

Biological Analysis Report

SO-DIST-2021-01-26-02

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 : Collier Coco**
Request ID: **RQ-2021-01-25-49**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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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: 23-FEB-2021 11:14



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: Coco @ h2otreatmentplant

Collection Date/Time: 01/25/2021 12:25

Field ID: G1SD0120

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2221347	SOP-PCR-1.0	HF183-qPCR**	71	U	GEU/100 mL	P392614	MS
	SOP-PCR-1.2	GULL2-qPCR**	900	U	TSC/100 mL	P392614	MS
	SOP-PCR-1.3	GFD-qPCR**	270	I	TSC/100 mL	P392614	
	SOP-PCR-1.4	BacR-qPCR**	760	U	TSC/100 mL	P392614	
	SOP-PCR-1.5	DG3-qPCR**	640	U	TSC/100 mL	P392614	
2221356	Colilert-18	Escherichia Coli-Quanti-Tray	238		MPN/100 mL		

Ref. Method and Comment:

SOP-PCR-1.2: Precision data unavailable for GULL2-qPCR component.

SOP-PCR-1.3: Precision data unavailable for GFD-qPCR component.

Sample Location: Coco @ Ibis way

Collection Date/Time: 01/25/2021 12:40

Field ID: G1SD0119

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2221348	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P392614	MS
	SOP-PCR-1.2	GULL2-qPCR**	1.2E+03	U	TSC/100 mL	P392614	MS
	SOP-PCR-1.3	GFD-qPCR**	240	U	TSC/100 mL	P392614	
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P392614	
	SOP-PCR-1.5	DG3-qPCR**	860	U	TSC/100 mL	P392614	
2221357	Colilert-18	Escherichia Coli-Quanti-Tray	13.4		MPN/100 mL		

Ref. Method and Comment:

SOP-PCR-1.2: Precision data unavailable for GULL2-qPCR component.

SOP-PCR-1.3: Precision data unavailable for GFD-qPCR component.

Sample Location: Hendersoncrkrookerydock

Collection Date/Time: 01/25/2021 11:20

Field ID: G1SD0112

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2221350	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	109		MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	29.5	B	cfu/100 mL		

Sample Location: Rookerycanal@salinasdr

Collection Date/Time: 01/25/2021 10:45

Field ID: G1SD0111

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2221352	Colilert-18	Escherichia Coli-Quanti-Tray	17.1		MPN/100 mL		
2221354	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	195		MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	6.60	B	cfu/100 mL		

Sample Location: Rookerycanal@moonbayst

Collection Date/Time: 01/25/2021 10:20

Field ID: G1SD0110

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2221353	Colilert-18	Escherichia Coli-Quanti-Tray	73.8		MPN/100 mL		
2221355	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	10.0		MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	37.7	B	cfu/100 mL		

Sample Location: Rookery Bay Site 1

Collection Date/Time: 01/25/2021 09:15

Field ID: G1SD0067

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2221351	Enterolert/QT	ENTEROCOCCI-ENTEROLERT	10.0		MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	2	B	cfu/100 mL		

Sample Location: Cocohatchee@immokaleerd

Collection Date/Time: 01/25/2021 12:10

Field ID: G1SD0113

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2221349	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P392614	MS
	SOP-PCR-1.2	GULL2-qPCR**	1.2E+03	U	TSC/100 mL	P392614	MS
	SOP-PCR-1.3	GFD-qPCR**	240	U	TSC/100 mL	P392614	
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P392614	
	SOP-PCR-1.5	DG3-qPCR**	860	U	TSC/100 mL	P392614	
2221358	Colilert-18	Escherichia Coli-Quanti-Tray	147		MPN/100 mL		

Ref. Method and Comment:
 SOP-PCR-1.2: Precision data unavailable for GULL2-qPCR component.
 SOP-PCR-1.3: Precision data unavailable for GFD-qPCR component.

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
 Batch ID: P392614

Component	Result	Code	Units
HF183-qPCR	280	U	GEU/100 mL

Reference Method: SOP-PCR-1.2
 Batch ID: P392614

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

Reference Method: SOP-PCR-1.3
 Batch ID: P392614

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

Reference Method: SOP-PCR-1.4
 Batch ID: P392614

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

Reference Method: SOP-PCR-1.5
 Batch ID: P392614

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: P392614

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	132	98.8	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P392614

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	86.6	83.2	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P392614

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	103	73.4	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P392614

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	97.0	71.0	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P392614

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	67.8	94.4	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P392614

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220204	HF183-qPCR	101	93.0	P/P	50 - 175
2220205	HF183-qPCR	91.1		P	50 - 175
2220231	HF183-qPCR	89.3		P	50 - 175
2220509	HF183-qPCR	106		P	50 - 175
2220510	HF183-qPCR	99.1		P	50 - 175
2220598	HF183-qPCR	82.9		P	50 - 175
2221252	HF183-qPCR	92.7		P	50 - 175
2221253	HF183-qPCR	79.9		P	50 - 175
2221347	HF183-qPCR	82.3		P	50 - 175
2221348	HF183-qPCR	107		P	50 - 175
2221349	HF183-qPCR	102		P	50 - 175
2221978	HF183-qPCR	51.5		P	50 - 175
2222088	HF183-qPCR	35.7		F	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P392614

