

Biological Analysis Report

TLH-ROC-2019-08-27-02

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

Event Description: **Run 1**
Request ID: **RQ-2019-06-24-37**
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: Puja Jasrotia, Environmental Manager

Date Certified: 30-SEP-2019 12:16

A handwritten signature in black ink, appearing to be 'Puja Jasrotia', with a horizontal line underneath it.

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: LITTLE AUCILLA RIVER

Collection Date/Time: 08/27/2019 09:35

Field ID: G1TLHR0029

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2115039	SM 10200 H (mod.)	Chlorophyll-a, Corrected	11		ug/L	P370327	
		Phaeophytin-a	0.90	U	ug/L	P370327	
		Chlorophyll-a, Uncorrected	11		ug/L	P370327	
2115042	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	49.6		MPN/100 mL	P370260	

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: LITTLE AUCILLA RVR @ US221

Collection Date/Time: 08/27/2019 10:05

Field ID: G1TLHR0099

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2115040	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.82	U	ug/L	P370327	
		Phaeophytin-a	0.90	U	ug/L	P370327	
		Chlorophyll-a, Uncorrected	0.75	I	ug/L	P370327	
2115043	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	42.0		MPN/100 mL	P370260	
2115044	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P369893	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P369893	MS
	SOP-PCR-1.3	GFD-purified-qPCR**	1.30E+04	J	TSC/100 mL	P369833	MS
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P369893	
	SOP-PCR-1.7	HUMM2-qPCR**	630	U	TSC/100 mL	P369893	

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

SOP-PCR-1.7: Precision data unavailable for Analysis Batch A94257

Sample Location: GRASSY HOLE SPRING ON ICHETUCKNEE RIVER

Collection Date/Time: 08/27/2019 12:45

Field ID: G1TLHR0100

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2115041	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.82	U	ug/L	P370327	
		Phaeophytin-a	0.90	U	ug/L	P370327	
		Chlorophyll-a, Uncorrected	0.60	U	ug/L	P370327	

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: P370327

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: P370260

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

Reference Method: SOP-PCR-1.0
Batch ID: P369893

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

Reference Method: SOP-PCR-1.2
Batch ID: P369893

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

Reference Method: SOP-PCR-1.3
Batch ID: P369833

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

Reference Method: SOP-PCR-1.5
Batch ID: P369893

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

Reference Method: SOP-PCR-1.7
Batch ID: P369893

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: P370327

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	90.2		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P369893

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	143	171	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P369893

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.2
 Batch ID: P369893

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	139	149	P/P	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P369833

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	94.3	74.7	P/P	50 - 175

Reference Method: SOP-PCR-1.5
 Batch ID: P369893

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	92.2	84.8	P/P	50 - 175

Reference Method: SOP-PCR-1.7
 Batch ID: P369893

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HUMM2-qPCR	101	172	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P369893

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107028	HF183-qPCR	109		P	50 - 175
2115044	HF183-qPCR	132		P	50 - 175
2115733	HF183-qPCR	118		P	50 - 175
2115734	HF183-qPCR	135		P	50 - 175
2115735	HF183-qPCR	118		P	50 - 175
2115736	HF183-qPCR	129	118	P/P	50 - 175
2115970	HF183-qPCR	116		P	50 - 175
2116025	HF183-qPCR	113		P	50 - 175
2116097	HF183-qPCR	131		P	50 - 175
2116098	HF183-qPCR	124		P	50 - 175
2116099	HF183-qPCR	129		P	50 - 175
2116100	HF183-qPCR	124		P	50 - 175
2116129	HF183-qPCR	119		P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P369893

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2115044	GULL2-qPCR	121		P	50 - 300
2115733	GULL2-qPCR	50.5		P	50 - 300
2115734	GULL2-qPCR	264		P	50 - 300
2115735	GULL2-qPCR	111		P	50 - 300
2115736	GULL2-qPCR	118	121	P/P	50 - 300
2115970	GULL2-qPCR	37.9		F	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2

Batch ID: P369893

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2116097	GULL2-qPCR	125		P	50 - 300
2116098	GULL2-qPCR	101		P	50 - 300
2116099	GULL2-qPCR	138		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P369833

