

Biological Analysis Report

TLH-ROC-2021-01-28-02

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

Event Description: **Run 12**
Request ID: **RQ-2021-01-11-53**
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 - Bench Biology & Aquatic
Toxicity
Puja Jasrotia, Ph.D. - Molecular Biology & Taxonomy
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Puja Jasrotia, Environmental Administrator

Date Certified: 16-FEB-2021 14:43

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: Watson Bayou South

Collection Date/Time: 01/28/2021 12:00

Field ID: G3TLHR0006

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2222205	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.4		ug/L	P393694	
		Phaeophytin-a	0.98	U	ug/L	P393694	
		Chlorophyll-a, Uncorrected	3.9		ug/L	P393694	
2222209	Enterolert/QT	Enterococci-Quanti-Tray	41.0		MPN/100 mL	P393421	

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: Boggy Creek @ SR22

Collection Date/Time: 01/28/2021 10:50

Field ID: G3TLHR0015

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2222210	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	579.4		MPN/100 mL	P393421	

Sample Location: Mule Creek @ Alvie Holmes Rd.

Collection Date/Time: 01/28/2021 10:30

Field ID: G3TLHR0017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2222211	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	1299.7		MPN/100 mL	P393421	

Sample Location: Parker Creek @ Park

Collection Date/Time: 01/28/2021 11:25

Field ID: G3TLHR0040

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2222203	SM 10200 H (mod.)	Chlorophyll-a, Corrected	4.4		ug/L	P393694	
		Phaeophytin-a	0.90	U	ug/L	P393694	
		Chlorophyll-a, Uncorrected	4.8		ug/L	P393694	
2222206	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	384.0		MPN/100 mL	P393421	
2222212	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P393122	MS
	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	U	TSC/100 mL	P393122	
	SOP-PCR-1.3	GFD-qPCR**	590	I	TSC/100 mL	P393122	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P393122	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P393122	

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: Parker Bayou @ Mouth

Collection Date/Time: 01/28/2021 11:00

Field ID: G3TLHR0043

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2222204	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.2		ug/L	P393694	
		Phaeophytin-a	2.3	I	ug/L	P393694	
		Chlorophyll-a, Uncorrected	4.7		ug/L	P393694	
2222207	Enterolert/QT	Enterococci-Quanti-Tray	52.0	A	MPN/100 mL	P393421	
2222208	SM 9222 D	Fecal Coliforms-Membrane Filter	64	A	cfu/100 mL	P393223	

Field ID: G3TLHR0043

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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: Enterolert/QT
Batch ID: P393421

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

Reference Method: SM 10200 H (mod.)
Batch ID: P393694

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: SM 9222 D
Batch ID: P393223

Component	Result	Code	Units
Fecal Coliforms-Membrane Filter	2	U	cfu/100 mL

Reference Method: SM 9223 Quanti-Tray
Batch ID: P393421

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

Reference Method: SOP-PCR-1.0
Batch ID: P393122

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

Reference Method: SOP-PCR-1.2
Batch ID: P393122

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

Reference Method: SOP-PCR-1.3
Batch ID: P393122

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

Reference Method: SOP-PCR-1.4
Batch ID: P393122

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.5
 Batch ID: P393122

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: P393694

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	106		P	84 - 116

Reference Method: SOP-PCR-1.0
 Batch ID: P393122

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	114	94.8	P/P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P393122

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	75.0	86.5	P/P	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P393122

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	91.7	89.7	P/P	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P393122

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	105	86.2	P/P	50 - 175

Reference Method: SOP-PCR-1.5
 Batch ID: P393122

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	97.7	97.1	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P393122

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2222212	HF183-qPCR	104		P	50 - 175
2222294	HF183-qPCR	103	100	P/P	50 - 175
2222295	HF183-qPCR	91.7		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P393122

