

Biological Analysis Report

SO-DIST-2021-08-10-02

Florida Department of Environmental Protection
Central 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: **2021 SMP : Myakka**

Request ID: **RQ-2021-08-02-76**

Customer: **SO-DIST**

Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: William Mullen

For additional information please contact
Cheryl Swanson - Administrator
Cheryl Swanson - 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: 08-SEP-2021 16:34



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, 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: Brandy Branch @ NW Lily Co Rd.

Collection Date/Time: 08/09/2021 09:40

Field ID: G3SD0201

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2268364	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	160		MPN/100 mL		

Sample Location: Osborn Branch

Collection Date/Time: 08/09/2021 10:05

Field ID: G3SD0179

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2268359	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.9	I	ug/L	P403011	
		Phaeophytin-a	0.90	U	ug/L	P403011	
		Chlorophyll-a, Uncorrected	2.0		ug/L	P403011	
2268361	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P402240	
	SOP-PCR-1.2	GULL2-qPCR**	3.6E+03	UJ	TSC/100 mL	P402240	MS
	SOP-PCR-1.3	GFD-qPCR**	1.91E+04		TSC/100 mL	P402240	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P402240	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P402240	
2268362	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	41		MPN/100 mL		

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.

SOP-PCR-1.2: Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: Brandy Branch @ SR 70

Collection Date/Time: 08/09/2021 10:50

Field ID: G3SD0083

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2268360	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.1	I	ug/L	P403011	
		Phaeophytin-a	0.90	U	ug/L	P403011	
		Chlorophyll-a, Uncorrected	1.6	I	ug/L	P403011	
2268363	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	479		MPN/100 mL		

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: Lake Myakka (Lower) @ Middle

Collection Date/Time: 08/09/2021 12:20

Field ID: G3SD0107

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2268358	SM 10200 H (mod.)	Chlorophyll-a, Corrected	39		ug/L	P403011	
		Phaeophytin-a	3.5		ug/L	P403011	
		Chlorophyll-a, Uncorrected	43		ug/L	P403011	

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.

Quality Assurance Report

Method Blank Results

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P403011

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.82	U	ug/L
Chlorophyll-a, Uncorrected	0.60	U	ug/L
Phaeophytin-a	0.90	U	ug/L

Reference Method: SOP-PCR-1.0
Batch ID: P402240

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

Reference Method: SOP-PCR-1.2
Batch ID: P402240

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

Reference Method: SOP-PCR-1.3
Batch ID: P402240

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

Reference Method: SOP-PCR-1.4
Batch ID: P402240

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

Reference Method: SOP-PCR-1.5
Batch ID: P402240

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: P403011

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	94.6		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P402240

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	67.4	123	P/P	50 - 175

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P402240

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	99.4	119	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P402240

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	94.8	122	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P402240

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	111	108	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P402240

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	87.8	104	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P402240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2268314	HF183-qPCR	80.5	83.8	P/P	50 - 175
2268361	HF183-qPCR	73.1		P	50 - 175
2269838	HF183-qPCR	59.9		P	50 - 175
2269956	HF183-qPCR	79.8		P	50 - 175
2270373	HF183-qPCR	81.7		P	50 - 175
2270447	HF183-qPCR	69.5		P	50 - 175
2270509	HF183-qPCR	70.7		P	50 - 175
2270537	HF183-qPCR	84.9		P	50 - 175
2270967	HF183-qPCR	61.3		P	50 - 175
2270968	HF183-qPCR	72.8		P	50 - 175
2271379	HF183-qPCR	65.5		P	50 - 175
2271827	HF183-qPCR	74.9		P	50 - 175
2271899	HF183-qPCR	73.9		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P402240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2268314	GULL2-qPCR	60.1	72.7	P/P	50 - 300
2268361	GULL2-qPCR	48.4		F	50 - 300
2269838	GULL2-qPCR	72.5		P	50 - 300
2269956	GULL2-qPCR	50.5		P	50 - 300
2270373	GULL2-qPCR	29.0		F	50 - 300
2270509	GULL2-qPCR	68.5		P	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2

