

Biological Analysis Report

SE-DIST-2022-05-04-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Port Mayaca 2022**

Request ID: **RQ-2022-05-02-77**

Customer: **SE-DIST**

Project ID: **SMP**

Send Reports to:

FL Dept. of Environmental Protection

FL Dept. of Environmental Protection

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Date Certified: 13-JUN-2022 12:36

A handwritten signature in black ink, appearing to be 'Sarah Menz', written in a cursive style.

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: Chlorophyll/Grain Size/BOD, 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: Mosquito Creek @ 70

Collection Date/Time: 05/03/2022 08:30

Field ID: G1SE0006

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2324121	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	816.4	Q	MPN/100 mL	P413523	
2324124	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P413055	
	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	U	TSC/100 mL	P413055	
	SOP-PCR-1.3	GFD-qPCR**	990	I	TSC/100 mL	P413055	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P413055	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P413055	

Sample Location: Nubbin Slough 1.4 Miles Upstream of 710

Collection Date/Time: 05/03/2022 09:00

Field ID: G1SE0031

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2324119	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	723.0	Q	MPN/100 mL	P413523	
2324122	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P413055	
	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	U	TSC/100 mL	P413055	
	SOP-PCR-1.3	GFD-qPCR**	760	I	TSC/100 mL	P413055	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P413055	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P413055	

Sample Location: Lettuce Creek @ 710

Collection Date/Time: 05/03/2022 09:45

Field ID: G1SE0015

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2324114	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.6	I	ug/L	P413776	
		Phaeophytin-a	0.90	U	ug/L	P413776	
		Chlorophyll-a, Uncorrected	1.8		ug/L	P413776	
2324120	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	191.8	Q	MPN/100 mL	P413523	
2324123	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P413055	
	SOP-PCR-1.4	BacR-qPCR**	1.01E+04		TSC/100 mL	P413055	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P413055	

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: L-65 Upstream of S-153

Collection Date/Time: 05/03/2022 10:20

Field ID: G1SE0050

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2324112	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.0		ug/L	P413776	
		Phaeophytin-a	0.90	U	ug/L	P413776	
		Chlorophyll-a, Uncorrected	6.7		ug/L	P413776	
2324116	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	13.4	Q	MPN/100 mL	P413523	

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: S-153 Unnamed Creek @ 710

Collection Date/Time: 05/03/2022 11:00

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2324113	SM 10200 H (mod.)	Chlorophyll-a, Corrected	8.5		ug/L	P413776	
		Phaeophytin-a	11		ug/L	P413776	
		Chlorophyll-a, Uncorrected	16		ug/L	P413776	
2324117	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	31.0	Q	MPN/100 mL	P413523	

Sample Location: Nubbin Slough Upstream of STA

Field ID: G1SE0004

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2324118	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	613.1	0	MPN/100 mL	P413523	

Batch ID: P413776

Batch ID: P413523

Batch ID: P413055

Batch ID: P413055

Batch ID: P413055

Batch ID: P413055

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.5
Batch ID: P413055

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P413776

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	95.9		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P413055

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	91.0	72.7	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P413055

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	106	70.9	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P413055

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	89.5	80.1	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P413055

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	96.6	63.8	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P413055

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	100	87.0	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P413055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2322668	HF183-qPCR	85.0	85.9	P/P	50 - 175
2323219	HF183-qPCR	83.9		P	50 - 175
2323353	HF183-qPCR	82.9		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P413055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2323611	HF183-qPCR	80.0		P	50 - 175
2323612	HF183-qPCR	85.5		P	50 - 175
2323613	HF183-qPCR	76.9		P	50 - 175
2323614	HF183-qPCR	76.3		P	50 - 175
2323751	HF183-qPCR	75.8		P	50 - 175
2324122	HF183-qPCR	84.2		P	50 - 175
2324123	HF183-qPCR	81.2		P	50 - 175
2324124	HF183-qPCR	86.8		P	50 - 175
2324165	HF183-qPCR	84.1		P	50 - 175
2324761	HF183-qPCR	73.5		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P413055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2322668	GULL2-qPCR	88.4	78.8	P/P	50 - 300
2323611	GULL2-qPCR	55.5		P	50 - 300
2323612	GULL2-qPCR	52.8		P	50 - 300
2323613	GULL2-qPCR	68.0		P	50 - 300
2323614	GULL2-qPCR	53.4		P	50 - 300
2323751	GULL2-qPCR	60.1		P	50 - 300
2324122	GULL2-qPCR	63.7		P	50 - 300
2324124	GULL2-qPCR	58.4		P	50 - 300
2324165	GULL2-qPCR	93.1		P	50 - 300
2324761	GULL2-qPCR	68.8		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P413055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2322668	GFD-qPCR	99.3	92.4	P/P	50 - 175
2323611	GFD-qPCR	102		P	50 - 175
2323612	GFD-qPCR	99.6		P	50 - 175
2323613	GFD-qPCR	103		P	50 - 175
2323614	GFD-qPCR	94.2		P	50 - 175
2323751	GFD-qPCR	99.5		P	50 - 175
2324122	GFD-qPCR	91.5		P	50 - 175
2324124	GFD-qPCR	79.3		P	50 - 175
2324165	GFD-qPCR	97.7		P	50 - 175
2324761	GFD-qPCR	93.6		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P413055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2322668	BacR-qPCR	72.2	79.0	P/P	50 - 175
2323219	BacR-qPCR	55.0		P	50 - 175
2323353	BacR-qPCR	58.1		P	50 - 175
2323611	BacR-qPCR	57.6		P	50 - 175
2323612	BacR-qPCR	52.4		P	50 - 175
2323613	BacR-qPCR	58.5		P	50 - 175
2323614	BacR-qPCR	57.8		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
 Batch ID: P413055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2323751	BacR-qPCR	56.5		P	50 - 175
2324122	BacR-qPCR	57.9		P	50 - 175
2324123	BacR-qPCR	62.8		P	50 - 175
2324124	BacR-qPCR	63.6		P	50 - 175
2324165	BacR-qPCR	85.4		P	50 - 175
2324761	BacR-qPCR	52.6		P	50 - 175

