Biological Analysis Report

TLH-ROC-2022-08-25-02

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Run 5**
Request ID: **RQ-2022-07-25-20**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
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Certified by: Sarah Menz, Environmental Administrator

Date Certified: 07-OCT-2022 13:11

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: Welaunee Creek **Collection Date/Time: 08/25/2022 11:20**

Field ID: G1TLHR0149 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2352501	SM 10200 H (mod.)	Chlorophyll-a, Corrected	13		ug/L	P419126	RPD
		Phaeophytin-a	10		ug/L	P419126	
		Chlorophyll-a, Uncorrected	18		ug/L	P419126	RPD
2352502	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	547.5		MPN/100 mL	P418790	
2352503	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P418689	
	SOP-PCR-1.2	GULL2-qPCR**	3.6E+03	U	TSC/100 mL	P418689	
	SOP-PCR-1.3	GFD-qPCR**	720	U	TSC/100 mL	P418689	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P418689	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P418689	

Quality Assurance Report
Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P419126

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 9223 B Quanti-Tray
Batch ID: P418790

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

Reference Method: SOP-PCR-1.0
Batch ID: P418689

Component	Result	Code	Units
HF183-qPCR	3.3E+03	U	TSC/100 mL

Reference Method: SOP-PCR-1.2
Batch ID: P418689

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

Reference Method: SOP-PCR-1.3
Batch ID: P418689

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

Reference Method: SOP-PCR-1.4
Batch ID: P418689

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: P418689

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: P419126

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	104		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P418689

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	76.8	91.7	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P418689

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	95.2	101	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P418689

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	94.9	105	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P418689

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	95.5	82.2	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P418689

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	105	84.6	P/P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P418689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352450	HF183-qPCR	78.5		P	50 - 175
2352451	HF183-qPCR	78.8		P	50 - 175
2352469	HF183-qPCR	94.1	86.8	P/P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P418689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352503	HF183-qPCR	90.5		P	50 - 175
2352686	HF183-qPCR	80.1		P	50 - 175
2352890	HF183-qPCR	84.0		P	50 - 175
2352970	HF183-qPCR	91.7		P	50 - 175
2353376	HF183-qPCR	73.3		P	50 - 175
2353607	HF183-qPCR	85.5		P	50 - 175
2353608	HF183-qPCR	90.8		P	50 - 175
2353656	HF183-qPCR	90.4		P	50 - 175
2353925	HF183-qPCR	90.0		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P418689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352450	GULL2-qPCR	75.8		P	50 - 300
2352451	GULL2-qPCR	79.8		P	50 - 300
2352469	GULL2-qPCR	74.1	80.9	P/P	50 - 300
2352503	GULL2-qPCR	77.7		P	50 - 300
2352686	GULL2-qPCR	53.2		P	50 - 300
2352890	GULL2-qPCR	81.6		P	50 - 300
2353376	GULL2-qPCR	38.5		F	50 - 300
2353607	GULL2-qPCR	82.6		P	50 - 300
2353608	GULL2-qPCR	67.9		P	50 - 300
2353925	GULL2-qPCR	89.6		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P418689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352450	GFD-qPCR	97.5		P	50 - 175
2352451	GFD-qPCR	102		P	50 - 175
2352469	GFD-qPCR	94.9	96.2	P/P	50 - 175
2352503	GFD-qPCR	98.0		P	50 - 175
2352686	GFD-qPCR	91.8		P	50 - 175
2352890	GFD-qPCR	83.1		P	50 - 175
2353376	GFD-qPCR	79.7		P	50 - 175
2353607	GFD-qPCR	97.3		P	50 - 175
2353608	GFD-qPCR	73.7		P	50 - 175
2353925	GFD-qPCR	95.3		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P418689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352450	BacR-qPCR	69.0		P	50 - 175
2352451	BacR-qPCR	68.9		P	50 - 175
2352469	BacR-qPCR	79.4	78.3	P/P	50 - 175
2352503	BacR-qPCR	75.2		P	50 - 175
2352686	BacR-qPCR	59.4		P	50 - 175
2352890	BacR-qPCR	67.1		P	50 - 175
2352970	BacR-qPCR	69.8		P	50 - 175
2353376	BacR-qPCR	54.1		P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P418689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2353607	BacR-qPCR	80.9		P	50 - 175
2353608	BacR-qPCR	74.8		P	50 - 175
2353656	BacR-qPCR	73.2		P	50 - 175
2353925	BacR-qPCR	84.2		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P418689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352450	DG3-qPCR	93.2		P	50 - 175
2352451	DG3-qPCR	91.5		P	50 - 175
2352469	DG3-qPCR	86.7	90.5	P/P	50 - 175
2352503	DG3-qPCR	92.8		P	50 - 175
2352686	DG3-qPCR	71.7		P	50 - 175
2352890	DG3-qPCR	90.9		P	50 - 175
2352970	DG3-qPCR	81.1		P	50 - 175
2353376	DG3-qPCR	72.5		P	50 - 175
2353607	DG3-qPCR	91.8		P	50 - 175
2353608	DG3-qPCR	92.0		P	50 - 175
2353656	DG3-qPCR	75.6		P	50 - 175
2353925	DG3-qPCR	92.3		P	50 - 175

