Biological Analysis Report

SO-DIST-2020-12-15-02

Florida Department of Environmental Protection
Central Laboratory
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DOH Accreditation E31780

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

Event Description: **2020 SMP : Joshua Creek, Hog Bay**
Request ID: **RQ-2020-12-14-46**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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Date Certified: 06-JAN-2021 07:41

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: Hog Bay @ Cr 763 **Collection Date/Time: 12/14/2020 11:10**

Field ID: G3SD0096 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2213181	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.1	I	ug/L	P391406	
		Phaeophytin-a	0.90	U	ug/L	P391406	
		Chlorophyll-a, Uncorrected	1.4	I	ug/L	P391406	
2213184	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P390703	
	SOP-PCR-1.2	GULL2-qPCR**	1.2E+03	U	TSC/100 mL	P390703	
	SOP-PCR-1.3	GFD-qPCR**	240	U	TSC/100 mL	P390703	
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P390703	
	SOP-PCR-1.5	DG3-qPCR**	860	U	TSC/100 mL	P390703	
2213187	Colilert-18	Escherichia Coli-Quanti-Tray	326		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: Joshua Creek above CR760 **Collection Date/Time: 12/14/2020 12:30**

Field ID: G3SD0175 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2213182	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.2	I	ug/L	P391406	
		Phaeophytin-a	0.98	U	ug/L	P391406	
		Chlorophyll-a, Uncorrected	1.5	I	ug/L	P391406	
2213188	Colilert-18	Escherichia Coli-Quanti-Tray	548		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: P391406

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: P390703

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

Reference Method: SOP-PCR-1.2
Batch ID: P390703

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

Quality Assurance Report
Method Blank Results

Reference Method: SOP-PCR-1.3
Batch ID: P390703

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

Reference Method: SOP-PCR-1.4
Batch ID: P390703

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

Reference Method: SOP-PCR-1.5
Batch ID: P390703

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: P391406

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	102		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P390703

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	131	125	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P390703

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	90.8	80.8	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P390703

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	83.1	81.2	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P390703

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	116	109	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P390703

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P390703

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	110	116	P/P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P390703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2210993	HF183-qPCR	148	128	P/P	50 - 175
2211289	HF183-qPCR	102		P	50 - 175
2211290	HF183-qPCR	133		P	50 - 175
2212223	HF183-qPCR	107		P	50 - 175
2212224	HF183-qPCR	117		P	50 - 175
2213097	HF183-qPCR	128		P	50 - 175
2213184	HF183-qPCR	105		P	50 - 175
2213215	HF183-qPCR	117		P	50 - 175
2213216	HF183-qPCR	134		P	50 - 175
2213371	HF183-qPCR	84.4		P	50 - 175
2214254	HF183-qPCR	138		P	50 - 175
2214726	HF183-qPCR	68.9		P	50 - 175
2214727	HF183-qPCR	62.1		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P390703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2210993	GULL2-qPCR	81.4	79.5	P/P	50 - 300
2212223	GULL2-qPCR	80.6		P	50 - 300
2212224	GULL2-qPCR	85.0		P	50 - 300
2213184	GULL2-qPCR	81.5		P	50 - 300
2213215	GULL2-qPCR	73.7		P	50 - 300
2213216	GULL2-qPCR	78.4		P	50 - 300
2213371	GULL2-qPCR	63.8		P	50 - 300
2214726	GULL2-qPCR	61.5		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P390703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2210993	GFD-qPCR	78.2	77.7	P/P	50 - 175
2212223	GFD-qPCR	94.4		P	50 - 175
2212224	GFD-qPCR	90.1		P	50 - 175
2213184	GFD-qPCR	87.9		P	50 - 175
2213215	GFD-qPCR	80.5		P	50 - 175
2213216	GFD-qPCR	75.6		P	50 - 175
2213371	GFD-qPCR	84.9		P	50 - 175
2214726	GFD-qPCR	74.8		P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P390703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2210993	BacR-qPCR	99.3	94.1	P/P	50 - 175
2211289	BacR-qPCR	112		P	50 - 175
2211290	BacR-qPCR	110		P	50 - 175
2212223	BacR-qPCR	88.8		P	50 - 175
2212224	BacR-qPCR	92.1		P	50 - 175
2213097	BacR-qPCR	76.2		P	50 - 175
2213184	BacR-qPCR	86.4		P	50 - 175
2213215	BacR-qPCR	96.4		P	50 - 175
2213216	BacR-qPCR	96.8		P	50 - 175
2213371	BacR-qPCR	88.4		P	50 - 175
2214254	BacR-qPCR	79.7		P	50 - 175
2214726	BacR-qPCR	75.9		P	50 - 175
2214727	BacR-qPCR	83.7		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P390703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2210993	DG3-qPCR	101	99.6	P/P	50 - 175
2211289	DG3-qPCR	81.6		P	50 - 175
2211290	DG3-qPCR	88.5		P	50 - 175
2212223	DG3-qPCR	92.6		P	50 - 175
2212224	DG3-qPCR	95.0		P	50 - 175
2213184	DG3-qPCR	74.8		P	50 - 175
2213215	DG3-qPCR	89.6		P	50 - 175
2213216	DG3-qPCR	92.0		P	50 - 175
2213371	DG3-qPCR	88.1		P	50 - 175
2214254	DG3-qPCR	85.2		P	50 - 175
2214726	DG3-qPCR	74.1		P	50 - 175
2214727	DG3-qPCR	85.6		P	50 - 175

