

Biological Analysis Report

TLH-ROC-2019-10-21-01

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

Event Description: **WBID 758**
Request ID: **RQ-2019-10-07-19**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Michael Eckles

For additional information please contact
Cheryl Swanson - Administrator
Jacqueline Savage - Microbiology
Diane Power - Bench Biology
Andrew Tintle - Aquatic Toxicology
Puja Jasrotia, Ph.D. - Molecular Biology
Amelia Rankin - Taxonomy (Invertebrate & Algal)
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 15-NOV-2019 15:29



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: Lexington Creek @ Timberlane Rd

Collection Date/Time: 10/21/2019 09:55

Field ID: G1TLHR0088

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2129911	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.6	I	ug/L	P373913	
		Phaeophytin-a	0.90	U	ug/L	P373913	
		Chlorophyll-a, Uncorrected	1.6	I	ug/L	P373913	
2129913	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	2224.0		MPN/100 mL	P373515	RPD
2129915	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P372664	
	SOP-PCR-1.3	GFD-purified-qPCR**	170	UJ	TSC/100 mL	P372558	MS
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P372664	LCS
	SOP-PCR-1.7	HUMM2-qPCR**	1.10E+04		TSC/100 mL	P372664	
2129916	SOP-PCR-1.1	HF183-PMA treated-qPCR**	270	J	GEU/100 mL	P372596	SUR
		HF183-purified-untreated-qPCR**	3.13E+03	J	GEU/100 mL	P372596	LCS, SUR

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 A95684

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

SOP-PCR-1.1: Quality control failure(s) observed. See QA report for details. Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: Lexington Creek 100m downstream N Meridian Rd **Collection Date/Time: 10/21/2019 10:30**

Field ID: G1TLHR0109

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2129912	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.3	I	ug/L	P373913	
		Phaeophytin-a	1.0	U	ug/L	P373913	
		Chlorophyll-a, Uncorrected	2.4		ug/L	P373913	
2129914	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	884.35	A	MPN/100 mL	P373515	RPD
2129917	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P372664	
	SOP-PCR-1.3	GFD-purified-qPCR**	170	UJ	TSC/100 mL	P372558	MS
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P372664	LCS
	SOP-PCR-1.7	HUMM2-qPCR**	7.8E+03		TSC/100 mL	P372664	
2129918	SOP-PCR-1.1	HF183-PMA treated-qPCR**	75	IJ	GEU/100 mL	P372596	SUR
		HF183-purified-untreated-qPCR**	96	IJ	GEU/100 mL	P372596	LCS, SUR

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 A95684

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

SOP-PCR-1.1: Quality control failure(s) observed. See QA report for details. Refer to the Lab Analysis Report for an explanation of QC Codes.

Quality Assurance Report

Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P373913

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: SM 9223 Quanti-Tray
Batch ID: P373515

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

Reference Method: SOP-PCR-1.1
Batch ID: P372596

Component	Result	Code	Units
HF183-purified-untreated-qPCR	47	U	GEU/100 mL

Reference Method: SOP-PCR-1.2
Batch ID: P372664

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-1.5
Batch ID: P372664

Component	Result	Code	Units
DG3-qPCR	2.6E+03	U	TSC/100 mL

Reference Method: SOP-PCR-1.7
Batch ID: P372664

Component	Result	Code	Units
HUMM2-qPCR	1.3E+03	U	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P373913

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	107		P	84 - 116

Reference Method: SOP-PCR-1.1
Batch ID: P372596

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-purified-untreated-qPCR	110	12.1	P/F	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P372664

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.2

Batch ID: P372664

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	93.5	161	P/P	50 - 300

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-1.5

Batch ID: P372664

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	136	226	P/F	50 - 175

Reference Method: SOP-PCR-1.7

Batch ID: P372664

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HUMM2-qPCR	103	110	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.1

Batch ID: P372596

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2128655	HF183-PMA treated-qPCR	111	117	P/P	50 - 175
2128655	HF183-purified-untreated-qPCR	110	107	P/P	50 - 175
2129296	HF183-PMA treated-qPCR	99.4		P	50 - 175
2129296	HF183-purified-untreated-qPCR	108		P	50 - 175
2129297	HF183-PMA treated-qPCR	102		P	50 - 175
2129297	HF183-purified-untreated-qPCR	105		P	50 - 175
2129298	HF183-PMA treated-qPCR	104		P	50 - 175
2129298	HF183-purified-untreated-qPCR	105		P	50 - 175
2129916	HF183-PMA treated-qPCR	105		P	50 - 175
2129916	HF183-purified-untreated-qPCR	102		P	50 - 175
2129918	HF183-PMA treated-qPCR	104		P	50 - 175
2129918	HF183-purified-untreated-qPCR	104		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P372664

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2129915	GULL2-qPCR	91.4		P	50 - 300
2129917	GULL2-qPCR	81.3		P	50 - 300
2130153	GULL2-qPCR	99.0		P	50 - 300

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
2123207	GFD-purified-qPCR	343		F	50 - 175
2123983	GFD-purified-qPCR	415		F	50 - 175
2123984	GFD-purified-qPCR	377		F	50 - 175
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-1.5