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2

Batch ID: P392614

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220205	GULL2-qPCR	67.7		P	50 - 300
2221253	GULL2-qPCR	48.4		F	50 - 300
2221347	GULL2-qPCR	80.5		P	50 - 300
2221348	GULL2-qPCR	60.6		P	50 - 300
2221349	GULL2-qPCR	76.5		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P392614

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220205	GFD-qPCR	108		P	50 - 175
2220509	GFD-qPCR	99.0		P	50 - 175
2220510	GFD-qPCR	105		P	50 - 175
2220598	GFD-qPCR	108		P	50 - 175
2221253	GFD-qPCR	104		P	50 - 175
2221347	GFD-qPCR	96.0		P	50 - 175
2221348	GFD-qPCR	89.4		P	50 - 175
2221349	GFD-qPCR	93.5		P	50 - 175
2221978	GFD-qPCR	113		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P392614

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220204	BacR-qPCR	84.5	91.6	P/P	50 - 175
2220205	BacR-qPCR	85.9		P	50 - 175
2220231	BacR-qPCR	97.4		P	50 - 175
2220509	BacR-qPCR	86.2		P	50 - 175
2220510	BacR-qPCR	86.4		P	50 - 175
2220598	BacR-qPCR	62.2		P	50 - 175
2221252	BacR-qPCR	82.4		P	50 - 175
2221253	BacR-qPCR	66.7		P	50 - 175
2221347	BacR-qPCR	82.2		P	50 - 175
2221348	BacR-qPCR	83.5		P	50 - 175
2221349	BacR-qPCR	89.7		P	50 - 175
2221978	BacR-qPCR	80.3		P	50 - 175
2222088	BacR-qPCR	77.4		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P392614

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220204	DG3-qPCR	112	101	P/P	50 - 175
2220205	DG3-qPCR	93.9		P	50 - 175
2220231	DG3-qPCR	95.1		P	50 - 175
2221252	DG3-qPCR	100		P	50 - 175
2221253	DG3-qPCR	77.7		P	50 - 175
2221347	DG3-qPCR	93.5		P	50 - 175
2221348	DG3-qPCR	83.8		P	50 - 175
2221349	DG3-qPCR	89.1		P	50 - 175
2222088	DG3-qPCR	88.9		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P392614

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220204	HF183-qPCR	8.55	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P392614

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220204	BacR-qPCR	8.06	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P392614

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220204	DG3-qPCR	10.8	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2221347
Field Sample ID: G1SD0120

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	94.9	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	97.7	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	96.5	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	96.4	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	101	P	50 - 300

Lab Sample ID: 2221348
Field Sample ID: G1SD0119

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	95.8	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	89.4	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	86.0	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	88.8	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	97.7	P	50 - 300

Lab Sample ID: 2221349
Field Sample ID: G1SD0113

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	97.4	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	93.7	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	90.5	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	93.7	P	50 - 300

Quality Assurance Report Surrogates

Lab Sample ID: 2221349
Field Sample ID: G1SD0113

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.5	SKETA-qPCR	93.9	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	98.8	132	101	93.0	91.1			8.55
SOP-PCR-1.2	GULL2-qPCR	83.2	86.6	67.7	48.4	80.5			
SOP-PCR-1.3	GFD-qPCR	73.4	103	108	99.0	105			
SOP-PCR-1.4	BacR-qPCR	71.0	97.0	84.5	91.6	85.9			8.06
SOP-PCR-1.5	DG3-qPCR	94.4	67.8	112	101	93.9			10.8

Reference Method Descriptions

Method	Description	Associated Samples
Colilert-18	E. coli by Colilert-18/QT by Sanders in Fort Myers	2221352, 2221353, 2221356, 2221357, 2221358
Enterolert/QT	Enterococci by Enterolert/QT by Sanders in Fort Myers	2221350, 2221351, 2221354, 2221355
SM 9222 D	Fecal coliforms by MF by Sanders in Fort Myers	2221350, 2221351, 2221354, 2221355
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2221347, 2221348, 2221349
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2221347, 2221348, 2221349
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2221347, 2221348, 2221349
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2221347, 2221348, 2221349
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2221347, 2221348, 2221349

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Colilert-18	01/25/2021	01/25/2021 17:15		01/26/2021 11:50	Sanders-Fort Myers	2221352, 2221353, 2221356, 2221357, 2221358
Enterolert/QT	01/25/2021	01/25/2021 14:32		01/26/2021 14:52	Sanders-Fort Myers	2221350, 2221351, 2221354, 2221355
SM 9222 D	01/25/2021	01/25/2021 16:59		01/26/2021 15:10	Sanders-Fort Myers	2221350, 2221351, 2221354, 2221355
SOP-PCR-1.0	01/26/2021	01/26/2021 13:25	DeAsia Armster	01/29/2021 11:30	Lauren Campbell	2221347, 2221348, 2221349
SOP-PCR-1.2	01/26/2021	01/26/2021 13:25	DeAsia Armster	02/02/2021 08:27	Mailin Lopez	2221347, 2221348, 2221349
SOP-PCR-1.3	01/26/2021	01/26/2021 13:25	DeAsia Armster	02/02/2021 11:28	Mailin Lopez	2221347, 2221348, 2221349
SOP-PCR-1.4	01/26/2021	01/26/2021 13:25	DeAsia Armster	01/29/2021 16:04	Lauren Campbell	2221347, 2221348, 2221349
SOP-PCR-1.5	01/26/2021	01/26/2021 13:25	DeAsia Armster	01/31/2021 09:02	Mailin Lopez	2221347, 2221348, 2221349