

Biological Analysis Report

SO-DIST-2021-09-29-01

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

Overflow Analyses Performed By:
Sanders Laboratories
10090 Bavaria Road
Ft. Myers, FL 33913
DOH Accreditation E85457

Event Description: **2021 SMP: Continuous Lee**
Request ID: **RQ-2021-09-13-47**
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
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Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 16-NOV-2021 13:51



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: Spring Creek @ US41

Collection Date/Time: 09/28/2021 10:10

Field ID: G1SD0109

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2279163	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.5		ug/L	P404754	
		Phaeophytin-a	0.90	U	ug/L	P404754	
		Chlorophyll-a, Uncorrected	3.0		ug/L	P404754	
2279176	SOP-PCR-1.0	HF183-qPCR**	1.1E+03	U	TSC/100 mL	P404278	
	SOP-PCR-1.2	GULL2-qPCR**	1.2E+03	U	TSC/100 mL	P404278	SUR
	SOP-PCR-1.3	GFD-qPCR**	1.94E+04		TSC/100 mL	P404278	
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P404278	LCS
	SOP-PCR-1.5	DG3-qPCR**	860	U	TSC/100 mL	P404278	LCS
2279178	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	288		MPN/100 mL		

Ref. Method and Comment:
 SOP-PCR-1.2: Surrogate passed for Gull2; SUR QC code is incorrect.

Sample Location: Imperial River @ Orr Rd.

Collection Date/Time: 09/28/2021 11:20

Field ID: G1SD0105

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2279164	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.3	I	ug/L	P404754	
		Phaeophytin-a	0.90	U	ug/L	P404754	
		Chlorophyll-a, Uncorrected	2.8		ug/L	P404754	

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P404754

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: P404278

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

Reference Method: SOP-PCR-1.2
Batch ID: P404278

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

Reference Method: SOP-PCR-1.3
Batch ID: P404278

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.4
Batch ID: P404278

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

Reference Method: SOP-PCR-1.5
Batch ID: P404278

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: P404754

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	97.6		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P404278

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	71.6	113	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P404278

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	133	113	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P404278

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	97.3	99.5	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P404278

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	98.9	19.2	P/F	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P404278

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	72.1	19.7	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P404278

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278676	HF183-qPCR	92.9	86.4	P/P	50 - 175
2278854	HF183-qPCR	86.9		P	50 - 175
2279114	HF183-qPCR	94.5		P	50 - 175
2279176	HF183-qPCR	86.2		P	50 - 175
2279587	HF183-qPCR	83.2		P	50 - 175
2279972	HF183-qPCR	76.6		P	50 - 175
2280472	HF183-qPCR	73.1		P	50 - 175
2281065	HF183-qPCR	75.9		P	50 - 175
2281066	HF183-qPCR	77.5		P	50 - 175
2281067	HF183-qPCR	76.4		P	50 - 175
2281068	HF183-qPCR	77.9		P	50 - 175
2281069	HF183-qPCR	79.3		P	50 - 175
2281070	HF183-qPCR	79.3		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P404278

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278676	GULL2-qPCR	79.6	77.1	P/P	50 - 300
2278854	GULL2-qPCR	78.8		P	50 - 300
2279114	GULL2-qPCR	72.2		P	50 - 300
2279176	GULL2-qPCR	82.9		P	50 - 300
2279587	GULL2-qPCR	60.1		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P404278

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278676	GFD-qPCR	106	99.8	P/P	50 - 175
2278854	GFD-qPCR	100		P	50 - 175
2279114	GFD-qPCR	114		P	50 - 175
2279176	GFD-qPCR	103		P	50 - 175
2279587	GFD-qPCR	90.1		P	50 - 175
2279972	GFD-qPCR	91.3		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P404278

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278676	BacR-qPCR	77.5	66.4	P/P	50 - 175
2278854	BacR-qPCR	76.6		P	50 - 175
2279114	BacR-qPCR	74.4		P	50 - 175
2279176	BacR-qPCR	72.6		P	50 - 175
2279587	BacR-qPCR	54.4		P	50 - 175
2279972	BacR-qPCR	53.1		P	50 - 175
2280472	BacR-qPCR	58.4		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P404278

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278676	DG3-qPCR	86.2	82.0	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P404278

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278854	DG3-qPCR	92.3		P	50 - 175
2279114	DG3-qPCR	80.0		P	50 - 175
2279176	DG3-qPCR	88.1		P	50 - 175
2279587	DG3-qPCR	76.1		P	50 - 175
2279972	DG3-qPCR	77.6		P	50 - 175
2280472	DG3-qPCR	77.4		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P404754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279194	Chlorophyll-a, Corrected	2.68	Sample	P	0 - 25
2279194	Chlorophyll-a, Uncorrected	3.27	Sample	P	0 - 25
2279194	Phaeophytin-a	4.96	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P404278

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278676	HF183-qPCR	7.27	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P404278

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278676	GULL2-qPCR	3.18	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P404278

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278676	GFD-qPCR	5.53	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P404278

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278676	BacR-qPCR	15.4	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.5
 Batch ID: P404278

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278676	DG3-qPCR	5.00	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2279176
 Field Sample ID: G1SD0109

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	96.9	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	103	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	113	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	99.9	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	86.3	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	97.6						2.68	
	Chlorophyll-a, Uncorrected							3.27	
	Phaeophytin-a							4.96	
SOP-PCR-1.0	HF183-qPCR	113	71.6	77.5	76.4	77.9			7.27
SOP-PCR-1.2	GULL2-qPCR	113	133	79.3					
				79.6	77.1	78.8			3.18
SOP-PCR-1.3	GFD-qPCR	99.5	97.3	72.2					
				106	99.8	100			5.53
SOP-PCR-1.4	BacR-qPCR	19.2	98.9	114					
				77.5	66.4	76.6			15.4
SOP-PCR-1.5	DG3-qPCR	19.7	72.1	74.4					
				86.2	82.0	92.3			5.00
				80.0					

Reference Method Descriptions

Method	Description	Associated Samples
Enterolert/QT	Enterococci by Enterolert/QT by Sanders in Fort Myers	2279178
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2279163, 2279164
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2279176
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2279176
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2279176
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2279176

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2279176

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	09/28/2021	09/28/2021 16:40		09/29/2021 17:20	Sanders-Fort Myers	2279178
SM 10200 H (mod.)	09/29/2021	09/29/2021 13:53	Jillian G Hanley	10/05/2021 15:42	Jillian G Hanley	2279163, 2279164
SOP-PCR-1.0	09/29/2021	09/29/2021 14:30	DeAsia Armster	10/08/2021 13:11	DeAsia Armster	2279176
SOP-PCR-1.2	09/29/2021	09/29/2021 14:30	DeAsia Armster	10/13/2021 14:12	DeAsia Armster	2279176
SOP-PCR-1.3	09/29/2021	09/29/2021 14:30	DeAsia Armster	10/15/2021 08:54	Mailin Lopez	2279176
SOP-PCR-1.4	09/29/2021	09/29/2021 14:30	DeAsia Armster	10/12/2021 09:37	DeAsia Armster	2279176
SOP-PCR-1.5	09/29/2021	09/29/2021 14:30	DeAsia Armster	10/13/2021 09:54	DeAsia Armster	2279176