

Biological Analysis Report

SO-DIST-2023-08-10-01

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: **2022 SMP : Myakka**
Request ID: **RQ-2023-08-07-58**
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

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: 25-SEP-2023 10:39



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: BRANDYBRANCHATNWLILYCORD

Collection Date/Time: 08/09/2023 09:00

Field ID: G3SD0201

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2430429	SOP-PCR-1.0	HF183-qPCR**	1.1E+03	U	TSC/100 mL	P433620	
	SOP-PCR-1.2	GULL2-qPCR**	1.2E+03	U	TSC/100 mL	P433620	
	SOP-PCR-1.3	GFD-qPCR**	4.7E+03		TSC/100 mL	P433620	
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P433620	
	SOP-PCR-1.5	DG3-qPCR**	860	U	TSC/100 mL	P433620	
2430430	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	262		MPN/100 mL		

Sample Location: Lake Myakka (UPPER) at Middle

Collection Date/Time: 08/09/2023 10:30

Field ID: G3SD0133

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2430428	SM 10150 B	Chlorophyll-a, Corrected	14		ug/L	P433888	
		Phaeophytin-a	1.8	U	ug/L	P433888	
		Chlorophyll-a, Uncorrected	15		ug/L	P433888	

Ref. Method and Comment:

SM 10150 B: 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) at Middle

Collection Date/Time: 08/09/2023 12:50

Field ID: G3SD0107

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2430427	SM 10150 B	Chlorophyll-a, Corrected	20		ug/L	P433888	
		Phaeophytin-a	5.3		ug/L	P433888	
		Chlorophyll-a, Uncorrected	24		ug/L	P433888	

Ref. Method and Comment:

SM 10150 B: 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

Reference Method: SM 10150 B

Batch ID: P433888

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: P433620

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

Reference Method: SOP-PCR-1.2

Batch ID: P433620

Component	Result	Code	Units
-----------	--------	------	-------

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.2
Batch ID: P433620

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

Reference Method: SOP-PCR-1.3
Batch ID: P433620

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

Reference Method: SOP-PCR-1.4
Batch ID: P433620

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

Reference Method: SOP-PCR-1.5
Batch ID: P433620

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10150 B
Batch ID: P433888

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	96.4		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P433620

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	94.6	87.4	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P433620

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	95.5	83.6	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P433620

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	93.0	83.9	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P433620

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
-----------	---------	---------	-----------	----------------

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P433620

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	94.6	73.0	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P433620

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	97.7	69.6	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P433620

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2429973	HF183-qPCR	86.2	96.0	P	50 - 175
2430004	HF183-qPCR	97.4		P/P	50 - 175
2430100	HF183-qPCR	88.2		P	50 - 175
2430429	HF183-qPCR	99.4	96.0	P	50 - 175
2430516	HF183-qPCR	92.6		P	50 - 175
2430517	HF183-qPCR	78.4		P	50 - 175
2430588	HF183-qPCR	101	96.0	P	50 - 175
2430589	HF183-qPCR	98.2		P	50 - 175
2430590	HF183-qPCR	117		P	50 - 175
2430591	HF183-qPCR	99.4	96.0	P	50 - 175
2430592	HF183-qPCR	102		P	50 - 175
2430593	HF183-qPCR	89.6		P	50 - 175
2430850	HF183-qPCR	91.7	96.0	P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P433620

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2429973	GULL2-qPCR	66.4	65.8	P	50 - 300
2430004	GULL2-qPCR	65.3		P/P	50 - 300
2430429	GULL2-qPCR	74.6		P	50 - 300
2430516	GULL2-qPCR	31.5	65.8	F	50 - 300
2430517	GULL2-qPCR	78.0		P	50 - 300
2430588	GULL2-qPCR	67.8		P	50 - 300
2430589	GULL2-qPCR	90.7	65.8	P	50 - 300
2430590	GULL2-qPCR	73.0		P	50 - 300
2430591	GULL2-qPCR	81.6		P	50 - 300
2430592	GULL2-qPCR	86.3	65.8	P	50 - 300
2430593	GULL2-qPCR	85.0		P	50 - 300
2430850	GULL2-qPCR	66.6		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P433620

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2429973	GFD-qPCR	88.5		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P433620

