

Biological Analysis Report

SO-DIST-2020-07-07-01

Florida Department of Environmental Protection
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DOH Accreditation E31780

Overflow Analyses Performed By:
Sanders Laboratories
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Event Description: **2020 SMP : Lee**
Request ID: **RQ-2020-03-30-26**
Customer: **SO-DIST**
Project ID: **SMP**

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Date Certified: 17-AUG-2020 22:51



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: Manuel Branch @ Park

Collection Date/Time: 07/06/2020 09:00

Field ID: G1SD0070

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2180810	SM 10200 H (mod.)	Chlorophyll-a, Corrected	14		ug/L	P384629	
		Phaeophytin-a	2.9		ug/L	P384629	
		Chlorophyll-a, Uncorrected	16		ug/L	P384629	
2180812	SOP-PCR-1.0	HF183-qPCR**	1.55E+03		GEU/100 mL	P383562	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P383562	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P383562	
2180815	Colilert-18	Escherichia Coli-Quanti-Tray	816		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: CarrellCanalaboveWeir

Collection Date/Time: 07/06/2020 09:35

Field ID: G3SD0167

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2180813	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P383562	
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	U	TSC/100 mL	P383562	
	SOP-PCR-1.3	GFD-purified-qPCR**	170	U	TSC/100 mL	P384146	LCS, MS, RPD
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P383562	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P383562	
2180816	Colilert-18	Escherichia Coli-Quanti-Tray	517		MPN/100 mL		

Sample Location: WhiskeyCreek@CollegeBld

Collection Date/Time: 07/06/2020 10:00

Field ID: G3SD0169

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2180814	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P383562	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P383562	
	SOP-PCR-1.3	GFD-purified-qPCR**	170	U	TSC/100 mL	P384146	LCS, MS, RPD
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P383562	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P383562	
2180817	Colilert-18	Escherichia Coli-Quanti-Tray	530		MPN/100 mL		

Sample Location: Drainage Ditch @ CR850

Collection Date/Time: 07/06/2020 11:30

Field ID: G1SD0061

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2180811	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.2		ug/L	P384629	
		Phaeophytin-a	1.5	I	ug/L	P384629	
		Chlorophyll-a, Uncorrected	4.2		ug/L	P384629	
2180818	Colilert-18	Escherichia Coli-Quanti-Tray	55.6		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.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P384629

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: P383562

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

Reference Method: SOP-PCR-1.2
Batch ID: P383562

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

Reference Method: SOP-PCR-1.3
Batch ID: P384146

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

Reference Method: SOP-PCR-1.4
Batch ID: P383562

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

Reference Method: SOP-PCR-1.5
Batch ID: P383562

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: P384629

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: P383562

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	107	121	P/P	50 - 175

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P383562

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	89.2	53.4	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P384146

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	99.1	5.94	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P383562

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	98.0	95.9	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P383562

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	98.1	107	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P383562

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2177136	HF183-qPCR	104	103	P/P	50 - 175
2178000	HF183-qPCR	94.6		P	50 - 175
2178238	HF183-qPCR	89.6		P	50 - 175
2178439	HF183-qPCR	119		P	50 - 175
2178479	HF183-qPCR	101		P	50 - 175
2179074	HF183-qPCR	75.6		P	50 - 175
2179545	HF183-qPCR	84.4		P	50 - 175
2179853	HF183-qPCR	98.2		P	50 - 175
2180812	HF183-qPCR	85.0		P	50 - 175
2180813	HF183-qPCR	90.3		P	50 - 175
2180814	HF183-qPCR	116		P	50 - 175
2180887	HF183-qPCR	101		P	50 - 175
2180888	HF183-qPCR	106		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P383562

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2177136	GULL2-qPCR	88.5	89.3	P/P	50 - 300
2178000	GULL2-qPCR	71.8		P	50 - 300
2178238	GULL2-qPCR	81.5		P	50 - 300
2178439	GULL2-qPCR	89.4		P	50 - 300
2178479	GULL2-qPCR	89.9		P	50 - 300
2179545	GULL2-qPCR	55.6		P	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2

Batch ID: P383562

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2179853	GULL2-qPCR	76.3		P	50 - 300
2180813	GULL2-qPCR	80.3		P	50 - 300
2180814	GULL2-qPCR	84.1		P	50 - 300
2180887	GULL2-qPCR	80.4		P	50 - 300
2180888	GULL2-qPCR	90.5		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P384146

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2177136	GFD-purified-qPCR	107		P	50 - 175
2178000	GFD-purified-qPCR	95.2		P	50 - 175
2178238	GFD-purified-qPCR	104		P	50 - 175
2178439	GFD-purified-qPCR	98.0		P	50 - 175
2178479	GFD-purified-qPCR	115		P	50 - 175
2179545	GFD-purified-qPCR	87.3		P	50 - 175
2179853	GFD-purified-qPCR	7.25		F	50 - 175
2180711	GFD-purified-qPCR	106		P	50 - 175
2180712	GFD-purified-qPCR	102		P	50 - 175
2180713	GFD-purified-qPCR	101	139	P/P	50 - 175
2180813	GFD-purified-qPCR	72.4		P	50 - 175
2180814	GFD-purified-qPCR	98.8		P	50 - 175
2180887	GFD-purified-qPCR	90.6		P	50 - 175
2180888	GFD-purified-qPCR	82.8		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P383562

