

Biological Analysis Report

TLH-ROC-2019-08-15-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Run 7**
Request ID: **RQ-2019-08-19-21**
Customer: **TLH-ROC**
Project ID: **SMP**

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Certified by: Jacqueline Savage, Environmental Administrator

Date Certified: 27-SEP-2019 14:46

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, Microbiology and Molecular.

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: CHIPOLA RIVER

Collection Date/Time: 08/15/2019 11:00

Field ID: G2TLHR0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2112171	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.2		ug/L	P369812	
		Phaeophytin-a	3.6		ug/L	P369812	
		Chlorophyll-a, Uncorrected	5.5		ug/L	P369812	
2112175	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	39.9		MPN/100 mL	P370010	

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: F.B-08152019

Collection Date/Time: 08/15/2019 09:00

Field ID: FIELD BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2112179	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	1.0	U	MPN/100 mL	P370010	

Sample Location: TENMILE CREEK @ CR274

Collection Date/Time: 08/15/2019 11:40

Field ID: G2TLHR0001

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2112173	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.3	I	ug/L	P369812	
		Phaeophytin-a	1.6	I	ug/L	P369812	
		Chlorophyll-a, Uncorrected	2.3	I	ug/L	P369812	
2112177	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	712.0		MPN/100 mL	P370010	
2112180	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P368911	
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	UJ	TSC/100 mL	P368911	MS
	SOP-PCR-1.3	GFD-purified-qPCR**	1.16E+03	J	TSC/100 mL	P370173	MS
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	UJ	TSC/100 mL	P368911	MS
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P368911	LCS

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.

SOP-PCR-1.2: Precision data unavailable for Analysis Batch A94133. Quality control failure(s) observed. See QA report for details.

SOP-PCR-1.3: Quality control failure(s) observed. See QA report for details.

SOP-PCR-1.4: Quality control failure(s) observed. See QA report for details.

Sample Location: CHIPOLA RIVER @ MAGNOLIA RD

Collection Date/Time: 08/15/2019 12:20

Field ID: G2TLHR0016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2112172	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.0	I	ug/L	P369812	
		Phaeophytin-a	1.2	I	ug/L	P369812	
		Chlorophyll-a, Uncorrected	2.8	A	ug/L	P369812	
2112176	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	127.4		MPN/100 mL	P370010	

Ref. Method and Comment:

SM 10200 H (mod.): Laboratory duplicate result is 2.0 I for Chlorophyll-a Corrected and 1.2 I for Phaeophytin-a. Precision data is unavailable due to the small amount of analyte in the QC sample.

Sample Location: APALACHICOLA RIVER @ BRISTOL LANDING

Collection Date/Time: 08/15/2019 13:20

Field ID: G2TLHR0043

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2112174	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.8	I	ug/L	P369812	
		Phaeophytin-a	1.0	I	ug/L	P369812	
		Chlorophyll-a, Uncorrected	2.4		ug/L	P369812	
2112178	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	81.7	A	MPN/100 mL	P370010	

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: P369812

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.96	U	ug/L
Chlorophyll-a, Uncorrected	0.70	U	ug/L
Phaeophytin-a	1.0	U	ug/L

Reference Method: SM 9223 Quanti-Tray

Batch ID: P370010

Component	Result	Code	Units
Escherichia Coli-Quanti-Tray	1.0	U	MPN/100 mL

Reference Method: SOP-PCR-1.0

Batch ID: P368911

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

Reference Method: SOP-PCR-1.2

Batch ID: P368911

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

Reference Method: SOP-PCR-1.3

Batch ID: P370173

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

Reference Method: SOP-PCR-1.4

Batch ID: P368911

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

Reference Method: SOP-PCR-1.5

Batch ID: P368911

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: P369812

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	85.6		P	84 - 116

Reference Method: SOP-PCR-1.0
 Batch ID: P368911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	111	75.8	P/P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P368911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	94.2	57.4	P/P	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P370173

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	133	78.3	P/P	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P368911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	99.7	54.2	P/P	50 - 175

Reference Method: SOP-PCR-1.5
 Batch ID: P368911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	102	25.1	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P368911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112055	HF183-qPCR	95.1		P	50 - 175
2112072	HF183-qPCR	83.3		P	50 - 175
2112073	HF183-qPCR	88.8		P	50 - 175
2112180	HF183-qPCR	78.7		P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P368911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109921	GULL2-qPCR	60.4		P	50 - 300
2112055	GULL2-qPCR	70.1		P	50 - 300
2112180	GULL2-qPCR	31.2		F	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3