Reference Method: SOP-PCR-1.5
 Batch ID: P413055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2322668	DG3-qPCR	95.0	92.4	P/P	50 - 175
2323219	DG3-qPCR	40.1		F	50 - 175
2323353	DG3-qPCR	91.1		P	50 - 175
2323611	DG3-qPCR	85.4		P	50 - 175
2323612	DG3-qPCR	78.8		P	50 - 175
2323613	DG3-qPCR	91.2		P	50 - 175
2323614	DG3-qPCR	91.6		P	50 - 175
2323751	DG3-qPCR	91.8		P	50 - 175
2324122	DG3-qPCR	98.2		P	50 - 175
2324123	DG3-qPCR	94.0		P	50 - 175
2324124	DG3-qPCR	104		P	50 - 175
2324165	DG3-qPCR	98.2		P	50 - 175
2324761	DG3-qPCR	92.4		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 9223 B Quanti-Tray
 Batch ID: P413523

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2324067	Escherichia Coli-Quanti-Tray	18.2	Sample	P	0 - 80
2324452	Escherichia Coli-Quanti-Tray	17.2	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
 Batch ID: P413055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2322668	HF183-qPCR	1.04	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
 Batch ID: P413055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2322668	GULL2-qPCR	11.5	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.3
Batch ID: P413055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2322668	GFD-qPCR	7.22	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P413055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2322668	BacR-qPCR	9.11	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P413055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2322668	DG3-qPCR	2.78	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2324122
Field Sample ID: G1SE0031

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	90.6	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	103	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	105	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	115	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	87.8	P	50 - 300

Lab Sample ID: 2324123
Field Sample ID: G1SE0015

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	75.3	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	101	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	70.0	P	50 - 300

Lab Sample ID: 2324124
Field Sample ID: G1SE0006

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	94.2	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	94.4	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	86.5	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	95.4	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	87.5	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	95.9							
SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray							18.2 17.2	
SOP-PCR-1.0	HF183-qPCR	72.7	91.0	85.0	85.9	83.9			1.04
				82.9					
SOP-PCR-1.2	GULL2-qPCR	70.9	106	88.4	78.8	55.5			11.5
				52.8					
SOP-PCR-1.3	GFD-qPCR	80.1	89.5	99.3	92.4	102			7.22
				99.6					
SOP-PCR-1.4	BacR-qPCR	63.8	96.6	72.2	79.0	55.0			9.11
				58.1					
SOP-PCR-1.5	DG3-qPCR	87.0	100	95.0	92.4	40.1			2.78
				91.1					

Reference Method Descriptions

Method	Description	Associated Samples
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2324112, 2324113, 2324114
SM 9223 B Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2324116, 2324117, 2324118, 2324119, 2324120, 2324121
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2324122, 2324123, 2324124
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2324122, 2324124
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2324122, 2324124
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2324122, 2324123, 2324124
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2324122, 2324123, 2324124

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	05/04/2022	05/04/2022 13:04	Jillian G Hanley	05/10/2022 14:04	Jillian G Hanley	2324112, 2324113, 2324114
SM 9223 B Quanti-Tray	05/04/2022	05/04/2022 16:22	Caitlyn Owens	05/05/2022 10:48	Austin Nolan	2324116, 2324117, 2324118, 2324119, 2324120, 2324121
SOP-PCR-1.0	05/04/2022	05/04/2022 14:10	Claudia Castro	06/06/2022 09:14	DeAsia Armster	2324122, 2324123, 2324124
SOP-PCR-1.2	05/04/2022	05/04/2022 14:10	Claudia Castro	06/07/2022 09:23	DeAsia Armster	2324122, 2324124
SOP-PCR-1.3	05/04/2022	05/04/2022 14:10	Claudia Castro	06/07/2022 11:06	DeAsia Armster	2324122, 2324124
SOP-PCR-1.4	05/04/2022	05/04/2022 14:10	Claudia Castro	06/06/2022 11:18	Roberta Tatti	2324122, 2324123, 2324124
SOP-PCR-1.5	05/04/2022	05/04/2022 14:10	Claudia Castro	06/06/2022 14:10	Roberta Tatti	2324122, 2324123, 2324124