

Biological Analysis Report

SE-DIST-2023-07-06-01

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

Event Description: **Vero Beach**
Request ID: **RQ-2023-07-03-40**
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: Jordan Skaggs

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: Puja Jasrotia, Environmental Administrator

Date Certified: 22-AUG-2023 10:27



NON-CONFORMANCE REPORT INCLUDED

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: NORTH CANAL ATUS 1

Collection Date/Time: 07/05/2023 10:00

Field ID: G5SE0043

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2421655	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	166.4	Q	MPN/100 mL	P432251	
2421661	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P432084	
	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	U	TSC/100 mL	P432084	
	SOP-PCR-1.3	GFD-qPCR**	470	I	TSC/100 mL	P432084	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P432084	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P432084	

Ref. Method and Comment:

SM 9223 B Quanti-Tray: Precision data is unavailable for E. coli coli due to the small amount of analyte in the QC sample for the batch.

Sample Location: MAIN CANAL AT COUNTRY CLUB DR

Collection Date/Time: 07/05/2023 10:15

Field ID: G5SE0113

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2421656	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	68.3	Q	MPN/100 mL	P432251	

Ref. Method and Comment:

SM 9223 B Quanti-Tray: Precision data is unavailable for E. coli coli due to the small amount of analyte in the QC sample for the batch.

Sample Location: MAIN CANAL AT KINGS HIGHWAY

Collection Date/Time: 07/05/2023 10:40

Field ID: G5SE0115

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2421657	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	101.2	Q	MPN/100 mL	P432251	

Ref. Method and Comment:

SM 9223 B Quanti-Tray: Precision data is unavailable for E. coli coli due to the small amount of analyte in the QC sample for the batch.

Sample Location: SOUTH CANAL AT 43RD AVE

Collection Date/Time: 07/05/2023 10:50

Field ID: G5SE0087

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2421658	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	103.6	JQ	MPN/100 mL	P432251	

Ref. Method and Comment:

SM 9223 B Quanti-Tray: See Non-Conformance Report 9962. Precision data is unavailable for E. coli coli due to the small amount of analyte in the QC sample for the batch.

Sample Location: SOUTH CANAL AT 20TH AVE

Collection Date/Time: 07/05/2023 11:00

Field ID: G5SE0086

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2421659	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	58.3	Q	MPN/100 mL	P432251	

Ref. Method and Comment:

SM 9223 B Quanti-Tray: Precision data is unavailable for E. coli coli due to the small amount of analyte in the QC sample for the batch.

Sample Location: VERO NORTH CANAL AT 66TH AVE

Collection Date/Time: 07/05/2023 09:30

Field ID: G5SE0069

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2421654	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	178.5	Q	MPN/100 mL	P432251	
2421660	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P432084	
	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	U	TSC/100 mL	P432084	

Field ID: G5SE0069

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2421660	SOP-PCR-1.3	GFD-qPCR**	2.3E+03		TSC/100 mL	P432084	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P432084	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P432084	

Ref. Method and Comment:

SM 9223 B Quanti-Tray: Precision data is unavailable for E. coli coli due to the small amount of analyte in the QC sample for the batch.

Non-Conformance Report

NCR ID: 9962

Event(s)

SE-DIST-2023-07-06-01

Job(s)

TLH-2023-07-06-96

Sample(s)

2421658

Test(s)

ECOLI-18QT

NCR Type: ANALYSIS

NCR Category: Analysis Not Performed

Observation: Sample was not run according to method. Sample had a conductivity above 1900 umhos/cm and was not diluted at least 10 fold according to method.

Resolution: Results J-Qualified and customers Jordan Skaggs and Andrew Luering were notified via email.

Authorized by/Date: Cheryl A. Swanson 7/13/2023

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry Colin Wright (850) 245-8085
Biology Cheryl Swanson (850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: SM 9223 B Quanti-Tray

Batch ID: P432251

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

Reference Method: SOP-PCR-1.0

Batch ID: P432084

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

Reference Method: SOP-PCR-1.2

Batch ID: P432084

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

Reference Method: SOP-PCR-1.3

Batch ID: P432084

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

Quality Assurance Report
Method Blank Results

Reference Method: SOP-PCR-1.4
Batch ID: P432084

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

Reference Method: SOP-PCR-1.5
Batch ID: P432084

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: P432084

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	67.5	85.3	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P432084

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	97.5	94.6	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P432084

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	91.5	92.2	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P432084

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	95.8	79.2	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P432084

