

Biological Analysis Report

SE-DIST-2023-11-14-01

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

Event Description: **SMP - Vero Beach**
Request ID: **RQ-2023-10-23-18**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
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2199 South Rock Road
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Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 22-DEC-2023 17:24



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: SOUTH CANAL AT 20TH AVE

Collection Date/Time: 11/13/2023 10:20

Field ID: G5SE0086

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2451199	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	648.8	Q	MPN/100 mL	P437947	

Ref. Method and Comment:

SM 9223 B Quanti-Tray: Precision data is unavailable for E. 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: 11/13/2023 11:15

Field ID: G5SE0069

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2451203	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	187.2	Q	MPN/100 mL	P437947	
2451205	SOP-PCR-1.0	HF183-qPCR**	1.1E+03	U	TSC/100 mL	P437732	
	SOP-PCR-1.4	BacR-qPCR**	3.1E+03	I	TSC/100 mL	P437732	
	SOP-PCR-1.5	DG3-qPCR**	860	U	TSC/100 mL	P437732	

Ref. Method and Comment:

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

Sample Location: NORTH CANAL ATUS1

Collection Date/Time: 11/13/2023 11:45

Field ID: G5SE0043

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2451204	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	272.3	Q	MPN/100 mL	P437947	
2451206	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P437732	
	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	U	TSC/100 mL	P437732	
	SOP-PCR-1.3	GFD-qPCR**	1.5E+03	I	TSC/100 mL	P437732	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P437732	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P437732	

Ref. Method and Comment:

SM 9223 B Quanti-Tray: Precision data is unavailable for E. 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: 11/13/2023 12:10

Field ID: G5SE0113

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2451200	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	224.7	Q	MPN/100 mL	P437947	

Ref. Method and Comment:

SM 9223 B Quanti-Tray: Precision data is unavailable for E. 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: 11/13/2023 10:50

Field ID: G5SE0115

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2451201	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	137.4	Q	MPN/100 mL	P437947	

Ref. Method and Comment:

SM 9223 B Quanti-Tray: Precision data is unavailable for E. 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: 11/13/2023 10:30

Field ID: G5SE0087

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Field ID: G5SE0087

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2451202	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	197.0	Q	MPN/100 mL	P437947	

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 9223 B Quanti-Tray
Batch ID: P437947

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

Reference Method: SOP-PCR-1.0
Batch ID: P437732

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

Reference Method: SOP-PCR-1.2
Batch ID: P437732

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

Reference Method: SOP-PCR-1.3
Batch ID: P437732

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

Reference Method: SOP-PCR-1.4
Batch ID: P437732

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

Reference Method: SOP-PCR-1.5
Batch ID: P437732

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: P437732

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	94.1	71.1	P/P	50 - 175

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P437732

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	118	89.2	P/P	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P437732

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	99.4	71.4	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P437732

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	98.8	68.5	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P437732

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	105	70.5	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P437732

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451153	HF183-qPCR	88.4	92.4	P/P	50 - 175
2451192	HF183-qPCR	89.1		P	50 - 175
2451205	HF183-qPCR	100		P	50 - 175
2451206	HF183-qPCR	108		P	50 - 175
2451418	HF183-qPCR	81.5		P	50 - 175
2451419	HF183-qPCR	89.0		P	50 - 175
2451681	HF183-qPCR	85.4		P	50 - 175
2451959	HF183-qPCR	88.7		P	50 - 175
2451985	HF183-qPCR	84.9		P	50 - 175
2452066	HF183-qPCR	75.7		P	50 - 175
2452125	HF183-qPCR	105		P	50 - 175
2452126	HF183-qPCR	88.6		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P437732

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451153	GULL2-qPCR	92.1	93.1	P/P	50 - 175
2451206	GULL2-qPCR	84.0		P	50 - 175
2451418	GULL2-qPCR	48.2		F	50 - 175
2451985	GULL2-qPCR	92.1		P	50 - 175
2452126	GULL2-qPCR	19.2		F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3

