

Biological Analysis Report

SE-DIST-2024-06-04-02

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

Event Description: **SMP - Okee**
Request ID: **RQ-2024-05-13-17**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Andrew Luering

For additional information please contact
Cheryl Swanson - Administrator
Sarah Menz, Ph.D. - Bench Biology & Aquatic
Toxicity
Puja Jasrotia, Ph.D. - Molecular Biology & Taxonomy
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 17-JUL-2024 17:25



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: NUBBIN SLOUGH 14 MILES UPSTREAM OF 710

Collection Date/Time: 06/03/2024 09:45

Field ID: G1SE0031

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2491050	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	213.0	Q	MPN/100 mL	P446367	
2491051	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P445821	
	SOP-PCR-1.2	GULL2-qPCR**	3.6E+03	U	TSC/100 mL	P445821	
	SOP-PCR-1.3	GFD-qPCR**	4.3E+03		TSC/100 mL	P445821	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P445821	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P445821	

Quality Assurance Report
Method Blank Results

Reference Method: SM 9223 B Quanti-Tray
Batch ID: P446367

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

Reference Method: SOP-PCR-1.0
Batch ID: P445821

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

Reference Method: SOP-PCR-1.2
Batch ID: P445821

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

Reference Method: SOP-PCR-1.3
Batch ID: P445821

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

Reference Method: SOP-PCR-1.4
Batch ID: P445821

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

Reference Method: SOP-PCR-1.5
Batch ID: P445821

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P445821

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	96.1	82.6	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P445821

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	90.7	51.3	P/P	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P445821

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	69.8	52.1	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P445821

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	99.5	85.3	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P445821

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	91.4	77.9	P/P	50 - 175

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P445821

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2489765	HF183-qPCR	89.0	86.9	P/P	50 - 175
2489766	HF183-qPCR	86.1		P	50 - 175
2489767	HF183-qPCR	92.1		P	50 - 175
2489768	HF183-qPCR	88.4		P	50 - 175
2489769	HF183-qPCR	91.6		P	50 - 175
2489770	HF183-qPCR	86.7		P	50 - 175
2490782	HF183-qPCR	90.2		P	50 - 175
2490783	HF183-qPCR	79.3		P	50 - 175
2490907	HF183-qPCR	95.2		P	50 - 175
2490908	HF183-qPCR	89.3		P	50 - 175
2490909	HF183-qPCR	82.7		P	50 - 175
2490910	HF183-qPCR	84.6		P	50 - 175
2491051	HF183-qPCR	98.6		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P445821

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-1.2
Batch ID: P445821

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2489765	GULL2-qPCR	70.2	71.7	P/P	50 - 175
2489766	GULL2-qPCR	84.1		P	50 - 175
2489767	GULL2-qPCR	47.6		F	50 - 175
2489769	GULL2-qPCR	91.2		P	50 - 175
2489770	GULL2-qPCR	79.8		P	50 - 175
2490782	GULL2-qPCR	69.4		P	50 - 175
2490783	GULL2-qPCR	35.3		F	50 - 175
2490907	GULL2-qPCR	68.9		P	50 - 175
2490908	GULL2-qPCR	58.7		P	50 - 175
2490909	GULL2-qPCR	70.2		P	50 - 175
2490910	GULL2-qPCR	82.7		P	50 - 175
2491051	GULL2-qPCR	67.0		P	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P445821

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2489765	GFD-qPCR	92.6	87.6	P/P	50 - 175
2489766	GFD-qPCR	92.6		P	50 - 175
2489767	GFD-qPCR	91.9		P	50 - 175
2489769	GFD-qPCR	89.7		P	50 - 175
2489770	GFD-qPCR	94.6		P	50 - 175
2490782	GFD-qPCR	95.0		P	50 - 175
2490783	GFD-qPCR	85.6		P	50 - 175
2490907	GFD-qPCR	82.0		P	50 - 175
2490908	GFD-qPCR	83.6		P	50 - 175
2490909	GFD-qPCR	74.2		P	50 - 175
2490910	GFD-qPCR	78.5		P	50 - 175
2491051	GFD-qPCR	86.9		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P445821

