

Biological Analysis Report

TLH-ROC-2022-06-01-01

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

Event Description: **Run 18**
Request ID: **RQ-2022-04-25-45**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
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Certified by: Puja Jasrotia, Environmental Administrator

Date Certified: 13-JUL-2022 10:44

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: Lewis Creek upstream HWY157

Collection Date/Time: 06/01/2022 08:55

Field ID: G1TLHR0159

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2331163	SM 10200 H (mod.)	Chlorophyll-a, Corrected	8.7		ug/L	P414841	
		Phaeophytin-a	4.8		ug/L	P414841	RPD
		Chlorophyll-a, Uncorrected	12		ug/L	P414841	
2331166	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	30.5		MPN/100 mL	P414720	

Sample Location: Beaver Creek

Collection Date/Time: 06/01/2022 10:15

Field ID: G1TLHR0165

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2331164	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.89	U	ug/L	P414841	
		Phaeophytin-a	0.98	U	ug/L	P414841	RPD
		Chlorophyll-a, Uncorrected	0.65	U	ug/L	P414841	
2331167	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	2419.6	J	MPN/100 mL	P414720	
2331171	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P414487	
	SOP-PCR-1.2	GULL2-qPCR**	3.6E+03	U	TSC/100 mL	P414487	
	SOP-PCR-1.3	GFD-qPCR**	720	U	TSC/100 mL	P414487	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P414487	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P414487	

Ref. Method and Comment:

SM 9223 B Quanti-Tray: All Quanti-Tray wells were positive. Result may be higher than reported.

Sample Location: Willacoochee Creek upstream Milligan Rd

Collection Date/Time: 06/01/2022 09:40

Field ID: G1TLHR0157

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2331165	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	866.4		MPN/100 mL	P414720	
2331170	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P414487	
	SOP-PCR-1.2	GULL2-qPCR**	3.6E+03	U	TSC/100 mL	P414487	
	SOP-PCR-1.3	GFD-qPCR**	920	I	TSC/100 mL	P414487	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	UJ	TSC/100 mL	P414487	MS
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P414487	

Ref. Method and Comment:

SOP-PCR-1.4: Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: Quincy Creek upstream Ralph Strang Rd

Collection Date/Time: 06/01/2022 11:10

Field ID: G1TLHR0163

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2331169	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	209.8		MPN/100 mL	P414720	

Sample Location: Richlander Creek upstream Hwy65B

Collection Date/Time: 06/01/2022 11:50

Field ID: G1TLHR0162

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2331168	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	2723.0		MPN/100 mL	P414720	
2331172	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P414487	

Field ID: G1TLHR0162

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2331172	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	U	TSC/100 mL	P414487	
	SOP-PCR-1.3	GFD-qPCR**	360	U	TSC/100 mL	P414487	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P414487	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P414487	

Quality Assurance Report
Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P414841

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.89	U	ug/L
Chlorophyll-a, Uncorrected	0.65	U	ug/L
Phaeophytin-a	0.98	U	ug/L

Reference Method: SM 9223 B Quanti-Tray
Batch ID: P414720

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

Reference Method: SOP-PCR-1.0
Batch ID: P414487

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

Reference Method: SOP-PCR-1.2
Batch ID: P414487

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

Reference Method: SOP-PCR-1.3
Batch ID: P414487

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

Reference Method: SOP-PCR-1.4
Batch ID: P414487

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

Reference Method: SOP-PCR-1.5
Batch ID: P414487

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P414841

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	88.6		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P414487

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	125	93.4	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P414487

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	107	92.8	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P414487

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	93.6	100	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P414487

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	87.8	73.1	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P414487

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	75.0	64.9	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P414487

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330531	HF183-qPCR	75.8		P	50 - 175
2330532	HF183-qPCR	103	109	P/P	50 - 175
2330711	HF183-qPCR	118		P	50 - 175
2330712	HF183-qPCR	97.7		P	50 - 175
2330713	HF183-qPCR	101		P	50 - 175
2330832	HF183-qPCR	92.0		P	50 - 175
2330833	HF183-qPCR	116		P	50 - 175
2331170	HF183-qPCR	97.4		P	50 - 175
2331171	HF183-qPCR	115		P	50 - 175
2331172	HF183-qPCR	116		P	50 - 175
2331314	HF183-qPCR	122		P	50 - 175
2331405	HF183-qPCR	109		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2

Batch ID: P414487

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330531	GULL2-qPCR	88.7	84.1	P	50 - 300
2330532	GULL2-qPCR	86.5		P/P	50 - 300
2330711	GULL2-qPCR	85.7		P	50 - 300
2330712	GULL2-qPCR	68.9		P	50 - 300
2330713	GULL2-qPCR	73.8		P	50 - 300
2330832	GULL2-qPCR	80.0		P	50 - 300
2330833	GULL2-qPCR	69.0		P	50 - 300
2331170	GULL2-qPCR	60.9		P	50 - 300
2331171	GULL2-qPCR	82.0		P	50 - 300
2331172	GULL2-qPCR	90.7		P	50 - 300
2331314	GULL2-qPCR	101		P	50 - 300
2331405	GULL2-qPCR	74.0		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P414487