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2177136	BacR-qPCR	69.9	73.1	P/P	50 - 175
2178000	BacR-qPCR	67.4		P	50 - 175
2178238	BacR-qPCR	96.0		P	50 - 175
2178439	BacR-qPCR	87.5		P	50 - 175
2178479	BacR-qPCR	84.2		P	50 - 175
2179074	BacR-qPCR	56.1		P	50 - 175
2179545	BacR-qPCR	60.2		P	50 - 175
2179853	BacR-qPCR	77.4		P	50 - 175
2180812	BacR-qPCR	71.9		P	50 - 175
2180813	BacR-qPCR	63.9		P	50 - 175
2180814	BacR-qPCR	84.2		P	50 - 175
2180887	BacR-qPCR	74.0		P	50 - 175
2180888	BacR-qPCR	70.0		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P383562

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2177136	DG3-qPCR	90.4	96.1	P/P	50 - 175
2178000	DG3-qPCR	86.0		P	50 - 175
2178238	DG3-qPCR	91.5		P	50 - 175
2178439	DG3-qPCR	100		P	50 - 175
2178479	DG3-qPCR	96.9		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
 Batch ID: P383562

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2179074	DG3-qPCR	80.3		P	50 - 175
2179545	DG3-qPCR	79.8		P	50 - 175
2179853	DG3-qPCR	99.2		P	50 - 175
2180812	DG3-qPCR	89.8		P	50 - 175
2180813	DG3-qPCR	81.1		P	50 - 175
2180814	DG3-qPCR	104		P	50 - 175
2180887	DG3-qPCR	94.5		P	50 - 175
2180888	DG3-qPCR	97.4		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
 Batch ID: P383562

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177136	HF183-qPCR	0.785	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
 Batch ID: P383562

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177136	GULL2-qPCR	0.971	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P384146

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2180713	GFD-purified-qPCR	32.1	Spike	F	0 - 25

Reference Method: SOP-PCR-1.4
 Batch ID: P383562

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177136	BacR-qPCR	4.51	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
 Batch ID: P383562

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2177136	DG3-qPCR	6.21	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2180812
Field Sample ID: G1SD0070

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	85.6	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	89.0	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	83.0	P	50 - 300

Lab Sample ID: 2180813
Field Sample ID: G3SD0167

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	90.8	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	85.8	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	82.7	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	85.8	P	50 - 300

Lab Sample ID: 2180814
Field Sample ID: G3SD0169

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	108	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	93.7	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	102	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	108	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							
SOP-PCR-1.0	HF183-qPCR	121	107	104	103	94.6			0.785
				89.6					
SOP-PCR-1.2	GULL2-qPCR	53.4	89.2	88.5	89.3	71.8			0.971
				81.5					
SOP-PCR-1.3	GFD-purified-qPCR	5.94	99.1	106	102	101			32.1
				139					
SOP-PCR-1.4	BacR-qPCR	95.9	98.0	69.9	73.1	67.4			4.51
				96.0					
SOP-PCR-1.5	DG3-qPCR	107	98.1	90.4	96.1	86.0			6.21
				91.5					

Reference Method Descriptions

Method	Description	Associated Samples
Colilert-18	E. coli by Colilert-18/QT by Sanders in Fort Myers	2180815, 2180816, 2180817, 2180818
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2180810, 2180811
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2180812, 2180813, 2180814
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2180813, 2180814
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2180813, 2180814

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2180812, 2180813, 2180814
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2180812, 2180813, 2180814

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Colilert-18	07/06/2020	07/06/2020 14:32		07/07/2020 09:12	Sanders-Fort Myers	2180815, 2180816, 2180817, 2180818
SM 10200 H (mod.)	07/07/2020	07/07/2020 15:56	Carina A. Tull	07/13/2020 08:57	Jessica Fetgatter	2180810, 2180811
SOP-PCR-1.0	07/07/2020	07/07/2020 14:30	Angela Smith	07/14/2020 14:24	Lauren Campbell	2180812, 2180813, 2180814
SOP-PCR-1.2	07/07/2020	07/07/2020 14:30	Angela Smith	07/16/2020 12:05	Mailin Lopez	2180813, 2180814
SOP-PCR-1.3	07/07/2020	07/07/2020 14:30	Lauren Campbell	07/17/2020 10:44	Mailin Lopez	2180813, 2180814
SOP-PCR-1.4	07/07/2020	07/07/2020 14:30	Angela Smith	07/15/2020 10:42	Lauren Campbell	2180812, 2180813, 2180814
SOP-PCR-1.5	07/07/2020	07/07/2020 14:30	Angela Smith	07/15/2020 12:16	Lauren Campbell	2180812, 2180813, 2180814