Batch ID: P402240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270967	GULL2-qPCR	51.4		P	50 - 300
2270968	GULL2-qPCR	50.0		P	50 - 300
2271379	GULL2-qPCR	62.3		P	50 - 300
2271827	GULL2-qPCR	47.0		F	50 - 300
2271899	GULL2-qPCR	60.8		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P402240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2268314	GFD-qPCR	94.1	95.1	P/P	50 - 175
2268361	GFD-qPCR	121		P	50 - 175
2269838	GFD-qPCR	98.1		P	50 - 175
2269956	GFD-qPCR	108		P	50 - 175
2270373	GFD-qPCR	118		P	50 - 175
2270509	GFD-qPCR	100		P	50 - 175
2270967	GFD-qPCR	105		P	50 - 175
2270968	GFD-qPCR	108		P	50 - 175
2271379	GFD-qPCR	87.9		P	50 - 175
2271827	GFD-qPCR	97.7		P	50 - 175
2271899	GFD-qPCR	92.8		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P402240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2268314	BacR-qPCR	74.7	72.5	P/P	50 - 175
2268361	BacR-qPCR	75.2		P	50 - 175
2269838	BacR-qPCR	71.1		P	50 - 175
2269956	BacR-qPCR	74.3		P	50 - 175
2270373	BacR-qPCR	79.9		P	50 - 175
2270447	BacR-qPCR	69.6		P	50 - 175
2270509	BacR-qPCR	73.2		P	50 - 175
2270537	BacR-qPCR	65.9		P	50 - 175
2270967	BacR-qPCR	71.1		P	50 - 175
2270968	BacR-qPCR	68.3		P	50 - 175
2271379	BacR-qPCR	64.0		P	50 - 175
2271827	BacR-qPCR	64.3		P	50 - 175
2271899	BacR-qPCR	61.5		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P402240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2268314	DG3-qPCR	75.6	71.7	P/P	50 - 175
2268361	DG3-qPCR	70.6		P	50 - 175
2269838	DG3-qPCR	63.8		P	50 - 175
2269956	DG3-qPCR	71.6		P	50 - 175
2270373	DG3-qPCR	62.8		P	50 - 175
2270447	DG3-qPCR	73.5		P	50 - 175
2270509	DG3-qPCR	67.3		P	50 - 175
2270537	DG3-qPCR	63.5		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P402240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2270967	DG3-qPCR	64.7		P	50 - 175
2270968	DG3-qPCR	69.8		P	50 - 175
2271379	DG3-qPCR	76.3		P	50 - 175
2271827	DG3-qPCR	74.9		P	50 - 175
2271899	DG3-qPCR	66.5		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P403011

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2268377	Chlorophyll-a, Corrected	5.30	Sample	P	0 - 25
2268377	Chlorophyll-a, Uncorrected	8.40	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P402240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2268314	HF183-qPCR	4.11	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P402240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2268314	GULL2-qPCR	19.0	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P402240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2268314	GFD-qPCR	1.13	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P402240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2268314	BacR-qPCR	2.97	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P402240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2268314	DG3-qPCR	5.31	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: 2268361
 Field Sample ID: G3SD0179

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	70.9	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	99.1	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	93.2	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	103	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	75.4	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	94.6							5.30	
	Chlorophyll-a, Uncorrected								8.40	
SOP-PCR-1.0	HF183-qPCR	123	67.4		80.5	83.8	73.1			4.11
					59.9					
SOP-PCR-1.2	GULL2-qPCR	119	99.4		60.1	72.7	48.4			19.0
					72.5					
SOP-PCR-1.3	GFD-qPCR	122	94.8		94.1	95.1	121			1.13
					98.1					
SOP-PCR-1.4	BacR-qPCR	108	111		74.7	72.5	75.2			2.97
					71.1					
SOP-PCR-1.5	DG3-qPCR	104	87.8		75.6	71.7	70.6			5.31
					63.8					

Reference Method Descriptions

Method	Description	Associated Samples
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2268358, 2268359, 2268360
SM 9223 Quanti-Tray	E. coli by Colilert/QT by BEA South in North Port	2268362, 2268363, 2268364
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2268361
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2268361
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2268361
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2268361
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2268361

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	08/10/2021	08/10/2021 15:16	Jillian G Hanley	08/25/2021 09:32	Joel Wharton	2268358, 2268359, 2268360
SM 9223 Quanti-Tray	08/09/2021	08/09/2021 16:13		08/10/2021 16:29	Benchmark EnviroAnalytical in North Port	2268362, 2268363, 2268364
SOP-PCR-1.0	08/10/2021	08/10/2021 13:30	Mailin Lopez	08/27/2021 10:31	DeAsia Armster	2268361
SOP-PCR-1.2	08/10/2021	08/10/2021 13:30	Mailin Lopez	08/31/2021 11:06	DeAsia Armster	2268361
SOP-PCR-1.3	08/10/2021	08/10/2021 13:30	Mailin Lopez	08/31/2021 13:37	Mailin Lopez	2268361
SOP-PCR-1.4	08/10/2021	08/10/2021 13:30	Mailin Lopez	08/30/2021 10:12	DeAsia Armster	2268361
SOP-PCR-1.5	08/10/2021	08/10/2021 13:30	Mailin Lopez	08/30/2021 14:36	DeAsia Armster	2268361