

Biological Analysis Report

TLH-ROC-2022-06-29-01

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

Event Description: **June-Aug. Aucilla, Fenholloway**
Request ID: **RQ-2022-06-20-19**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
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Attn: Chris Green

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Certified by: Sarah Menz, Environmental Administrator

Date Certified: 11-AUG-2022 12:44

A handwritten signature in black ink, appearing to be 'Sarah Menz', written in a cursive style.

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: Fenholloway River @ Mouth

Collection Date/Time: 06/29/2022 10:30

Field ID: G1TLHR0042

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2338251	Enterolert/QT	Enterococci-Quanti-Tray	96.0		MPN/100 mL	P416076	

Sample Location: Fenholloway River ENCOC

Collection Date/Time: 06/29/2022 10:15

Field ID: G1TLHR0120

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2338252	Enterolert/QT	Enterococci-Quanti-Tray	96.0		MPN/100 mL	P416076	

Sample Location: Fenholloway River @ Old Club H

Collection Date/Time: 06/29/2022 10:05

Field ID: G1TLHR0080

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2338253	Enterolert/QT	Enterococci-Quanti-Tray	20.0		MPN/100 mL	P416076	

Sample Location: Trib to Fenholloway River @ Mouth

Collection Date/Time: 06/29/2022 10:20

Field ID: G1TLHR0168

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2338254	Enterolert/QT	Enterococci-Quanti-Tray	96.50	A	MPN/100 mL	P416076	

Sample Location: Aucilla River @ Mouth

Collection Date/Time: 06/29/2022 11:40

Field ID: G1TLHR0091

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2338250	Enterolert/QT	Enterococci-Quanti-Tray	20.0		MPN/100 mL	P416076	
2338255	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P415979	
	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	U	TSC/100 mL	P415979	
	SOP-PCR-1.3	GFD-qPCR**	360	U	TSC/100 mL	P415979	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P415979	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	UJ	TSC/100 mL	P415979	RPD

Ref. Method and Comment:
 SOP-PCR-1.5: Refer to the Lab Analysis Report for an explanation of QC Codes.

Quality Assurance Report Method Blank Results

Reference Method: Enterolert/QT
Batch ID: P416076

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

Reference Method: SOP-PCR-1.0
Batch ID: P415979

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: P415979

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

Reference Method: SOP-PCR-1.3
Batch ID: P415979

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

Reference Method: SOP-PCR-1.4
Batch ID: P415979

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

Reference Method: SOP-PCR-1.5
Batch ID: P415979

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: P415979

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	52.2	80.9	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P415979

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	106	83.5	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P415979

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	87.2	83.5	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P415979

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	104	79.3	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P415979

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: P415979

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	94.4	73.1	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P415979

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2338255	HF183-qPCR	89.1	86.2	P/P	50 - 175
2338386	HF183-qPCR	80.0		P	50 - 175
2338434	HF183-qPCR	96.3		P	50 - 175
2338654	HF183-qPCR	91.5		P	50 - 175
2338655	HF183-qPCR	86.9		P	50 - 175
2338656	HF183-qPCR	98.4		P	50 - 175
2339171	HF183-qPCR	86.8		P	50 - 175
2339351	HF183-qPCR	83.2		P	50 - 175
2339479	HF183-qPCR	84.4		P	50 - 175
2339480	HF183-qPCR	89.5		P	50 - 175
2339481	HF183-qPCR	71.7		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P415979

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2338255	GULL2-qPCR	91.1	85.2	P/P	50 - 300
2338386	GULL2-qPCR	85.6		P	50 - 300
2338434	GULL2-qPCR	81.7		P	50 - 300
2338654	GULL2-qPCR	71.9		P	50 - 300
2338655	GULL2-qPCR	68.0		P	50 - 300
2338656	GULL2-qPCR	63.9		P	50 - 300
2339171	GULL2-qPCR	69.2		P	50 - 300
2339351	GULL2-qPCR	71.9		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P415979

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2338255	GFD-qPCR	87.2	90.1	P/P	50 - 175
2338386	GFD-qPCR	96.7		P	50 - 175
2338434	GFD-qPCR	93.0		P	50 - 175
2338654	GFD-qPCR	82.3		P	50 - 175
2338655	GFD-qPCR	89.2		P	50 - 175
2338656	GFD-qPCR	84.6		P	50 - 175
2339171	GFD-qPCR	87.3		P	50 - 175
2339351	GFD-qPCR	78.9		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P415979

