

Biological Analysis Report

CEN-DIST-2022-01-04-01

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

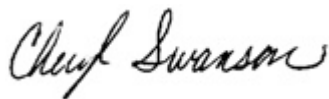
Event Description: **Run 10**
Request ID: **RQ-2022-01-03-26**
Customer: **CEN-DIST**
Project ID: **SMP**

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Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 25-JAN-2022 14:32



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 groups are included in this report: Microbiology and Molecular.

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 by the Florida Department of Health Environmental Laboratory Certification Program 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: Sweetwater Creek @ 35m US of Cress Run

Collection Date/Time: 01/03/2022 10:50

Field ID: G2CE0139

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2297175	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	1553.1	Q	MPN/100 mL	P408291	
2297179	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P407563	LCS
	SOP-PCR-1.2	GULL2-qPCR**	3.6E+03	U	TSC/100 mL	P407563	LCS
	SOP-PCR-1.3	GFD-qPCR**	1.31E+03	I	TSC/100 mL	P407563	LCS
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P407563	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P407563	

Sample Location: Phelps Creek 25m S of Pine Ave.

Collection Date/Time: 01/03/2022 11:45

Field ID: G2CE0246

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2297177	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	121.1	Q	MPN/100 mL	P408291	

Sample Location: Phelps Creek 85m N of Lake Mary Blvd.

Collection Date/Time: 01/03/2022 12:05

Field ID: G2CE0247

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2297178	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	193.0	AQ	MPN/100 mL	P408291	

Sample Location: Sweetwater Creek @ US of DeLeon St.

Collection Date/Time: 01/03/2022 11:14

Field ID: G2CE0119

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2297176	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	1553.1	Q	MPN/100 mL	P408291	
2297180	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P407563	LCS
	SOP-PCR-1.2	GULL2-qPCR**	3.6E+03	U	TSC/100 mL	P407563	LCS
	SOP-PCR-1.3	GFD-qPCR**	723	I	TSC/100 mL	P407563	LCS
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P407563	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P407563	

Quality Assurance Report Method Blank Results

Reference Method: SM 9223 B Quanti-Tray
Batch ID: P408291

Component	Result	Code	Units
Escherichia Coli-Quanti-Tray	1.0	U	MPN/100 mL

Reference Method: SOP-PCR-1.0
Batch ID: P407563

Component	Result	Code	Units
HF183-qPCR	3.3E+03	U	TSC/100 mL

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.2
Batch ID: P407563

Component	Result	Code	Units
GULL2-qPCR	3.6E+03	U	TSC/100 mL

Reference Method: SOP-PCR-1.3
Batch ID: P407563

Component	Result	Code	Units
GFD-qPCR	720	U	TSC/100 mL

Reference Method: SOP-PCR-1.4
Batch ID: P407563

Component	Result	Code	Units
BacR-qPCR	3.0E+03	U	TSC/100 mL

Reference Method: SOP-PCR-1.5
Batch ID: P407563

Component	Result	Code	Units
DG3-qPCR	2.6E+03	U	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P407563

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	52.0	25.3	P/F	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P407563

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	90.4	23.4	P/F	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P407563

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	77.4	25.0	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P407563

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	52.0	73.2	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P407563

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P407563

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	60.3	84.9	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P407563

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2295813	HF183-qPCR	78.7		P	50 - 175
2295824	HF183-qPCR	72.3		P	50 - 175
2296261	HF183-qPCR	87.6		P	50 - 175
2296446	HF183-qPCR	75.8		P	50 - 175
2296709	HF183-qPCR	77.1	78.7	P/P	50 - 175
2297179	HF183-qPCR	70.7		P	50 - 175
2297180	HF183-qPCR	74.9		P	50 - 175
2297576	HF183-qPCR	65.5		P	50 - 175
2297790	HF183-qPCR	79.6		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P407563

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2296446	GULL2-qPCR	65.7		P	50 - 300
2296709	GULL2-qPCR	76.6	72.7	P/P	50 - 300
2297179	GULL2-qPCR	69.6		P	50 - 300
2297180	GULL2-qPCR	71.1		P	50 - 300
2297576	GULL2-qPCR	68.2		P	50 - 300
2297790	GULL2-qPCR	79.8		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P407563

