

Biological Analysis Report

NE-DIST-2023-05-25-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Suwannee North 2023**
Request ID: **RQ-2023-05-22-17**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
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8800 Baymeadows Way West
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Certified by: Sarah Menz, Environmental Administrator

Date Certified: 06-JUL-2023 12:23

A handwritten signature in black ink, appearing to be 'Sarah Menz', with a long, sweeping horizontal stroke extending to the right.

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: Hunters Creek at SR 135

Collection Date/Time: 05/24/2023 10:35

Field ID: 21020063

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2412796	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	325.5	Q	MPN/100 mL	P430509	
2412798	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P430325	
	SOP-PCR-1.2	GULL2-qPCR**	3.6E+03	U	TSC/100 mL	P430325	
	SOP-PCR-1.3	GFD-qPCR**	720	U	TSC/100 mL	P430325	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P430325	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P430325	

Sample Location: Cannon Cr at S Ward St

Collection Date/Time: 05/24/2023 11:35

Field ID: 21030016FLA

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2412797	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	158.0	Q	MPN/100 mL	P430509	
2412799	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P430325	
	SOP-PCR-1.2	GULL2-qPCR**	3.6E+03	U	TSC/100 mL	P430325	
	SOP-PCR-1.3	GFD-qPCR**	720	U	TSC/100 mL	P430325	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P430325	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P430325	

Quality Assurance Report Method Blank Results

Reference Method: SM 9223 B Quanti-Tray

Batch ID: P430509

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

Reference Method: SOP-PCR-1.0

Batch ID: P430325

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

Reference Method: SOP-PCR-1.2

Batch ID: P430325

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

Reference Method: SOP-PCR-1.3

Batch ID: P430325

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

Reference Method: SOP-PCR-1.4

Batch ID: P430325

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

Quality Assurance Report
Method Blank Results

Reference Method: SOP-PCR-1.5
Batch ID: P430325

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: P430325

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	96.6	100	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P430325

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	113	98.5	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P430325

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	86.6	98.8	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P430325

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	126	74.7	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P430325

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	94.8	78.8	P/P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P430325

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2412133	HF183-qPCR	54.2		P	50 - 175
2412134	HF183-qPCR	89.0	82.9	P/P	50 - 175
2412247	HF183-qPCR	75.9		P	50 - 175
2412540	HF183-qPCR	89.8		P	50 - 175
2412798	HF183-qPCR	94.2		P	50 - 175
2412799	HF183-qPCR	82.6		P	50 - 175
2412859	HF183-qPCR	89.2		P	50 - 175
2412860	HF183-qPCR	77.7		P	50 - 175
2412950	HF183-qPCR	93.8		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P430325

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2414171	HF183-qPCR	87.1		P	50 - 175
2414608	HF183-qPCR	93.6		P	50 - 175
2414962	HF183-qPCR	108		P	50 - 175
2415132	HF183-qPCR	94.3		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P430325

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2412134	GULL2-qPCR	101	95.3	P/P	50 - 300
2412540	GULL2-qPCR	92.4		P	50 - 300
2412798	GULL2-qPCR	55.9		P	50 - 300
2412799	GULL2-qPCR	87.4		P	50 - 300
2412859	GULL2-qPCR	86.2		P	50 - 300
2412860	GULL2-qPCR	84.5		P	50 - 300
2412950	GULL2-qPCR	102		P	50 - 300
2414962	GULL2-qPCR	61.6		P	50 - 300
2415132	GULL2-qPCR	83.5		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P430325

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2412134	GFD-qPCR	84.3	84.4	P/P	50 - 175
2412540	GFD-qPCR	86.8		P	50 - 175
2412798	GFD-qPCR	93.3		P	50 - 175
2412799	GFD-qPCR	96.5		P	50 - 175
2412859	GFD-qPCR	85.6		P	50 - 175
2412860	GFD-qPCR	89.4		P	50 - 175
2412950	GFD-qPCR	91.6		P	50 - 175
2414962	GFD-qPCR	89.7		P	50 - 175
2415132	GFD-qPCR	103		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P430325