Quality Assurance Report
Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P391406

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2213260	Chlorophyll-a, Corrected	9.19	Sample	P	0 - 25
2213260	Chlorophyll-a, Uncorrected	8.93	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P390703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2210993	HF183-qPCR	14.9	Spike	P	0 - 25

Quality Assurance Report
Precision

Reference Method: SOP-PCR-1.2
Batch ID: P390703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2210993	GULL2-qPCR	2.36	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P390703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2210993	GFD-qPCR	0.654	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P390703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2210993	BacR-qPCR	5.41	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P390703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2210993	DG3-qPCR	1.12	Spike	P	0 - 25

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2213184
Field Sample ID: G3SD0096

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	102	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	98.0	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	120	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	97.3	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	93.9	P	50 - 300

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision		
				LCS	SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	102			9.19	
	Chlorophyll-a, Uncorrected				8.93	
SOP-PCR-1.0	HF183-qPCR	125 131	148 128 102 133			14.9
SOP-PCR-1.2	GULL2-qPCR	80.8 90.8	85.0 81.5 73.7 78.4			2.36

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision		
				LCS	SMP	MS
SOP-PCR-1.3	GFD-qPCR	81.2 83.1	78.2 77.7 94.4 90.1			0.654
SOP-PCR-1.4	BacR-qPCR	109 116	99.3 94.1 112 110			5.41
SOP-PCR-1.5	DG3-qPCR	116 110	101 99.6 81.6 88.5			1.12

Reference Method Descriptions

Method	Description	Associated Samples
Colilert-18	E. coli by Colilert-18/QT by Sanders in Fort Myers	2213187, 2213188
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2213181, 2213182
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2213184
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2213184
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2213184
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2213184
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2213184

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Colilert-18	12/14/2020	12/14/2020 16:49		12/15/2020 11:30	Sanders-Fort Myers	2213187, 2213188
SM 10200 H (mod.)	12/15/2020	12/15/2020 14:06	Yuliya Danyuk	12/17/2020 13:55	Jessica Sherman	2213181, 2213182
SOP-PCR-1.0	12/15/2020	12/15/2020 13:30	Mailin Lopez	12/21/2020 14:31	Lauren Campbell	2213184
SOP-PCR-1.2	12/15/2020	12/15/2020 13:30	Mailin Lopez	12/23/2020 08:36	Mailin Lopez	2213184
SOP-PCR-1.3	12/15/2020	12/15/2020 13:30	Mailin Lopez	12/23/2020 14:21	Mailin Lopez	2213184
SOP-PCR-1.4	12/15/2020	12/15/2020 13:30	Mailin Lopez	12/22/2020 11:21	Lauren Campbell	2213184
SOP-PCR-1.5	12/15/2020	12/15/2020 13:30	Mailin Lopez	12/22/2020 12:33	Lauren Campbell	2213184