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2489765	BacR-qPCR	74.1	77.9	P/P	50 - 175
2489766	BacR-qPCR	89.5		P	50 - 175
2489767	BacR-qPCR	74.4		P	50 - 175
2489768	BacR-qPCR	58.8		P	50 - 175
2489769	BacR-qPCR	89.8		P	50 - 175
2489770	BacR-qPCR	77.3		P	50 - 175
2490782	BacR-qPCR	69.0		P	50 - 175
2490783	BacR-qPCR	52.2		P	50 - 175
2490907	BacR-qPCR	77.9		P	50 - 175
2490908	BacR-qPCR	69.1		P	50 - 175
2490909	BacR-qPCR	87.8		P	50 - 175
2490910	BacR-qPCR	91.0		P	50 - 175
2491051	BacR-qPCR	91.8		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P445821

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-1.5

Batch ID: P445821

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2489765	DG3-qPCR	85.5	86.3	P/P	50 - 175
2489766	DG3-qPCR	84.9		P	50 - 175
2489767	DG3-qPCR	86.7		P	50 - 175
2489768	DG3-qPCR	102		P	50 - 175
2489769	DG3-qPCR	89.3		P	50 - 175
2489770	DG3-qPCR	93.0		P	50 - 175
2490782	DG3-qPCR	89.3		P	50 - 175
2490783	DG3-qPCR	79.0		P	50 - 175
2490907	DG3-qPCR	90.2		P	50 - 175
2490908	DG3-qPCR	88.3		P	50 - 175
2490909	DG3-qPCR	88.1		P	50 - 175
2490910	DG3-qPCR	90.1		P	50 - 175
2491051	DG3-qPCR	88.2		P	50 - 175

Quality Assurance Report

Precision

Reference Method: SOP-PCR-1.0

Batch ID: P445821

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2489765	HF183-qPCR	2.35	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2

Batch ID: P445821

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2489765	GULL2-qPCR	2.10	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3

Batch ID: P445821

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2489765	GFD-qPCR	5.67	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4

Batch ID: P445821

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2489765	BacR-qPCR	4.99	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5

Batch ID: P445821

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2489765	DG3-qPCR	0.939	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: 2491051

Field Sample ID: G1SE0031

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	89.9	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	173	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	179	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	94.9	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	108	P	50 - 300

Quality Assurance Report

Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision	MS
							SMP	
				LCS				
SOP-PCR-1.0	HF183-qPCR	82.6	96.1	89.0	86.9	86.1		2.35
				92.1				
SOP-PCR-1.2	GULL2-qPCR	51.3	90.7	70.2	71.7	84.1		2.10
				47.6				
SOP-PCR-1.3	GFD-qPCR	52.1	69.8	86.9	92.6	87.6		5.67
				92.6				
SOP-PCR-1.4	BacR-qPCR	85.3	99.5	74.1	77.9	89.5		4.99
				74.4				
SOP-PCR-1.5	DG3-qPCR	77.9	91.4	85.5	86.3	84.9		0.939
				86.7				

Reference Method Descriptions

Method	Description	Associated Samples
SM 9223 B Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2491050
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2491051
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2491051
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2491051
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2491051
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2491051

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	06/04/2024	06/04/2024 16:41	Megan Higbee	06/05/2024 10:45	Megan Higbee	2491050
SOP-PCR-1.0	06/04/2024	06/04/2024 13:55	Madeline Gruver	06/06/2024 08:29	Roberta Tatti	2491051
SOP-PCR-1.2	06/04/2024	06/04/2024 13:55	Madeline Gruver	06/20/2024 15:06	Madeline Gruver	2491051
SOP-PCR-1.3	06/04/2024	06/04/2024 13:55	Madeline Gruver	06/18/2024 16:36	Madeline Gruver	2491051
SOP-PCR-1.4	06/04/2024	06/04/2024 13:55	Madeline Gruver	06/06/2024 13:12	Roberta Tatti	2491051
SOP-PCR-1.5	06/04/2024	06/04/2024 13:55	Madeline Gruver	06/07/2024 08:29	Roberta Tatti	2491051