Batch ID: P370173

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112055	GFD-purified-qPCR	275		F	50 - 175
2112180	GFD-purified-qPCR	333		F	50 - 175
2116489	GFD-purified-qPCR	383		F	50 - 175
2116490	GFD-purified-qPCR	351	366	F/F	50 - 175
2117393	GFD-purified-qPCR	332		F	50 - 175
2117394	GFD-purified-qPCR	366		F	50 - 175
2117395	GFD-purified-qPCR	324		F	50 - 175
2117486	GFD-purified-qPCR	386		F	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P368911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2110994	BacR-qPCR	47.6	61.5	F/P	50 - 175
2110996	BacR-qPCR	46.1		F	50 - 175
2110998	BacR-qPCR	51.5		P	50 - 175
2112055	BacR-qPCR	75.4		P	50 - 175
2112072	BacR-qPCR	67.6		P	50 - 175
2112073	BacR-qPCR	70.4		P	50 - 175
2112180	BacR-qPCR	46.3		F	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P368911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109921	DG3-qPCR	92.9		P	50 - 175
2110920	DG3-qPCR	94.6		P	50 - 175
2110922	DG3-qPCR	97.5		P	50 - 175
2110994	DG3-qPCR	74.1	86.8	P/P	50 - 175
2110996	DG3-qPCR	73.6		P	50 - 175
2110998	DG3-qPCR	83.6		P	50 - 175
2112055	DG3-qPCR	90.6		P	50 - 175
2112180	DG3-qPCR	66.1		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)

Batch ID: P369812

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112172	Chlorophyll-a, Uncorrected	3.73	Sample	P	0 - 25

Reference Method: SM 9223 Quanti-Tray

Batch ID: P370010

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111847	Escherichia Coli-Quanti-Tray	31.9	Sample	P	0 - 80
2112178	Escherichia Coli-Quanti-Tray	4.65	Sample	P	0 - 80

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P368911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110501	HF183-qPCR	7.86	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P370173

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2116490	GFD-purified-qPCR	4.29	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P368911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110994	BacR-qPCR	1.20	Sample	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P368911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110994	DG3-qPCR	15.8	Spike	P	0 - 25

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Surrogates

Lab Sample ID: 2112180
Field Sample ID: G2TLHR0001

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	139	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	95.9	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	87.3	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	83.5	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	85.6						
	Chlorophyll-a, Uncorrected						3.73	
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray						31.9	4.65
SOP-PCR-1.0	HF183-qPCR	75.8	111	95.1	83.3	88.8		7.86
				78.7				
SOP-PCR-1.2	GULL2-qPCR	57.4	94.2	70.1	31.2	60.4		

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.3	GFD-purified-qPCR	78.3	133	383	351	366			4.29
SOP-PCR-1.4	BacR-qPCR	54.2	99.7	47.6	61.5	46.1		1.20	
SOP-PCR-1.5	DG3-qPCR	25.1	102	74.1	86.8	73.6			15.8
				332		83.6			
				51.5					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2112171, 2112172, 2112173, 2112174
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2112175, 2112176, 2112177, 2112178, 2112179
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2112180
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2112180
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2112180
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2112180
SOP-PCR-1.5 / E31780	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2112180

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	08/15/2019	08/16/2019 14:26	Jennifer Mihalic	08/26/2019 15:11	Yuliya Danyuk	2112171, 2112172, 2112173, 2112174
SM 9223 Quanti-Tray	08/15/2019	08/15/2019 15:54	Carina A. Tull	08/16/2019 11:20	Carina A. Tull	2112175, 2112176, 2112177, 2112178, 2112179
SOP-PCR-1.0	08/15/2019	08/16/2019 13:20	Sarah Menz	09/04/2019 10:20	Mailin Lopez	2112180
SOP-PCR-1.2	08/15/2019	08/16/2019 13:20	Sarah Menz	09/11/2019 12:27	Mailin Lopez	2112180
SOP-PCR-1.3	08/15/2019	08/16/2019 13:20	Angela Smith	09/19/2019 14:15	Mailin Lopez	2112180
SOP-PCR-1.4	08/15/2019	08/16/2019 13:20	Sarah Menz	09/06/2019 08:53	Mailin Lopez	2112180
SOP-PCR-1.5	08/15/2019	08/16/2019 13:20	Sarah Menz	09/10/2019 12:16	Mailin Lopez	2112180