Biological Analysis Report

SW-DIST-2019-09-27-01

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

Overflow Analyses Performed By:
Benchmark EnvironAnalytical, Inc.
1711 12th Street East
Palmetto, FL 34221
DOH Accreditation E84167

Event Description: **Gilley, Owen, Myakka@Clay Gully**
Request ID: **RQ-2019-09-23-10**
Customer: **SW-DIST**
Project ID: **SMP**

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Date Certified: 12-NOV-2019 10:54

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: Gilley Crk @ Stricklands **Collection Date/Time: 09/26/2019 11:10**

Field ID: G2SW0024 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2123199	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.0		ug/L	P371933	
		Phaeophytin-a	1.8	I	ug/L	P371933	
		Chlorophyll-a, Uncorrected	7.3		ug/L	P371933	
2123207	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P371478	LCS
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P371478	
	SOP-PCR-1.3	GFD-purified-qPCR**	2.18E+03	J	TSC/100 mL	P372558	MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P371478	LCS
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P371478	LCS
2123210	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	1354		MPN/100 mL		

Ref. Method and Comment:
SOP-PCR-1.3: Quality control failure(s) observed. See QA report for details.
SOP-PCR-1.5: Precision data unavailable for Analysis Batch A95306.

Sample Location: Mobley Ditch @ 70 **Collection Date/Time: 09/26/2019 12:50**

Field ID: G3SW0056 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2123200	SM 10200 H (mod.)	Chlorophyll-a, Corrected	16		ug/L	P371933	
		Phaeophytin-a	5.2		ug/L	P371933	
		Chlorophyll-a, Uncorrected	20		ug/L	P371933	
2123208	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P371478	LCS
	SOP-PCR-1.4	BacR-qPCR**	2.6E+03	I	TSC/100 mL	P371478	LCS
2123211	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	86		MPN/100 mL		

Sample Location: Myakka River@Clay Gully in Park **Collection Date/Time: 09/26/2019 12:10**

Field ID: G3SW0054 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2123201	SM 10200 H (mod.)	Chlorophyll-a, Corrected	51		ug/L	P371933	
		Phaeophytin-a	3.5	I	ug/L	P371933	
		Chlorophyll-a, Uncorrected	55		ug/L	P371933	
2123209	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P371478	LCS
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P371478	LCS
2123212	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	145		MPN/100 mL		

Quality Assurance Report
Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P371933

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

Quality Assurance Report
Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P371478

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

Reference Method: SOP-PCR-1.2
Batch ID: P371478

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

Reference Method: SOP-PCR-1.3
Batch ID: P372558

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

Reference Method: SOP-PCR-1.4
Batch ID: P371478

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

Reference Method: SOP-PCR-1.5
Batch ID: P371478

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: P371933

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	98.0		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P371478

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	123	195	P/F	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P371478

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	87.8	168	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P372558

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P372558

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	163	137	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P371478

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	77.7	254	P/F	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P371478

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	127	205	P/F	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P371478

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2123207	HF183-qPCR	134		P	50 - 175
2123208	HF183-qPCR	122		P	50 - 175
2123209	HF183-qPCR	95.5		P	50 - 175
2123301	HF183-qPCR	137		P	50 - 175
2123302	HF183-qPCR	137		P	50 - 175
2123303	HF183-qPCR	136		P	50 - 175
2123304	HF183-qPCR	109	118	P/P	50 - 175
2123305	HF183-qPCR	124		P	50 - 175
2123342	HF183-qPCR	109		P	50 - 175
2123343	HF183-qPCR	122		P	50 - 175
2123344	HF183-qPCR	138		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P371478

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2123207	GULL2-qPCR	84.0		P	50 - 300
2123301	GULL2-qPCR	85.0		P	50 - 300
2123302	GULL2-qPCR	90.1		P	50 - 300
2123303	GULL2-qPCR	83.9		P	50 - 300
2123304	GULL2-qPCR	88.4	85.6	P/P	50 - 300
2123305	GULL2-qPCR	79.6		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P372558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2123207	GFD-purified-qPCR	343		F	50 - 175
2123983	GFD-purified-qPCR	415		F	50 - 175
2123984	GFD-purified-qPCR	377		F	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P372558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2126456	GFD-purified-qPCR	107		P	50 - 175
2127162	GFD-purified-qPCR	330		F	50 - 175
2127750	GFD-purified-qPCR	331		F	50 - 175
2129915	GFD-purified-qPCR	377		F	50 - 175
2129917	GFD-purified-qPCR	385	366	F/F	50 - 175
2132423	GFD-purified-qPCR	367		F	50 - 175
2132424	GFD-purified-qPCR	372		F	50 - 175
2132425	GFD-purified-qPCR	325		F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P371478