Batch ID: P437732

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451153	GFD-qPCR	84.3	89.6	P/P	50 - 175
2451206	GFD-qPCR	89.6		P	50 - 175
2451418	GFD-qPCR	94.5		P	50 - 175
2451985	GFD-qPCR	84.4		P	50 - 175
2452126	GFD-qPCR	88.2		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P437732

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451153	BacR-qPCR	84.0	89.9	P/P	50 - 175
2451192	BacR-qPCR	95.8		P	50 - 175
2451205	BacR-qPCR	91.8		P	50 - 175
2451206	BacR-qPCR	83.9		P	50 - 175
2451418	BacR-qPCR	64.1		P	50 - 175
2451419	BacR-qPCR	84.6		P	50 - 175
2451681	BacR-qPCR	85.3		P	50 - 175
2451959	BacR-qPCR	78.4		P	50 - 175
2451985	BacR-qPCR	81.0		P	50 - 175
2452066	BacR-qPCR	84.4		P	50 - 175
2452125	BacR-qPCR	81.3		P	50 - 175
2452126	BacR-qPCR	62.8		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P437732

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451153	DG3-qPCR	94.4	100	P/P	50 - 175
2451192	DG3-qPCR	100		P	50 - 175
2451205	DG3-qPCR	106		P	50 - 175
2451206	DG3-qPCR	105		P	50 - 175
2451418	DG3-qPCR	82.5		P	50 - 175
2451419	DG3-qPCR	94.9		P	50 - 175
2451681	DG3-qPCR	99.4		P	50 - 175
2451959	DG3-qPCR	105		P	50 - 175
2451985	DG3-qPCR	104		P	50 - 175
2452066	DG3-qPCR	96.9		P	50 - 175
2452125	DG3-qPCR	91.8		P	50 - 175
2452126	DG3-qPCR	60.6		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0

Batch ID: P437732

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451153	HF183-qPCR	4.40	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.2
Batch ID: P437732

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451153	GULL2-qPCR	1.05	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P437732

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451153	GFD-qPCR	6.09	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P437732

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451153	BacR-qPCR	6.81	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P437732

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451153	DG3-qPCR	5.88	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2451205
Field Sample ID: G5SE0069

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	91.6	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	104	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	97.7	P	50 - 300

Lab Sample ID: 2451206
Field Sample ID: G5SE0043

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	82.3	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	101	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	108	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	97.8	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	87.8	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision	MS
								SMP	
SOP-PCR-1.0	HF183-qPCR	71.1	94.1	88.4	92.4	89.1			4.40
SOP-PCR-1.2	GULL2-qPCR	89.2	118	92.1	93.1	84.0			1.05
SOP-PCR-1.3	GFD-qPCR	71.4	99.4	84.3	89.6	89.6			6.09
SOP-PCR-1.4	BacR-qPCR	68.5	98.8	84.0	89.9	95.8			6.81
SOP-PCR-1.5	DG3-qPCR	70.5	105	94.4	100	100			5.88
				100					

Reference Method Descriptions

Method	Description	Associated Samples
SM 9223 B Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2451199, 2451200, 2451201, 2451202, 2451203, 2451204
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2451205, 2451206
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2451206
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2451206
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2451205, 2451206
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2451205, 2451206

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	11/14/2023	11/14/2023 16:00	Megan Higbee	11/15/2023 10:57	Megan Higbee	2451199, 2451200, 2451201, 2451202, 2451203, 2451204
SOP-PCR-1.0	11/14/2023	11/14/2023 12:31	Madeline Gruver	12/05/2023 08:47	Roberta Tatti	2451205, 2451206
SOP-PCR-1.2	11/14/2023	11/14/2023 12:31	Madeline Gruver	12/13/2023 14:14	Jennifer Mihalic	2451206
SOP-PCR-1.3	11/14/2023	11/14/2023 12:31	Madeline Gruver	12/12/2023 13:32	Jennifer Mihalic	2451206
SOP-PCR-1.4	11/14/2023	11/14/2023 12:31	Madeline Gruver	12/06/2023 08:50	Roberta Tatti	2451205, 2451206
SOP-PCR-1.5	11/14/2023	11/14/2023 12:31	Madeline Gruver	12/06/2023 09:50	Roberta Tatti	2451205, 2451206