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	105	91.4	P/P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P432084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2421579	HF183-qPCR	74.0	77.3	P/P	50 - 175
2421660	HF183-qPCR	88.5		P	50 - 175
2421661	HF183-qPCR	100		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P432084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2422578	HF183-qPCR	79.4		P	50 - 175
2422859	HF183-qPCR	83.3		P	50 - 175
2422860	HF183-qPCR	67.3		P	50 - 175
2424000	HF183-qPCR	103		P	50 - 175
2424001	HF183-qPCR	87.1		P	50 - 175
2424172	HF183-qPCR	98.0		P	50 - 175
2424197	HF183-qPCR	99.8		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P432084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2421579	GULL2-qPCR	71.6	78.7	P/P	50 - 300
2421660	GULL2-qPCR	75.9		P	50 - 300
2421661	GULL2-qPCR	61.3		P	50 - 300
2422578	GULL2-qPCR	75.1		P	50 - 300
2422859	GULL2-qPCR	74.3		P	50 - 300
2422860	GULL2-qPCR	52.3		P	50 - 300
2424197	GULL2-qPCR	88.4		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P432084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2421579	GFD-qPCR	90.4	95.2	P/P	50 - 175
2421660	GFD-qPCR	89.4		P	50 - 175
2421661	GFD-qPCR	94.6		P	50 - 175
2422578	GFD-qPCR	87.1		P	50 - 175
2422859	GFD-qPCR	94.1		P	50 - 175
2422860	GFD-qPCR	94.0		P	50 - 175
2424197	GFD-qPCR	99.1		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P432084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2421579	BacR-qPCR	76.0	76.2	P/P	50 - 175
2421660	BacR-qPCR	78.8		P	50 - 175
2421661	BacR-qPCR	74.6		P	50 - 175
2422578	BacR-qPCR	68.8		P	50 - 175
2422859	BacR-qPCR	71.7		P	50 - 175
2422860	BacR-qPCR	56.7		P	50 - 175
2424000	BacR-qPCR	74.4		P	50 - 175
2424001	BacR-qPCR	78.4		P	50 - 175
2424172	BacR-qPCR	76.4		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P432084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2421579	DG3-qPCR	90.7	91.5	P/P	50 - 175
2421660	DG3-qPCR	96.5		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
 Batch ID: P432084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2421661	DG3-qPCR	105		P	50 - 175
2422578	DG3-qPCR	90.5		P	50 - 175
2422859	DG3-qPCR	96.3		P	50 - 175
2422860	DG3-qPCR	89.8		P	50 - 175
2424000	DG3-qPCR	99.3		P	50 - 175
2424001	DG3-qPCR	100		P	50 - 175
2424172	DG3-qPCR	102		P	50 - 175
2424197	DG3-qPCR	108		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
 Batch ID: P432084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2421579	HF183-qPCR	4.36	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
 Batch ID: P432084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2421579	GULL2-qPCR	9.44	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P432084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2421579	GFD-qPCR	5.18	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
 Batch ID: P432084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2421579	BacR-qPCR	0.187	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
 Batch ID: P432084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2421579	DG3-qPCR	0.927	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2421660
Field Sample ID: G5SE0069

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	123	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	131	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	129	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	118	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	134	P	50 - 300

Lab Sample ID: 2421661
Field Sample ID: G5SE0043

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	101	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	120	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	114	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	108	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	103	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	85.3	67.5	74.0	77.3	88.5		4.36
SOP-PCR-1.2	GULL2-qPCR	94.6	97.5	71.6	78.7	75.9		9.44
SOP-PCR-1.3	GFD-qPCR	92.2	91.5	99.1	90.4	95.2		5.18
SOP-PCR-1.4	BacR-qPCR	79.2	95.8	76.0	76.2	78.8		0.187
SOP-PCR-1.5	DG3-qPCR	91.4	105	90.7	91.5	96.5		0.927

Reference Method Descriptions

Method	Description	Associated Samples
SM 9223 B Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2421654, 2421655, 2421656, 2421657, 2421658, 2421659
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2421660, 2421661
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2421660, 2421661
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2421660, 2421661
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2421660, 2421661
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2421660, 2421661

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	07/06/2023	07/06/2023 14:52	Aidan Cronin	07/07/2023 09:49	Aidan Cronin	2421654, 2421655, 2421656, 2421657, 2421658, 2421659
SOP-PCR-1.0	07/06/2023	07/06/2023 13:30	Claudia Castro	07/21/2023 08:39	Roberta Tatti	2421660, 2421661
SOP-PCR-1.2	07/06/2023	07/06/2023 13:30	Claudia Castro	07/26/2023 15:11	Madeline Gruver	2421660, 2421661
SOP-PCR-1.3	07/06/2023	07/06/2023 13:30	Claudia Castro	07/25/2023 18:56	Madeline Gruver	2421660, 2421661
SOP-PCR-1.4	07/06/2023	07/06/2023 13:30	Claudia Castro	07/24/2023 10:09	Roberta Tatti	2421660, 2421661
SOP-PCR-1.5	07/06/2023	07/06/2023 13:30	Claudia Castro	07/25/2023 09:19	Roberta Tatti	2421660, 2421661