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2115044	GFD-purified-qPCR	496		F	50 - 175
2115354	GFD-purified-qPCR	517		F	50 - 175
2115355	GFD-purified-qPCR	366		F	50 - 175
2115356	GFD-purified-qPCR	438		F	50 - 175
2115357	GFD-purified-qPCR	502	478	F/F	50 - 175
2115358	GFD-purified-qPCR	467		F	50 - 175
2115732	GFD-purified-qPCR	480		F	50 - 175
2115733	GFD-purified-qPCR	513		F	50 - 175
2115734	GFD-purified-qPCR	493		F	50 - 175
2115735	GFD-purified-qPCR	501		F	50 - 175
2115736	GFD-purified-qPCR	494		F	50 - 175
2115970	GFD-purified-qPCR	541		F	50 - 175
2116329	GFD-purified-qPCR	563		F	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P369893

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2115044	DG3-qPCR	86.6		P	50 - 175
2115970	DG3-qPCR	114		P	50 - 175
2116097	DG3-qPCR	89.9		P	50 - 175
2116098	DG3-qPCR	84.4		P	50 - 175
2116099	DG3-qPCR	86.5		P	50 - 175
2116100	DG3-qPCR	88.4		P	50 - 175

Reference Method: SOP-PCR-1.7

Batch ID: P369893

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2115044	HUMM2-qPCR	135		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)

Batch ID: P370327

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2115079	Chlorophyll-a, Corrected	2.56	Sample	P	0 - 25
2115079	Chlorophyll-a, Uncorrected	1.18	Sample	P	0 - 25

Quality Assurance Report Precision

Reference Method: SM 9223 Quanti-Tray
 Batch ID: P370260

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114828	Escherichia Coli-Quanti-Tray	10.6	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
 Batch ID: P369893

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2115736	HF183-qPCR	8.63	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
 Batch ID: P369893

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2115736	GULL2-qPCR	2.78	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P369833

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2115357	GFD-purified-qPCR	4.86	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
 Batch ID: P369893

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112421	DG3-qPCR	1.99	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: 2115044
 Field Sample ID: G1TLHR0099

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	119	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	105	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	99.8	P	50 - 300
SOP-PCR-1.7	SKETA-qPCR	102	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision LCS	Precision SMP	Precision MS
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Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	90.2						2.56	
	Chlorophyll-a, Uncorrected							1.18	
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray							10.6	
SOP-PCR-1.0	HF183-qPCR	171	143	118	135	118			8.63
				129					
SOP-PCR-1.2	GULL2-qPCR	149	139	50.5	264	111			2.78
				118					
SOP-PCR-1.3	GFD-purified-qPCR	74.7	94.3	496	517	366			4.86
				438					
SOP-PCR-1.5	DG3-qPCR	84.8	92.2	114	89.9	84.4			1.99
				86.5					
SOP-PCR-1.7	HUMM2-qPCR	172	101	135					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2115039, 2115040, 2115041
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2115042, 2115043
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2115044
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2115044
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2115044
SOP-PCR-1.5 / E31780	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2115044
SOP-PCR-1.7 / E31780	Detection and quantification of human-specific HUMM2 genetic marker with quantitative polymerase chain reaction	2115044

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	08/27/2019	08/28/2019 13:40	Peterson Janvier	09/05/2019 09:08	Yuliya Danyuk	2115039, 2115040, 2115041
SM 9223 Quanti-Tray	08/27/2019	08/27/2019 16:22	Anthony Mirabito	08/28/2019 10:39	Peterson Janvier	2115042, 2115043
SOP-PCR-1.0	08/27/2019	08/28/2019 13:30	Angela Smith	09/12/2019 10:16	Mailin Lopez	2115044
SOP-PCR-1.2	08/27/2019	08/28/2019 13:30	Angela Smith	09/16/2019 12:08	Mailin Lopez	2115044
SOP-PCR-1.3	08/27/2019	08/28/2019 13:30	Mailin Lopez	09/17/2019 08:30	Mailin Lopez	2115044
SOP-PCR-1.5	08/27/2019	08/28/2019 13:30	Angela Smith	09/13/2019 15:43	Mailin Lopez	2115044
SOP-PCR-1.7	08/27/2019	08/28/2019 13:30	Angela Smith	09/16/2019 13:08	Mailin Lopez	2115044