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2296446	GFD-qPCR	84.1		P	50 - 175
2296709	GFD-qPCR	75.8	77.4	P/P	50 - 175
2297179	GFD-qPCR	88.2		P	50 - 175
2297180	GFD-qPCR	89.9		P	50 - 175
2297576	GFD-qPCR	93.0		P	50 - 175
2297790	GFD-qPCR	81.3		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P407563

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2295813	BacR-qPCR	71.9		P	50 - 175
2295824	BacR-qPCR	60.6		P	50 - 175
2296261	BacR-qPCR	62.2		P	50 - 175
2296446	BacR-qPCR	57.3		P	50 - 175
2296709	BacR-qPCR	56.7	52.4	P/P	50 - 175
2297179	BacR-qPCR	64.5		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
 Batch ID: P407563

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2297180	BacR-qPCR	62.2		P	50 - 175
2297576	BacR-qPCR	52.7		P	50 - 175
2297790	BacR-qPCR	65.6		P	50 - 175

Reference Method: SOP-PCR-1.5
 Batch ID: P407563

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2295813	DG3-qPCR	75.1		P	50 - 175
2295824	DG3-qPCR	73.8		P	50 - 175
2296261	DG3-qPCR	76.7		P	50 - 175
2296446	DG3-qPCR	72.7		P	50 - 175
2296709	DG3-qPCR	70.5	67.2	P/P	50 - 175
2297179	DG3-qPCR	69.5		P	50 - 175
2297180	DG3-qPCR	68.8		P	50 - 175
2297576	DG3-qPCR	68.5		P	50 - 175
2297790	DG3-qPCR	72.6		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 9223 B Quanti-Tray
 Batch ID: P408291

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2297104	Escherichia Coli-Quanti-Tray	17.0	Sample	P	0 - 80
2297178	Escherichia Coli-Quanti-Tray	18.7	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
 Batch ID: P407563

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2296709	HF183-qPCR	2.08	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
 Batch ID: P407563

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2296709	GULL2-qPCR	5.18	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P407563

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2296709	GFD-qPCR	2.15	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.4
Batch ID: P407563

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2296709	BacR-qPCR	7.92	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P407563

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2296709	DG3-qPCR	4.68	Spike	P	0 - 25

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Surrogates

Lab Sample ID: 2297179
Field Sample ID: G2CE0139

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	91.7	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	91.6	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	90.8	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	94.0	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	84.0	P	50 - 300

Lab Sample ID: 2297180
Field Sample ID: G2CE0119

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	95.8	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	88.1	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	91.4	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	91.2	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	79.9	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision		
							LCS	SMP	MS
SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray							17.0	18.7
SOP-PCR-1.0	HF183-qPCR	25.3	52.0	78.7	72.3	87.6			2.08
				75.8					
SOP-PCR-1.2	GULL2-qPCR	23.4	90.4	65.7	76.6	72.7			5.18
				69.6					
SOP-PCR-1.3	GFD-qPCR	25.0	77.4	84.1	75.8	77.4			2.15
				88.2					
SOP-PCR-1.4	BacR-qPCR	73.2	52.0	71.9	60.6	62.2			7.92
				57.3					
SOP-PCR-1.5	DG3-qPCR	84.9	60.3	75.1	73.8	72.7			4.68
				76.7					

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SM 9223 B Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2297175, 2297176, 2297177, 2297178
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2297179, 2297180
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2297179, 2297180
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2297179, 2297180
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2297179, 2297180
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2297179, 2297180

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 9223 B Quanti-Tray	01/04/2022	01/04/2022 16:40	Amber S. Eells	01/05/2022 11:40	Amber S. Eells	2297175, 2297176, 2297177, 2297178
SOP-PCR-1.0	01/04/2022	01/04/2022 14:00	Luke Hudson	01/11/2022 10:54	DeAsia Armster	2297179, 2297180
SOP-PCR-1.2	01/04/2022	01/04/2022 14:00	Luke Hudson	01/14/2022 10:57	DeAsia Armster	2297179, 2297180
SOP-PCR-1.3	01/04/2022	01/04/2022 14:00	Luke Hudson	01/14/2022 15:02	DeAsia Armster	2297179, 2297180
SOP-PCR-1.4	01/04/2022	01/04/2022 14:00	Luke Hudson	01/12/2022 14:33	DeAsia Armster	2297179, 2297180
SOP-PCR-1.5	01/04/2022	01/04/2022 14:00	Luke Hudson	01/13/2022 10:07	DeAsia Armster	2297179, 2297180