

Biological Analysis Report

SO-DIST-2023-09-26-01

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

Overflow Analyses Performed By:
Benchmark EnviroAnalytical, Inc. - North Port
1001 Corporate Avenue, Suite 102
North Port, FL 34289
DOH Accreditation E85086

Event Description: **2023 SMP: SARASOTA**

Request ID: **RQ-2023-09-25-21**

Customer: **SO-DIST**

Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 314
Fort Myers, FL 33901-3381
Attn: Monica Jaeger

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Date Certified: 07-NOV-2023 09:31



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: Molecular and Overflow.

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 Creek (Tidal) at US 41				Collection Date/Time: 09/25/2023 13:20			
Field ID: G3SD0089				Matrix: W-SURF-SLT			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2440405	Enterolert/QT	Enterococci-Quanti-Tray	2382		MPN/100 mL		

Sample Location: North Creek by Oaks Creek Ct				Collection Date/Time: 09/25/2023 13:35			
Field ID: G3SD0064				Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2440404	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P435503	LCS
	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	U	TSC/100 mL	P435503	LCS
	SOP-PCR-1.3	GFD-qPCR**	990	I	TSC/100 mL	P435503	LCS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P435503	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P435503	
2440406	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	243		MPN/100 mL		

Ref. Method and Comment:
SOP-PCR-1.3: Duplicate was analyzed, and the result was 970 I.

Quality Assurance Report
Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P435503

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

Reference Method: SOP-PCR-1.2
Batch ID: P435503

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

Reference Method: SOP-PCR-1.3
Batch ID: P435503

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

Reference Method: SOP-PCR-1.4
Batch ID: P435503

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

Reference Method: SOP-PCR-1.5
Batch ID: P435503

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: P435503

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	67.3	13.9	P/F	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P435503

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	88.4	4.16	P/F	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P435503

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	96.8	7.28	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P435503

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	102	62.9	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P435503

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	107	65.4	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P435503

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2440404	HF183-qPCR	98.9	105	P/P	50 - 175
2441149	HF183-qPCR	78.9		P	50 - 175
2441337	HF183-qPCR	81.4		P	50 - 175
2441586	HF183-qPCR	67.9		P	50 - 175
2441587	HF183-qPCR	97.9		P	50 - 175
2442197	HF183-qPCR	88.2		P	50 - 175
2442198	HF183-qPCR	76.7		P	50 - 175
2442312	HF183-qPCR	97.2		P	50 - 175
2442410	HF183-qPCR	70.6		P	50 - 175
2442507	HF183-qPCR	87.1		P	50 - 175
2443119	HF183-qPCR	77.3		P	50 - 175
2443140	HF183-qPCR	84.3		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P435503

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2440404	GULL2-qPCR	61.3	62.7	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2

Batch ID: P435503

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2441149	GULL2-qPCR	62.5		P	50 - 175
2441337	GULL2-qPCR	82.6		P	50 - 175
2441586	GULL2-qPCR	69.0		P	50 - 175
2442198	GULL2-qPCR	74.1		P	50 - 175
2442312	GULL2-qPCR	58.4		P	50 - 175
2442410	GULL2-qPCR	74.2		P	50 - 175
2443119	GULL2-qPCR	75.8		P	50 - 175
2443140	GULL2-qPCR	70.0		P	50 - 175

Reference Method: SOP-PCR-1.3

Batch ID: P435503

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2440404	GFD-qPCR	102	100	P/P	50 - 175
2441149	GFD-qPCR	95.6		P	50 - 175
2441337	GFD-qPCR	90.1		P	50 - 175
2441586	GFD-qPCR	82.2		P	50 - 175
2441587	GFD-qPCR	83.9		P	50 - 175
2442197	GFD-qPCR	101		P	50 - 175
2442198	GFD-qPCR	88.5		P	50 - 175
2442312	GFD-qPCR	84.6		P	50 - 175
2442410	GFD-qPCR	85.4		P	50 - 175
2443119	GFD-qPCR	83.9		P	50 - 175
2443140	GFD-qPCR	75.1		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P435503