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2123207	BacR-qPCR	91.2		P	50 - 175
2123208	BacR-qPCR	74.8		P	50 - 175
2123209	BacR-qPCR	84.4		P	50 - 175
2123301	BacR-qPCR	94.8		P	50 - 175
2123302	BacR-qPCR	84.9		P	50 - 175
2123303	BacR-qPCR	77.8		P	50 - 175
2123304	BacR-qPCR	74.2	74.3	P/P	50 - 175
2123305	BacR-qPCR	91.7		P	50 - 175
2123342	BacR-qPCR	58.6		P	50 - 175
2123343	BacR-qPCR	87.3		P	50 - 175
2123344	BacR-qPCR	93.6		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P371478

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2123182	DG3-qPCR	115		P	50 - 175
2123184	DG3-qPCR	119		P	50 - 175
2123207	DG3-qPCR	118		P	50 - 175
2123342	DG3-qPCR	89.2		P	50 - 175
2123343	DG3-qPCR	116		P	50 - 175
2123344	DG3-qPCR	125		P	50 - 175

Quality Assurance Report
Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P371933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2123054	Chlorophyll-a, Corrected	1.34	Sample	P	0 - 25
2123054	Chlorophyll-a, Uncorrected	1.43	Sample	P	0 - 25
2123054	Phaeophytin-a	1.73	Sample	P	0 - 25

Quality Assurance Report
Precision

Reference Method: SOP-PCR-1.0
Batch ID: P371478

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2123304	HF183-qPCR	7.82	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P371478

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2123304	GULL2-qPCR	3.19	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P372558

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2129917	GFD-purified-qPCR	5.25	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P371478

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2123304	BacR-qPCR	0.0984	Spike	P	0 - 25

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2123207
Field Sample ID: G2SW0024

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	96.8	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	128	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	101	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	89.3	P	50 - 300

Lab Sample ID: 2123208
Field Sample ID: G3SW0056

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	98.7	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	89.7	P	50 - 300

Lab Sample ID: 2123209
Field Sample ID: G3SW0054

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	86.4	P	50 - 300

Quality Assurance Report
Surrogates

Lab Sample ID: 2123209
Field Sample ID: G3SW0054

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.4	SKETA-qPCR	104	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	98.0			1.34	
	Chlorophyll-a, Uncorrected				1.43	
	Phaeophytin-a				1.73	
SOP-PCR-1.0	HF183-qPCR	195 123	134 122 95.5 137			7.82
SOP-PCR-1.2	GULL2-qPCR	168 87.8	84.0 85.0 90.1 83.9			3.19
SOP-PCR-1.3	GFD-purified-qPCR	137 163	415 377 377 385			5.25
SOP-PCR-1.4	BacR-qPCR	254 77.7	91.2 74.8 84.4 94.8			0.0984
SOP-PCR-1.5	DG3-qPCR	205 127	115 119 118 89.2			

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2123199, 2123200, 2123201
SM 9223 B Quanti-Tray / E84167	E. coli by Colilert/QT by BEA in Palmetto	2123210, 2123211, 2123212
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2123207, 2123208, 2123209
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2123207
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2123207
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2123207, 2123208, 2123209
SOP-PCR-1.5 / E31780	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2123207

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	09/27/2019	09/27/2019 13:51	Yuliya Danyuk	10/04/2019 09:48	Carina A. Tull	2123199, 2123200, 2123201
SM 9223 B Quanti-Tray	09/26/2019	09/26/2019 14:55		09/27/2019 15:33	Benchmark EnviroAnalytical - Palmetto	2123210, 2123211, 2123212
SOP-PCR-1.0	09/27/2019	09/27/2019 14:05	Angela Smith	10/24/2019 12:29	Lauren Campbell	2123207, 2123208, 2123209
SOP-PCR-1.2	09/27/2019	09/27/2019 14:05	Angela Smith	10/31/2019 08:25	Mailin Lopez	2123207
SOP-PCR-1.3	09/27/2019	09/27/2019 14:05	Lauren Campbell	11/01/2019 08:15	Mailin Lopez	2123207
SOP-PCR-1.4	09/27/2019	09/27/2019 14:05	Angela Smith	10/24/2019 15:49	Lauren Campbell	2123207, 2123208, 2123209
SOP-PCR-1.5	09/27/2019	09/27/2019 14:05	Angela Smith	10/29/2019 10:44	Lauren Campbell	2123207