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2222296	HF183-qPCR	89.7		P	50 - 175
2223562	HF183-qPCR	65.9		P	50 - 175
2223759	HF183-qPCR	89.8		P	50 - 175
2223797	HF183-qPCR	83.8		P	50 - 175
2223798	HF183-qPCR	87.7		P	50 - 175
2223799	HF183-qPCR	89.4		P	50 - 175
2223800	HF183-qPCR	93.2		P	50 - 175
2223801	HF183-qPCR	87.2		P	50 - 175
2223802	HF183-qPCR	89.4		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P393122

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2222212	GULL2-qPCR	55.9		P	50 - 300
2222294	GULL2-qPCR	65.4	62.2	P/P	50 - 300
2222295	GULL2-qPCR	69.3		P	50 - 300
2222296	GULL2-qPCR	55.2		P	50 - 300
2223562	GULL2-qPCR	15.3		F	50 - 300
2223759	GULL2-qPCR	65.3		P	50 - 300
2223797	GULL2-qPCR	77.6		P	50 - 300
2223798	GULL2-qPCR	57.3		P	50 - 300
2223799	GULL2-qPCR	58.8		P	50 - 300
2223800	GULL2-qPCR	60.1		P	50 - 300
2223801	GULL2-qPCR	70.0		P	50 - 300
2223802	GULL2-qPCR	67.0		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P393122

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2222212	GFD-qPCR	94.5		P	50 - 175
2222294	GFD-qPCR	97.3	90.0	P/P	50 - 175
2222295	GFD-qPCR	99.0		P	50 - 175
2222296	GFD-qPCR	95.8		P	50 - 175
2223562	GFD-qPCR	75.1		P	50 - 175
2223759	GFD-qPCR	93.3		P	50 - 175
2223797	GFD-qPCR	89.4		P	50 - 175
2223798	GFD-qPCR	92.6		P	50 - 175
2223799	GFD-qPCR	90.5		P	50 - 175
2223800	GFD-qPCR	75.6		P	50 - 175
2223801	GFD-qPCR	92.0		P	50 - 175
2223802	GFD-qPCR	90.6		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P393122

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2222212	BacR-qPCR	74.7		P	50 - 175
2222294	BacR-qPCR	70.6	77.3	P/P	50 - 175
2222295	BacR-qPCR	75.6		P	50 - 175
2222296	BacR-qPCR	67.1		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4

Batch ID: P393122

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2223759	BacR-qPCR	57.8		P	50 - 175
2223797	BacR-qPCR	57.9		P	50 - 175
2223798	BacR-qPCR	66.5		P	50 - 175
2223799	BacR-qPCR	71.7		P	50 - 175
2223800	BacR-qPCR	76.4		P	50 - 175
2223801	BacR-qPCR	76.3		P	50 - 175
2223802	BacR-qPCR	68.0		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P393122

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2222212	DG3-qPCR	86.0		P	50 - 175
2222294	DG3-qPCR	83.6	84.3	P/P	50 - 175
2222295	DG3-qPCR	81.3		P	50 - 175
2222296	DG3-qPCR	87.0		P	50 - 175
2223562	DG3-qPCR	65.9		P	50 - 175
2223759	DG3-qPCR	77.3		P	50 - 175
2223797	DG3-qPCR	82.5		P	50 - 175
2223798	DG3-qPCR	81.4		P	50 - 175
2223799	DG3-qPCR	78.4		P	50 - 175
2223800	DG3-qPCR	81.2		P	50 - 175
2223801	DG3-qPCR	80.7		P	50 - 175
2223802	DG3-qPCR	84.7		P	50 - 175

Quality Assurance Report Precision

Reference Method: Enterolert/QT

Batch ID: P393421

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2222207	Enterococci-Quanti-Tray	42.3	Sample	P	0 - 80

Reference Method: SM 10200 H (mod.)