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2440404	BacR-qPCR	90.4	92.9	P/P	50 - 175
2441149	BacR-qPCR	69.3		P	50 - 175
2441337	BacR-qPCR	88.1		P	50 - 175
2441586	BacR-qPCR	75.2		P	50 - 175
2441587	BacR-qPCR	59.3		P	50 - 175
2442197	BacR-qPCR	60.3		P	50 - 175
2442198	BacR-qPCR	79.4		P	50 - 175
2442312	BacR-qPCR	69.3		P	50 - 175
2442410	BacR-qPCR	78.0		P	50 - 175
2442507	BacR-qPCR	53.3		P	50 - 175
2443119	BacR-qPCR	90.2		P	50 - 175
2443140	BacR-qPCR	84.0		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P435503

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2440404	DG3-qPCR	99.1	96.1	P/P	50 - 175
2441149	DG3-qPCR	85.5		P	50 - 175
2441337	DG3-qPCR	85.2		P	50 - 175
2441586	DG3-qPCR	71.7		P	50 - 175
2441587	DG3-qPCR	91.4		P	50 - 175
2442197	DG3-qPCR	93.8		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P435503

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2442198	DG3-qPCR	95.7		P	50 - 175
2442312	DG3-qPCR	99.3		P	50 - 175
2442410	DG3-qPCR	90.6		P	50 - 175
2442507	DG3-qPCR	70.3		P	50 - 175
2443119	DG3-qPCR	88.8		P	50 - 175
2443140	DG3-qPCR	87.4		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P435503

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2440404	HF183-qPCR	6.00	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P435503

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2440404	GULL2-qPCR	2.13	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P435503

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2440404	GFD-qPCR	1.13	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P435503

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2440404	BacR-qPCR	2.75	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P435503

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2440404	DG3-qPCR	3.15	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Quality Assurance Report Surrogates

Lab Sample ID: 2440404
 Field Sample ID: G3SD0064

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	69.1	P	50 - 300
SOP-PCR-1.0	SKETA-qPCR	73.6	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	92.8	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	101	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	102	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	102	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	91.4	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	96.8	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	79.9	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	80.2	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	13.9	67.3	98.9	105	78.9		6.00
SOP-PCR-1.2	GULL2-qPCR	4.16	88.4	61.3	62.7	62.5		2.13
SOP-PCR-1.3	GFD-qPCR	7.28	96.8	102	100	95.6		1.13
SOP-PCR-1.4	BacR-qPCR	62.9	102	90.4	92.9	69.3		2.75
SOP-PCR-1.5	DG3-qPCR	65.4	107	99.1	96.1	85.5		3.15

Reference Method Descriptions

Method	Description	Associated Samples
Enterolert/QT	Enterococci by Enterolert/QT by BEA South in North Port	2440405
SM 9223 Quanti-Tray	E. coli by Colilert/QT by BEA South in North Port	2440406
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2440404
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2440404
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2440404
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2440404
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2440404

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	09/25/2023	09/25/2023 15:23		09/26/2023 15:37	Benchmark EnviroAnalytical in North Port	2440405
SM 9223 Quanti-Tray	09/25/2023	09/25/2023 15:26		09/26/2023 16:38	Benchmark EnviroAnalytical in North Port	2440406
SOP-PCR-1.0	09/26/2023	09/26/2023 13:00	Claudia Castro	10/25/2023 08:32	Roberta Tatti	2440404
SOP-PCR-1.2	09/26/2023	09/26/2023 13:00	Claudia Castro	10/30/2023 10:15	Roberta Tatti	2440404
SOP-PCR-1.3	09/26/2023	09/26/2023 13:00	Claudia Castro	10/27/2023 09:24	Roberta Tatti	2440404
SOP-PCR-1.4	09/26/2023	09/26/2023 13:00	Claudia Castro	10/26/2023 08:41	Roberta Tatti	2440404
SOP-PCR-1.5	09/26/2023	09/26/2023 13:00	Claudia Castro	10/26/2023 09:34	Roberta Tatti	2440404