Quality Assurance Report
Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P419126

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352446	Chlorophyll-a, Corrected	31.2	Sample	F	0 - 25
2352446	Chlorophyll-a, Uncorrected	28.0	Sample	F	0 - 25
2352446	Phaeophytin-a	19.8	Sample	P	0 - 25

Reference Method: SM 9223 B Quanti-Tray
Batch ID: P418790

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352256	Escherichia Coli-Quanti-Tray	0.0	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
Batch ID: P418689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352469	HF183-qPCR	8.15	Spike	P	0 - 25

Quality Assurance Report
Precision

Reference Method: SOP-PCR-1.2
Batch ID: P418689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352469	GULL2-qPCR	8.73	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P418689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352469	GFD-qPCR	1.28	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P418689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352469	BacR-qPCR	1.40	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P418689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352469	DG3-qPCR	4.28	Spike	P	0 - 25

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2352503
Field Sample ID: G1TLHR0149

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	96.1	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	110	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	95.6	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	82.7	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	105	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	104			31.2	
	Chlorophyll-a, Uncorrected				28.0	
	Phaeophytin-a				19.8	
SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray				0.0	
SOP-PCR-1.0	HF183-qPCR	91.7 76.8	78.5 78.8 94.1 86.8			8.15

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision		
				LCS	SMP	MS
SOP-PCR-1.2	GULL2-qPCR	101 95.2	75.8 79.8 74.1 80.9			8.73
SOP-PCR-1.3	GFD-qPCR	105 94.9	97.5 102 94.9 96.2			1.28
SOP-PCR-1.4	BacR-qPCR	82.2 95.5	69.0 68.9 79.4 78.3			1.40
SOP-PCR-1.5	DG3-qPCR	84.6 105	93.2 91.5 86.7 90.5			4.28

Reference Method Descriptions

Method	Description	Associated Samples
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2352501
SM 9223 B Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2352502
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2352503
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2352503
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2352503
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2352503
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2352503

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	08/25/2022	08/25/2022 15:20	Tynan A Branch	09/01/2022 16:04	Carina A. Tull	2352501
SM 9223 B Quanti-Tray	08/25/2022	08/25/2022 16:31	Austin Nolan	08/26/2022 10:41	Austin Nolan	2352502
SOP-PCR-1.0	08/25/2022	08/25/2022 14:35	Claudia Castro	09/29/2022 09:36	DeAsia Armster	2352503
SOP-PCR-1.2	08/25/2022	08/25/2022 14:35	Claudia Castro	09/30/2022 14:48	Roberta Tatti	2352503
SOP-PCR-1.3	08/25/2022	08/25/2022 14:35	Claudia Castro	10/03/2022 14:41	Roberta Tatti	2352503
SOP-PCR-1.4	08/25/2022	08/25/2022 14:35	Claudia Castro	09/29/2022 14:24	Roberta Tatti	2352503
SOP-PCR-1.5	08/25/2022	08/25/2022 14:35	Claudia Castro	09/30/2022 10:35	DeAsia Armster	2352503