1883627	Primidone	10.1	Spike	P	0 - 30
1883627	Silvex	10.6	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: 1883626
Field Sample ID: 26011105

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	92.5	P	40 - 150
USGS O-2060-01	2,4-D-d3	101	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	66.6	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	48.8	P	40 - 160
USGS O-2060-01	Diuron-d6	65.6	P	40 - 150
USGS O-2060-01	Primidone-d5	51.0	P	40 - 150

Lab Sample ID: 1883627
Field Sample ID: 20010382

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	82.0	P	40 - 150
USGS O-2060-01	2,4-D-d3	95.6	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	67.2	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	52.0	P	40 - 160
USGS O-2060-01	Diuron-d6	40.0	P	40 - 150
USGS O-2060-01	Primidone-d5	47.8	P	40 - 150

Quality Assurance Report
Calibration Verification

Reference Method: EPA 8321B
Run ID: A75457
Included Lab Sample IDs: 1883626, 1883627

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	89.5	102	P/P	60 - 150
Sucralose	90.2	89.5	P/P	60 - 150

Reference Method: USGS O-2060-01
Run ID: A75529
Included Lab Sample IDs: 1883626, 1883627

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4,5-T	89.0	91.8	P/P	50 - 150
2,4,5-T	96.0	99.4	P/P	50 - 150
2,4-D	111	119	P/P	50 - 150
2,4-D	121	117	P/P	50 - 150
Acifluorfen	110	108	P/P	50 - 150
Acifluorfen	122	108	P/P	50 - 150
Bentazon	95.2	102	P/P	50 - 150
Bentazon	98.6	96.2	P/P	50 - 150
Silvex	102	106	P/P	50 - 150
Silvex	107	103	P/P	50 - 150

Reference Method: USGS O-2060-01
Run ID: A75606
Included Lab Sample IDs: 1883626, 1883627

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	104	121	P/P	60 - 150

Quality Assurance Report
Calibration Verification

Reference Method: USGS O-2060-01
Run ID: A75606
Included Lab Sample IDs: 1883626, 1883627

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	127	121	P/P	60 - 150
Carbamazepine	119	138	P/P	60 - 150
Carbamazepine	143	143	P/P	60 - 150
Diuron	105	117	P/P	60 - 150
Fenuron	102	108	P/P	60 - 150
Fluridone	108	108	P/P	60 - 150
Imidacloprid	102	110	P/P	60 - 150
Linuron	82.8	103	P/P	60 - 150
Primidone	111	116	P/P	60 - 150
Primidone	87.6	103	P/P	60 - 150

Reference Method: USGS O-2060-01
Run ID: A75621
Included Lab Sample IDs: 1883626

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Diuron	86.4	97.2	P/P	60 - 150
Fenuron	125	113	P/P	60 - 150
Fluridone	118	125	P/P	60 - 150
Imidacloprid	126	98.8	P/P	60 - 150
Linuron	89.6	96.0	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		
					LCS	SMP	MS
EPA 8321B	Sucralose	94.3	100	107			6.76
USGS O-2060-01	2,4,5-T	86.4	114	101			11.9
	2,4-D	105	156	122			22.1
	Acetaminophen	66.4	80.4	76.8			4.58
	Acifluorfen	68.8	120	118			1.01
	Bentazon	125					8.87
	Carbamazepine	111	59.6	50.8			15.6
	Diuron	78.4	47.2	48.4			2.51
	Fenuron	85.2	52.0	47.2			9.68
	Fluridone	78.0	40.8	48.8			12.4
	Imidacloprid	83.6	109	94.8			14.1
	Linuron	82.8	54.4	80.4			38.6
	Primidone	86.0	60.0	66.4			10.1
	Silvex	122	168	151			10.6

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1883626, 1883627
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1883626, 1883627
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1883626, 1883627

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	03/28/2017	03/29/2017	Mohammad Ghaffari	03/29/2017	Mohammad Ghaffari	1883626, 1883627
USGS O-2060-01	03/28/2017	03/29/2017	Hoor Shaik	03/30/2017	Juyoung Kim	1883626, 1883627
	03/28/2017	03/29/2017	Hoor Shaik	04/02/2017	Juyoung Kim	1883626, 1883627
	03/28/2017	03/29/2017	Hoor Shaik	04/06/2017	Juyoung Kim	1883626