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330531	GFD-qPCR	92.7	89.3	P	50 - 175
2330532	GFD-qPCR	95.2		P/P	50 - 175
2330832	GFD-qPCR	92.7		P	50 - 175
2330833	GFD-qPCR	92.4		P	50 - 175
2331170	GFD-qPCR	86.3		P	50 - 175
2331171	GFD-qPCR	97.7		P	50 - 175
2331172	GFD-qPCR	88.6		P	50 - 175
2331314	GFD-qPCR	91.3		P	50 - 175
2331405	GFD-qPCR	88.0		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P414487

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330531	BacR-qPCR	62.1	54.0	P	50 - 175
2330532	BacR-qPCR	51.8		P/P	50 - 175
2330711	BacR-qPCR	65.6		P	50 - 175
2330712	BacR-qPCR	57.0		P	50 - 175
2330713	BacR-qPCR	59.3		P	50 - 175
2330832	BacR-qPCR	64.0		P	50 - 175
2330833	BacR-qPCR	59.2		P	50 - 175
2331170	BacR-qPCR	36.0		F	50 - 175
2331171	BacR-qPCR	52.9		P	50 - 175
2331172	BacR-qPCR	67.9		P	50 - 175
2331314	BacR-qPCR	73.1		P	50 - 175
2331405	BacR-qPCR	123		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P414487

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330531	DG3-qPCR	65.0	61.5	P	50 - 175
2330532	DG3-qPCR	56.6		P/P	50 - 175
2330711	DG3-qPCR	63.2		P	50 - 175
2330712	DG3-qPCR	58.8		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P414487

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2330713	DG3-qPCR	64.5		P	50 - 175
2330832	DG3-qPCR	68.8		P	50 - 175
2330833	DG3-qPCR	61.3		P	50 - 175
2331170	DG3-qPCR	51.1		P	50 - 175
2331171	DG3-qPCR	64.2		P	50 - 175
2331172	DG3-qPCR	66.1		P	50 - 175
2331314	DG3-qPCR	68.7		P	50 - 175
2331405	DG3-qPCR	61.4		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P414841

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2331143	Chlorophyll-a, Corrected	20.1	Sample	P	0 - 25
2331143	Chlorophyll-a, Uncorrected	21.1	Sample	P	0 - 25
2331143	Phaeophytin-a	29.2	Sample	F	0 - 25

Reference Method: SM 9223 B Quanti-Tray
Batch ID: P414720

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2331120	Escherichia Coli-Quanti-Tray	40.0	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
Batch ID: P414487

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330532	HF183-qPCR	5.68	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P414487

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330532	GULL2-qPCR	2.75	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P414487

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330532	GFD-qPCR	6.30	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.4
Batch ID: P414487

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330532	BacR-qPCR	4.12	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P414487

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2330532	DG3-qPCR	8.31	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2331170
Field Sample ID: G1TLHR0157

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	64.6	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	102	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	76.3	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	78.6	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	75.9	P	50 - 300

Lab Sample ID: 2331171
Field Sample ID: G1TLHR0165

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	112	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	113	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	109	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	115	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	102	P	50 - 300

Lab Sample ID: 2331172
Field Sample ID: G1TLHR0162

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	61.0	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	56.0	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	57.2	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	57.6	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	53.7	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision
				LCS SMP MS

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision	MS
								SMP	
SM 10200 H (mod.)	Chlorophyll-a, Corrected	88.6						20.1	
	Chlorophyll-a, Uncorrected							21.1	
	Phaeophytin-a							29.2	
SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray							40.0	
SOP-PCR-1.0	HF183-qPCR	93.4	125	75.8	103	109			5.68
SOP-PCR-1.2	GULL2-qPCR	92.8	107	88.7	86.5	84.1			2.75
SOP-PCR-1.3	GFD-qPCR	100	93.6	92.7	95.2	89.3			6.30
SOP-PCR-1.4	BacR-qPCR	73.1	87.8	62.1	51.8	54.0			4.12
SOP-PCR-1.5	DG3-qPCR	64.9	75.0	65.0	56.6	61.5			8.31
				63.2					

Reference Method Descriptions

Method	Description	Associated Samples
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2331163, 2331164
SM 9223 B Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2331165, 2331166, 2331167, 2331168, 2331169
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2331170, 2331171, 2331172
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2331170, 2331171, 2331172
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2331170, 2331171, 2331172
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2331170, 2331171, 2331172
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2331170, 2331171, 2331172

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	06/01/2022	06/01/2022 15:36	Tynan A Branch	06/07/2022 09:47	Joel Wharton	2331163, 2331164
SM 9223 B Quanti-Tray	06/01/2022	06/01/2022 16:04	Caitlyn Owens	06/02/2022 10:06	Caitlyn Owens	2331165, 2331166, 2331167, 2331168, 2331169
SOP-PCR-1.0	06/01/2022	06/02/2022 13:20	Claudia Castro	06/21/2022 15:14	Jennifer Mihalic	2331170, 2331171, 2331172
SOP-PCR-1.2	06/01/2022	06/02/2022 13:20	Claudia Castro	06/29/2022 13:32	Roberta Tatti	2331170, 2331171, 2331172
SOP-PCR-1.3	06/01/2022	06/02/2022 13:20	Claudia Castro	06/30/2022 09:50	Roberta Tatti	2331170, 2331171, 2331172
SOP-PCR-1.4	06/01/2022	06/02/2022 13:20	Claudia Castro	06/29/2022 10:37	DeAsia Armster	2331170, 2331171, 2331172
SOP-PCR-1.5	06/01/2022	06/02/2022 13:20	Claudia Castro	06/29/2022 09:02	DeAsia Armster	2331170, 2331171, 2331172