

Biological Analysis Report

SO-DIST-2020-02-11-01

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: **2020 SMP : Alva to LaBelle**

Request ID: **RQ-2020-02-10-56**

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: Jacqueline Savage, Environmental Administrator

Date Certified: 27-MAR-2020 15:43

A handwritten signature in black ink that reads "Jackie Savage". The signature is written in a cursive, flowing 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, 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: Cypress Creek @NRiverRd

Collection Date/Time: 02/10/2020 11:10

Field ID: G3SD0084

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156386	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P378461	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P378461	
	SOP-PCR-1.3	GFD-purified-qPCR**	170	U	TSC/100 mL	P378794	LCS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P378461	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P378461	
2156388	Colilert-18	Escherichia Coli-Quanti-Tray	39.9		MPN/100 mL		

Sample Location: BeeBranch@LoblollyBayRd

Collection Date/Time: 02/10/2020 11:50

Field ID: G3SD0085

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156384	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.3	I	ug/L	P378951	
		Phaeophytin-a	0.90	U	ug/L	P378951	
		Chlorophyll-a, Uncorrected	2.6		ug/L	P378951	
2156385	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P378461	
	SOP-PCR-1.4	BacR-qPCR**	3.7E+03	I	TSC/100 mL	P378461	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P378461	
2156387	Colilert-18	Escherichia Coli-Quanti-Tray	214		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: PollywogCreek@SR78

Collection Date/Time: 02/10/2020 12:30

Field ID: G3SD0098

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156389	Colilert-18	Escherichia Coli-Quanti-Tray	921		MPN/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P378951

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: P378461

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

Reference Method: SOP-PCR-1.2

Batch ID: P378461

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.2
 Batch ID: P378461

Component	Result	Code	Units
GULL2-qPCR	1.7E+04	U	TSC/100 mL

Reference Method: SOP-PCR-1.3
 Batch ID: P378794

Component	Result	Code	Units
GFD-purified-qPCR	340	U	TSC/100 mL

Reference Method: SOP-PCR-1.4
 Batch ID: P378461

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

Reference Method: SOP-PCR-1.5
 Batch ID: P378461

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: P378951

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	96.9		P	84 - 116

Reference Method: SOP-PCR-1.0
 Batch ID: P378461

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	104	146	P/P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P378461

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	100	100	P/P	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P378794

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	69.0	21.6	P/F	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P378461

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

Reference Method: SOP-PCR-1.4
Batch ID: P378461

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	98.9	147	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P378461

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	105	120	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P378461

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2155262	HF183-qPCR	96.6	103	P	50 - 175
2155263	HF183-qPCR	99.7		P/P	50 - 175
2156221	HF183-qPCR	85.1	103	P	50 - 175
2156313	HF183-qPCR	92.8		P	50 - 175
2156314	HF183-qPCR	95.7	103	P	50 - 175
2156315	HF183-qPCR	92.0		P	50 - 175
2156385	HF183-qPCR	88.5	103	P	50 - 175
2156386	HF183-qPCR	96.2		P	50 - 175
2156447	HF183-qPCR	89.5	103	P	50 - 175
2156448	HF183-qPCR	91.4		P	50 - 175
2156449	HF183-qPCR	106	103	P	50 - 175
2156450	HF183-qPCR	101		P	50 - 175
2156535	HF183-qPCR	90.7	103	P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P378461

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2155262	GULL2-qPCR	95.3	93.5	P	50 - 300
2155263	GULL2-qPCR	90.7		P/P	50 - 300
2156386	GULL2-qPCR	89.8	93.5	P	50 - 300
2156448	GULL2-qPCR	93.5		P	50 - 300
2156450	GULL2-qPCR	70.8	93.5	P	50 - 300
2156535	GULL2-qPCR	51.5		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P378794

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2155262	GFD-purified-qPCR	116	103	P	50 - 175
2155263	GFD-purified-qPCR	130		P	50 - 175
2156386	GFD-purified-qPCR	118	103	P	50 - 175
2156448	GFD-purified-qPCR	125		P	50 - 175
2156450	GFD-purified-qPCR	108	103	P	50 - 175
2156699	GFD-purified-qPCR	128		P	50 - 175
2156800	GFD-purified-qPCR	84.2	103	P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3