Batch ID: P372664

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2129293	DG3-qPCR	125		P	50 - 175
2129294	DG3-qPCR	127		P	50 - 175
2129295	DG3-qPCR	128	118	P/P	50 - 175
2129393	DG3-qPCR	111		P	50 - 175
2129394	DG3-qPCR	108		P	50 - 175
2129915	DG3-qPCR	127		P	50 - 175
2129917	DG3-qPCR	130		P	50 - 175
2130153	DG3-qPCR	134		P	50 - 175

Reference Method: SOP-PCR-1.7

Batch ID: P372664

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2129293	HUMM2-qPCR	85.8		P	50 - 175
2129294	HUMM2-qPCR	103		P	50 - 175
2129295	HUMM2-qPCR	90.8	90.1	P/P	50 - 175
2129915	HUMM2-qPCR	91.4		P	50 - 175
2129917	HUMM2-qPCR	90.8		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)

Batch ID: P373913

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2129792	Chlorophyll-a, Corrected	6.92	Sample	P	0 - 25
2129792	Chlorophyll-a, Uncorrected	6.66	Sample	P	0 - 25

Reference Method: SM 9223 Quanti-Tray

Batch ID: P373515

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
------------	-----------	-----------	-------------------	-----------	----------------

Quality Assurance Report Precision

Reference Method: SM 9223 Quanti-Tray
Batch ID: P373515

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2129914	Escherichia Coli-Quanti-Tray	53.3	Sample	P	0 - 80
2130001	Escherichia Coli-Quanti-Tray	100	Sample	F	0 - 80

Reference Method: SOP-PCR-1.1
Batch ID: P372596

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2128655	HF183-PMA treated-qPCR	5.03	Spike	P	0 - 25
2128655	HF183-purified-untreated-qPCR	10.3	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-1.5
Batch ID: P372664

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2129295	DG3-qPCR	8.21	Spike	P	0 - 25

Reference Method: SOP-PCR-1.7
Batch ID: P372664

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2129295	HUMM2-qPCR	0.719	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2129915
Field Sample ID: G1TLHR0088

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.2	SKETA-qPCR	104	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	103	P	50 - 300
SOP-PCR-1.7	SKETA-qPCR	107	P	50 - 300

Lab Sample ID: 2129916
Field Sample ID: G1TLHR0088

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
------------------	-----------	--------	-----------	----------------

Quality Assurance Report Surrogates

Lab Sample ID: 2129916
 Field Sample ID: G1TLHR0088

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.1	SKETA-qPCR	11.5	F	50 - 300
SOP-PCR-1.1	SKETA-qPCR	9.66	F	30 - 300

Lab Sample ID: 2129917
 Field Sample ID: G1TLHR0109

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.2	SKETA-qPCR	104	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	105	P	50 - 300
SOP-PCR-1.7	SKETA-qPCR	107	P	50 - 300

Lab Sample ID: 2129918
 Field Sample ID: G1TLHR0109

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.1	SKETA-qPCR	0.667	F	50 - 300
SOP-PCR-1.1	SKETA-qPCR	13.4	F	30 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	107						6.92	
	Chlorophyll-a, Uncorrected							6.66	
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray							53.3	100
SOP-PCR-1.1	HF183-PMA treated-qPCR			111	117	99.4			5.03
				102					
	HF183-purified-untreated-qPCR	12.1	110	110	107	108			10.3
				105					
SOP-PCR-1.2	GULL2-qPCR	161	93.5	91.4	81.3	99.0			
SOP-PCR-1.3	GFD-purified-qPCR	137	163	415	377	377			5.25
				385					
SOP-PCR-1.5	DG3-qPCR	226	136	125	127	128			8.21
				118					
SOP-PCR-1.7	HUMM2-qPCR	110	103	85.8	103	90.8			0.719
				90.1					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2129911, 2129912
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2129913, 2129914
SOP-PCR-1.1 / E31780	Quantitative Differentiation of live human-specific Bacteroides cells with Propidium Monazide and quantitative polymerase chain reaction	2129916, 2129918
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2129915, 2129917
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2129915, 2129917
SOP-PCR-1.5 / E31780	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2129915, 2129917

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SOP-PCR-1.7 / E31780	Detection and quantification of human-specific HUMM2 genetic marker with quantitative polymerase chain reaction	2129915, 2129917

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	10/21/2019	10/22/2019 14:44	Yuliya Danyuk	10/29/2019 16:54	Carina A. Tull	2129911, 2129912
SM 9223 Quanti-Tray	10/21/2019	10/21/2019 15:29	Jessica Sherman	10/22/2019 11:09	Jessica Sherman	2129913, 2129914
SOP-PCR-1.1	10/21/2019	10/21/2019 16:10	Angela Smith	11/06/2019 08:22	Mailin Lopez	2129916, 2129918
SOP-PCR-1.2	10/21/2019	10/21/2019 16:10	Angela Smith	11/13/2019 10:09	Mailin Lopez	2129915, 2129917
SOP-PCR-1.3	10/21/2019	10/21/2019 16:10	Lauren Campbell	11/01/2019 08:15	Mailin Lopez	2129915, 2129917
SOP-PCR-1.5	10/21/2019	10/21/2019 16:10	Angela Smith	11/07/2019 14:23	Lauren Campbell	2129915, 2129917
SOP-PCR-1.7	10/21/2019	10/21/2019 16:10	Angela Smith	11/07/2019 09:14	Mailin Lopez	2129915, 2129917