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2430004	GFD-qPCR	89.0	85.0	P/P	50 - 175
2430429	GFD-qPCR	92.7		P	50 - 175
2430516	GFD-qPCR	92.3		P	50 - 175
2430517	GFD-qPCR	76.2		P	50 - 175
2430588	GFD-qPCR	69.5		P	50 - 175
2430589	GFD-qPCR	83.1		P	50 - 175
2430590	GFD-qPCR	81.7		P	50 - 175
2430591	GFD-qPCR	80.5		P	50 - 175
2430592	GFD-qPCR	85.5		P	50 - 175
2430593	GFD-qPCR	76.6		P	50 - 175
2430850	GFD-qPCR	86.9		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P433620

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2429973	BacR-qPCR	76.1		P	50 - 175
2430004	BacR-qPCR	72.3	73.1	P/P	50 - 175
2430100	BacR-qPCR	79.0		P	50 - 175
2430429	BacR-qPCR	81.2		P	50 - 175
2430516	BacR-qPCR	70.7		P	50 - 175
2430517	BacR-qPCR	72.5		P	50 - 175
2430850	BacR-qPCR	85.2		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P433620

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2429973	DG3-qPCR	96.9		P	50 - 175
2430004	DG3-qPCR	102	96.3	P/P	50 - 175
2430100	DG3-qPCR	88.5		P	50 - 175
2430429	DG3-qPCR	94.1		P	50 - 175
2430516	DG3-qPCR	84.5		P	50 - 175
2430517	DG3-qPCR	84.9		P	50 - 175
2430588	DG3-qPCR	104		P	50 - 175
2430589	DG3-qPCR	99.5		P	50 - 175
2430590	DG3-qPCR	108		P	50 - 175
2430591	DG3-qPCR	102		P	50 - 175
2430592	DG3-qPCR	110		P	50 - 175
2430593	DG3-qPCR	101		P	50 - 175
2430850	DG3-qPCR	89.1		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10150 B
Batch ID: P433888

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2430643	Chlorophyll-a, Corrected	0.193	Sample	P	0 - 25

Quality Assurance Report Precision

Reference Method: SM 10150 B
Batch ID: P433888

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2430643	Chlorophyll-a, Uncorrected	0.751	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P433620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2430004	HF183-qPCR	1.48	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P433620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2430004	GULL2-qPCR	0.728	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P433620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2430004	GFD-qPCR	4.54	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P433620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2430004	BacR-qPCR	1.00	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P433620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2430004	DG3-qPCR	5.33	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2430429
Field Sample ID: G3SD0201

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	103	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	118	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	116	P	50 - 300

Quality Assurance Report Surrogates

Lab Sample ID: 2430429
 Field Sample ID: G3SD0201

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.4	SKETA-qPCR	125	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	100	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10150 B	Chlorophyll-a, Corrected	96.4						0.193	
	Chlorophyll-a, Uncorrected							0.751	
SOP-PCR-1.0	HF183-qPCR	87.4	94.6	86.2	97.4	96.0			1.48
				88.2					
SOP-PCR-1.2	GULL2-qPCR	83.6	95.5	66.4	65.3	65.8			0.728
				74.6					
SOP-PCR-1.3	GFD-qPCR	83.9	93.0	88.5	89.0	85.0			4.54
				92.7					
SOP-PCR-1.4	BacR-qPCR	73.0	94.6	76.1	72.3	73.1			1.00
				79.0					
SOP-PCR-1.5	DG3-qPCR	69.6	97.7	96.9	102	96.3			5.33
				88.5					

Reference Method Descriptions

Method	Description	Associated Samples
SM 10150 B	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2430427, 2430428
SM 9223 Quanti-Tray	E. coli by Colilert/QT by BEA South in North Port	2430430
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2430429
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2430429
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2430429
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2430429
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2430429

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10150 B	08/10/2023	08/10/2023 14:11	Tynan A Branch	08/15/2023 09:59	Megan Higbee	2430427, 2430428
SM 9223 Quanti-Tray	08/09/2023	08/09/2023 15:25		08/10/2023 16:11	Benchmark EnviroAnalytical in North Port	2430430
SOP-PCR-1.0	08/10/2023	08/10/2023 15:00	Claudia Castro	08/16/2023 17:07	Madeline Gruver	2430429
SOP-PCR-1.2	08/10/2023	08/10/2023 15:00	Claudia Castro	08/18/2023 09:29	Roberta Tatti	2430429
SOP-PCR-1.3	08/10/2023	08/10/2023 15:00	Claudia Castro	08/21/2023 09:30	Roberta Tatti	2430429
SOP-PCR-1.4	08/10/2023	08/10/2023 15:00	Claudia Castro	08/17/2023 15:21	Madeline Gruver	2430429
SOP-PCR-1.5	08/10/2023	08/10/2023 15:00	Claudia Castro	08/18/2023 10:39	Roberta Tatti	2430429