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

Reference Method: SOP-PCR-1.4
Batch ID: P415979

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2338255	BacR-qPCR	91.4	82.9	P/P	50 - 175
2338386	BacR-qPCR	77.4		P	50 - 175
2338434	BacR-qPCR	65.0		P	50 - 175
2338654	BacR-qPCR	87.2		P	50 - 175
2338655	BacR-qPCR	92.1		P	50 - 175
2338656	BacR-qPCR	84.2		P	50 - 175
2339171	BacR-qPCR	91.3		P	50 - 175
2339351	BacR-qPCR	87.8		P	50 - 175
2339479	BacR-qPCR	64.7		P	50 - 175
2339480	BacR-qPCR	64.3		P	50 - 175
2339481	BacR-qPCR	50.4		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P415979

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2338255	DG3-qPCR	141	92.1	P/P	50 - 175
2338386	DG3-qPCR	92.2		P	50 - 175
2338434	DG3-qPCR	79.5		P	50 - 175
2338654	DG3-qPCR	80.4		P	50 - 175
2338655	DG3-qPCR	88.8		P	50 - 175
2338656	DG3-qPCR	89.8		P	50 - 175
2339171	DG3-qPCR	88.4		P	50 - 175
2339351	DG3-qPCR	81.7		P	50 - 175
2339479	DG3-qPCR	83.1		P	50 - 175
2339480	DG3-qPCR	84.8		P	50 - 175
2339481	DG3-qPCR	71.1		P	50 - 175

Quality Assurance Report Precision

Reference Method: Enterolert/QT
Batch ID: P416076

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2337844	Enterococci-Quanti-Tray	19.1	Sample	P	0 - 80
2338254	Enterococci-Quanti-Tray	25.9	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
Batch ID: P415979

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2338255	HF183-qPCR	3.29	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P415979

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: SOP-PCR-1.2
 Batch ID: P415979

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2338255	GULL2-qPCR	6.69	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P415979

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2338255	GFD-qPCR	3.28	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
 Batch ID: P415979

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2338255	BacR-qPCR	9.76	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
 Batch ID: P415979

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2338255	DG3-qPCR	41.9	Spike	F	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2338255
 Field Sample ID: G1TLHR0091

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	128	P	50 - 300
SOP-PCR-1.0	SKETA-qPCR	112	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	125	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	133	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	124	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	122	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	124	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	124	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	126	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	120	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision
			LCS	SMP MS
Enterolert/QT	Enterococci-Quanti-Tray			19.1 25.9

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	80.9	52.2	89.1	86.2	80.0			3.29
SOP-PCR-1.2	GULL2-qPCR	83.5	106	91.1	85.2	85.6			6.69
SOP-PCR-1.3	GFD-qPCR	83.5	87.2	87.2	90.1	96.7			3.28
SOP-PCR-1.4	BacR-qPCR	104	79.3	82.9	91.4	77.4			9.76
SOP-PCR-1.5	DG3-qPCR	73.1	94.4	141	92.1	92.2			41.9

Reference Method Descriptions

Method	Description	Associated Samples
Enterolert/QT	Enterococci by Enterolert Quanti-Tray method - non-chlorinated water systems	2338250, 2338251, 2338252, 2338253, 2338254
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2338255
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2338255
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2338255
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2338255
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2338255

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	06/29/2022	06/29/2022 15:27	Austin Nolan	06/30/2022 15:33	Ethan Wickline	2338250, 2338251, 2338252, 2338253, 2338254
SOP-PCR-1.0	06/29/2022	06/29/2022 16:20	Claudia Castro	07/27/2022 09:06	DeAsia Armster	2338255
SOP-PCR-1.2	06/29/2022	06/29/2022 16:20	Claudia Castro	08/01/2022 11:46	Roberta Tatti	2338255
SOP-PCR-1.3	06/29/2022	06/29/2022 16:20	Claudia Castro	08/01/2022 12:29	Roberta Tatti	2338255
SOP-PCR-1.4	06/29/2022	06/29/2022 16:20	Claudia Castro	07/29/2022 08:46	DeAsia Armster	2338255
SOP-PCR-1.5	06/29/2022	06/29/2022 16:20	Claudia Castro	07/29/2022 13:03	Roberta Tatti	2338255