Batch ID: P393694

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2222337	Chlorophyll-a, Corrected	3.20	Sample	P	0 - 25
2222337	Chlorophyll-a, Uncorrected	3.58	Sample	P	0 - 25

Reference Method: SM 9222 D

Batch ID: P393223

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2222208	Fecal Coliforms-Membrane Filter	0.0	Sample	P	0 - 50

Quality Assurance Report Precision

Reference Method: SM 9223 Quanti-Tray
Batch ID: P393421

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2222143	Escherichia Coli-Quanti-Tray	23.4	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
Batch ID: P393122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2222294	HF183-qPCR	2.75	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P393122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2222294	GULL2-qPCR	4.93	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P393122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2222294	GFD-qPCR	7.77	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P393122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2222294	BacR-qPCR	9.12	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P393122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2222294	DG3-qPCR	0.872	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2222212
Field Sample ID: G3TLHR0040

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	86.2	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	94.2	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	99.0	P	50 - 300

Quality Assurance Report Surrogates

Lab Sample ID: 2222212
Field Sample ID: G3TLHR0040

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.4	SKETA-qPCR	86.6	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	88.7	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
Enterolert/QT	Enterococci-Quanti-Tray							42.3	
SM 10200 H (mod.)	Chlorophyll-a, Corrected	106						3.20	
	Chlorophyll-a, Uncorrected							3.58	
SM 9222 D	Fecal Coliforms-Membrane Filter							0.0	
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray							23.4	
SOP-PCR-1.0	HF183-qPCR	94.8	114	104	103	100			2.75
				91.7					
SOP-PCR-1.2	GULL2-qPCR	86.5	75.0	55.9	65.4	62.2			4.93
				69.3					
SOP-PCR-1.3	GFD-qPCR	89.7	91.7	94.5	97.3	90.0			7.77
				99.0					
SOP-PCR-1.4	BacR-qPCR	86.2	105	75.6	67.1	57.8			9.12
				57.9					
SOP-PCR-1.5	DG3-qPCR	97.1	97.7	86.0	83.6	84.3			0.872
				81.3					

Reference Method Descriptions

Method	Description	Associated Samples
Enterolert/QT	Enterococci by Enterolert Quanti-Tray method - non-chlorinated water systems	2222207, 2222209
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2222203, 2222204, 2222205
SM 9222 D	Fecal coliforms by membrane filter method - non-chlorinated water systems	2222208
SM 9223 Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2222206, 2222210, 2222211
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2222212
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2222212
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2222212
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2222212
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2222212

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	01/28/2021	01/28/2021 15:58	Mia Jane Harrell	01/29/2021 16:39	Jessica Fetgatter	2222207, 2222209
SM 10200 H (mod.)	01/28/2021	01/28/2021 15:26	Jessica Sherman	02/02/2021 08:24	Yuliya Danyuk	2222203, 2222204, 2222205
SM 9222 D	01/28/2021	01/28/2021 16:12	Jessica Fetgatter	01/29/2021 15:38	Jessica Fetgatter	2222208
SM 9223 Quanti-Tray	01/28/2021	01/28/2021 16:40	Mia Jane Harrell	01/29/2021 11:09	Jessica Fetgatter	2222206, 2222210, 2222211
SOP-PCR-1.0	01/28/2021	01/29/2021 13:40	DeAsia Armster	02/08/2021 13:01	Mailin Lopez	2222212
SOP-PCR-1.2	01/28/2021	01/29/2021 13:40	DeAsia Armster	02/11/2021 08:34	Mailin Lopez	2222212
SOP-PCR-1.3	01/28/2021	01/29/2021 13:40	DeAsia Armster	02/11/2021 14:21	Mailin Lopez	2222212
SOP-PCR-1.4	01/28/2021	01/29/2021 13:40	DeAsia Armster	02/09/2021 08:57	Mailin Lopez	2222212
SOP-PCR-1.5	01/28/2021	01/29/2021 13:40	DeAsia Armster	02/10/2021 08:22	Mailin Lopez	2222212