Batch ID: P378794

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156801	GFD-purified-qPCR	121		P	50 - 175
2156802	GFD-purified-qPCR	110		P	50 - 175
2156803	GFD-purified-qPCR	121		P	50 - 175
2156804	GFD-purified-qPCR	118	124	P/P	50 - 175
2157508	GFD-purified-qPCR	126		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P378461

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2155262	BacR-qPCR	103		P	50 - 175
2155263	BacR-qPCR	92.3	94.2	P/P	50 - 175
2156221	BacR-qPCR	72.1		P	50 - 175
2156313	BacR-qPCR	62.0		P	50 - 175
2156314	BacR-qPCR	84.4		P	50 - 175
2156315	BacR-qPCR	87.5		P	50 - 175
2156385	BacR-qPCR	82.1		P	50 - 175
2156386	BacR-qPCR	86.5		P	50 - 175
2156447	BacR-qPCR	86.8		P	50 - 175
2156448	BacR-qPCR	84.8		P	50 - 175
2156449	BacR-qPCR	93.9		P	50 - 175
2156450	BacR-qPCR	87.1		P	50 - 175
2156535	BacR-qPCR	64.7		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P378461

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2155262	DG3-qPCR	97.5		P	50 - 175
2155263	DG3-qPCR	99.3	92.3	P/P	50 - 175
2156221	DG3-qPCR	84.5		P	50 - 175
2156313	DG3-qPCR	88.2		P	50 - 175
2156314	DG3-qPCR	109		P	50 - 175
2156315	DG3-qPCR	87.1		P	50 - 175
2156385	DG3-qPCR	92.4		P	50 - 175
2156386	DG3-qPCR	93.7		P	50 - 175
2156447	DG3-qPCR	91.2		P	50 - 175
2156448	DG3-qPCR	88.3		P	50 - 175
2156449	DG3-qPCR	98.0		P	50 - 175
2156450	DG3-qPCR	97.8		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0

Batch ID: P378461

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2155263	HF183-qPCR	3.16	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.2
Batch ID: P378461

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2155263	GULL2-qPCR	3.06	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P378794

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156804	GFD-purified-qPCR	5.52	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P378461

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2155263	BacR-qPCR	2.06	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P378461

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2155263	DG3-qPCR	7.22	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2156385
Field Sample ID: G3SD0085

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	89.8	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	93.9	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	92.2	P	50 - 300

Lab Sample ID: 2156386
Field Sample ID: G3SD0084

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	107	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	86.4	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	96.2	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	102	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	96.9						
SOP-PCR-1.0	HF183-qPCR	146	104	88.5	96.2	89.5		3.16
				91.4				
SOP-PCR-1.2	GULL2-qPCR	100	100	95.3	90.7	93.5		3.06
				89.8				
SOP-PCR-1.3	GFD-purified-qPCR	21.6	69.0	128	84.2	121		5.52
				110				
SOP-PCR-1.4	BacR-qPCR	147	98.9	103	92.3	94.2		2.06
				72.1				
SOP-PCR-1.5	DG3-qPCR	120	105	97.5	99.3	92.3		7.22
				84.5				

Reference Method Descriptions

Method	Description	Associated Samples
Colilert-18	E. coli by Colilert-18/QT by Sanders in Fort Myers	2156387, 2156388, 2156389
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2156384
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2156385, 2156386
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2156386
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2156386
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2156385, 2156386
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2156385, 2156386

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Colilert-18	02/10/2020	02/10/2020 14:39		02/11/2020 09:28	Sanders-Fort Myers	2156387, 2156388, 2156389
SM 10200 H (mod.)	02/11/2020	02/11/2020 14:15	Carina A. Tull	02/13/2020 10:07	Jessica Fetgatter	2156384
SOP-PCR-1.0	02/11/2020	02/11/2020 12:30	Angela Smith	02/13/2020 10:52	Lauren Campbell	2156385, 2156386
SOP-PCR-1.2	02/11/2020	02/11/2020 12:30	Angela Smith	02/17/2020 10:05	Mailin Lopez	2156386
SOP-PCR-1.3	02/11/2020	02/11/2020 12:30	Angela Smith	02/18/2020 08:40	Mailin Lopez	2156386
SOP-PCR-1.4	02/11/2020	02/11/2020 12:30	Angela Smith	02/13/2020 14:12	Lauren Campbell	2156385, 2156386
SOP-PCR-1.5	02/11/2020	02/11/2020 12:30	Angela Smith	02/14/2020 09:49	Lauren Campbell	2156385, 2156386