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2412133	BacR-qPCR	80.2		P	50 - 175
2412134	BacR-qPCR	97.1	90.6	P/P	50 - 175
2412247	BacR-qPCR	82.1		P	50 - 175
2412540	BacR-qPCR	84.2		P	50 - 175
2412798	BacR-qPCR	69.4		P	50 - 175
2412799	BacR-qPCR	77.3		P	50 - 175
2412859	BacR-qPCR	92.6		P	50 - 175
2412860	BacR-qPCR	85.0		P	50 - 175
2412950	BacR-qPCR	95.4		P	50 - 175
2414171	BacR-qPCR	89.6		P	50 - 175
2414608	BacR-qPCR	72.9		P	50 - 175
2414962	BacR-qPCR	90.3		P	50 - 175
2415132	BacR-qPCR	96.9		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P430325

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2412133	DG3-qPCR	69.5	82.0	P	50 - 175
2412134	DG3-qPCR	84.9		P/P	50 - 175
2412247	DG3-qPCR	79.6		P	50 - 175
2412540	DG3-qPCR	87.9		P	50 - 175
2412798	DG3-qPCR	83.8		P	50 - 175
2412799	DG3-qPCR	81.7		P	50 - 175
2412859	DG3-qPCR	86.6		P	50 - 175
2412860	DG3-qPCR	78.2		P	50 - 175
2412950	DG3-qPCR	86.6		P	50 - 175
2414171	DG3-qPCR	87.9		P	50 - 175
2414608	DG3-qPCR	92.0		P	50 - 175
2414962	DG3-qPCR	86.8		P	50 - 175
2415132	DG3-qPCR	87.2		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P430325

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412134	HF183-qPCR	7.10	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P430325

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412134	GULL2-qPCR	5.50	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P430325

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412134	GFD-qPCR	0.159	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P430325

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412134	BacR-qPCR	6.92	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P430325

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412134	DG3-qPCR	3.42	Spike	P	0 - 25

Quality Assurance Report Precision

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

Quality Assurance Report Surrogates

Lab Sample ID: 2412798
 Field Sample ID: 21020063

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	84.2	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	113	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	118	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	109	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	80.6	P	50 - 300

Lab Sample ID: 2412799
 Field Sample ID: 21030016FLA

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	111	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	125	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	129	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	117	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	105	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	100	96.6	94.3	54.2	89.0			7.10
SOP-PCR-1.2	GULL2-qPCR	98.5	113	101	95.3	92.4			5.50
SOP-PCR-1.3	GFD-qPCR	98.8	86.6	84.3	84.4	86.8			0.159
SOP-PCR-1.4	BacR-qPCR	74.7	126	80.2	97.1	90.6			6.92
SOP-PCR-1.5	DG3-qPCR	78.8	94.8	69.5	84.9	82.0			3.42

Reference Method Descriptions

Method	Description	Associated Samples
SM 9223 B Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2412796, 2412797
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2412798, 2412799
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2412798, 2412799
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2412798, 2412799
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2412798, 2412799
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2412798, 2412799

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	05/25/2023	05/25/2023 16:06	Julia Herten	05/26/2023 10:18	Aidan Cronin	2412796, 2412797
SOP-PCR-1.0	05/25/2023	05/25/2023 14:05	Claudia Castro	06/15/2023 13:35	Jennifer Mihalic	2412798, 2412799
SOP-PCR-1.2	05/25/2023	05/25/2023 14:05	Claudia Castro	06/20/2023 15:45	Madeline Gruver	2412798, 2412799
SOP-PCR-1.3	05/25/2023	05/25/2023 14:05	Claudia Castro	06/19/2023 15:52	Madeline Gruver	2412798, 2412799
SOP-PCR-1.4	05/25/2023	05/25/2023 14:05	Claudia Castro	06/16/2023 11:46	Jennifer Mihalic	2412798, 2412799
SOP-PCR-1.5	05/25/2023	05/25/2023 14:05	Claudia Castro	06/16/2023 14:43	Jennifer Mihalic	2412798, 2412799