Biological Analysis Report

NW-DIST-2022-02-24-01

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

Overflow Analyses Performed By:
University of West Florida
11000 University Parkway
Pensacola, FL 32514
DOH Accreditation E71969

Event Description: **Western Lake Run**
Request ID: **RQ-2022-02-14-57**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 208
Pensacola, FL 32502-5794
Attn: Myranda K Butler

For additional information please contact
Cheryl Swanson - Administrator
Sarah Menz, Ph.D. - Bench Biology & Aquatic Toxicity
Puja Jasrotia, Ph.D. - Molecular Biology & Taxonomy
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Sarah Menz, Environmental Administrator

Date Certified: 08-APR-2022 10:55

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, Molecular and Overflow.

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: Pond Creek West of Headwaters of Blackwater Bay **Collection Date/Time: 02/23/2022 11:15**

Field ID: G4NW0277 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2307878	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	231		MPN/100 mL		
2307879	SOP-PCR-1.0	HF183-qPCR**	1.1E+03	UJ	TSC/100 mL	P410240	SUR
	SOP-PCR-1.2	GULL2-qPCR**	1.2E+03	U	TSC/100 mL	P410240	
	SOP-PCR-1.3	GFD-qPCR**	240	U	TSC/100 mL	P410240	
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	UJ	TSC/100 mL	P410240	MS
	SOP-PCR-1.5	DG3-qPCR**	860	U	TSC/100 mL	P410240	LCS

Ref. Method and Comment:
SOP-PCR-1.0: Refer to the Lab Analysis Report for an explanation of QC Codes.
SOP-PCR-1.4: Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: Locklin Lake Center **Collection Date/Time: 02/23/2022 12:20**

Field ID: G4NW0437 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2307877	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.0		ug/L	P410830	
		Phaeophytin-a	6.1		ug/L	P410830	
		Chlorophyll-a, Uncorrected	10		ug/L	P410830	

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: P410830

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: SOP-PCR-1.0
Batch ID: P410240

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

Reference Method: SOP-PCR-1.2
Batch ID: P410240

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

Reference Method: SOP-PCR-1.3
Batch ID: P410240

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

Quality Assurance Report
Method Blank Results

Reference Method: SOP-PCR-1.4
Batch ID: P410240

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

Reference Method: SOP-PCR-1.5
Batch ID: P410240

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: P410830

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	98.1		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P410240

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	90.2	74.3	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P410240

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	97.6	60.2	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P410240

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	93.8	55.9	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P410240

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	51.0	75.4	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P410240

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	63.3	42.3	P/F	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P410240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2307578	HF183-qPCR	83.1	79.4	P/P	50 - 175
2307694	HF183-qPCR	88.6		P	50 - 175
2307695	HF183-qPCR	75.0		P	50 - 175
2307696	HF183-qPCR	92.2		P	50 - 175
2307762	HF183-qPCR	65.1		P	50 - 175
2307879	HF183-qPCR	71.6		P	50 - 175
2308358	HF183-qPCR	75.7		P	50 - 175
2308359	HF183-qPCR	78.7		P	50 - 175
2308815	HF183-qPCR	72.2		P	50 - 175
2308885	HF183-qPCR	91.0		P	50 - 175
2310127	HF183-qPCR	74.9		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P410240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2307578	GULL2-qPCR	86.5	90.7	P/P	50 - 300
2307694	GULL2-qPCR	81.5		P	50 - 300
2307695	GULL2-qPCR	75.9		P	50 - 300
2307696	GULL2-qPCR	90.7		P	50 - 300
2307879	GULL2-qPCR	72.5		P	50 - 300
2308358	GULL2-qPCR	77.7		P	50 - 300
2308359	GULL2-qPCR	92.1		P	50 - 300
2308815	GULL2-qPCR	89.3		P	50 - 300
2308885	GULL2-qPCR	94.0		P	50 - 300
2310127	GULL2-qPCR	96.0		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P410240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2307578	GFD-qPCR	86.5	86.8	P/P	50 - 175
2307694	GFD-qPCR	90.1		P	50 - 175
2307695	GFD-qPCR	91.5		P	50 - 175
2307696	GFD-qPCR	93.0		P	50 - 175
2307762	GFD-qPCR	91.5		P	50 - 175
2307879	GFD-qPCR	85.0		P	50 - 175
2308358	GFD-qPCR	81.5		P	50 - 175
2308359	GFD-qPCR	88.8		P	50 - 175
2308815	GFD-qPCR	91.6		P	50 - 175
2308885	GFD-qPCR	91.8		P	50 - 175
2310127	GFD-qPCR	88.3		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P410240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2307578	BacR-qPCR	58.2	62.8	P/P	50 - 175
2307762	BacR-qPCR	34.4		F	50 - 175
2307879	BacR-qPCR	39.7		F	50 - 175
2308358	BacR-qPCR	52.7		P	50 - 175
2308359	BacR-qPCR	50.6		P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P410240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2308815	BacR-qPCR	60.2		P	50 - 175
2308885	BacR-qPCR	69.8		P	50 - 175
2310127	BacR-qPCR	64.7		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P410240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2307578	DG3-qPCR	72.6	73.1	P/P	50 - 175
2307694	DG3-qPCR	62.7		P	50 - 175
2307695	DG3-qPCR	61.4		P	50 - 175
2307696	DG3-qPCR	70.2		P	50 - 175
2307879	DG3-qPCR	58.8		P	50 - 175
2308358	DG3-qPCR	67.9		P	50 - 175
2308359	DG3-qPCR	69.4		P	50 - 175
2308815	DG3-qPCR	73.9		P	50 - 175
2308885	DG3-qPCR	81.7		P	50 - 175
2310127	DG3-qPCR	74.7		P	50 - 175

Quality Assurance Report
Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P410830

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2308002	Chlorophyll-a, Corrected	7.18	Sample	P	0 - 25
2308002	Chlorophyll-a, Uncorrected	5.23	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P410240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2307578	HF183-qPCR	4.57	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P410240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2307578	GULL2-qPCR	4.77	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P410240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2307578	GFD-qPCR	0.327	Spike	P	0 - 25

Quality Assurance Report
Precision

Reference Method: SOP-PCR-1.4
Batch ID: P410240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2307578	BacR-qPCR	7.68	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P410240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2307578	DG3-qPCR	0.737	Spike	P	0 - 25

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2307879
Field Sample ID: G4NW0277

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	44.8	F	50 - 300
SOP-PCR-1.2	SKETA-qPCR	83.6	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	72.6	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	60.0	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	55.8	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	98.1			7.18	
	Chlorophyll-a, Uncorrected				5.23	
SOP-PCR-1.0	HF183-qPCR	74.3 90.2	88.6 75.0 92.2 83.1			4.57
SOP-PCR-1.2	GULL2-qPCR	60.2 97.6	81.5 75.9 90.7 86.5			4.77
SOP-PCR-1.3	GFD-qPCR	55.9 93.8	90.1 91.5 93.0 86.5			0.327
SOP-PCR-1.4	BacR-qPCR	75.4 51.0	58.2 62.8 34.4 39.7			7.68
SOP-PCR-1.5	DG3-qPCR	42.3 63.3	62.7 61.4 70.2 72.6			0.737

Reference Method Descriptions

Method	Description	Associated Samples
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2307877
SM 9223 B Quanti-Tray	E. coli by Colilert-18/QT by UWF in Pensacola	2307878

Reference Method Descriptions

Method	Description	Associated Samples
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2307879
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2307879
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2307879
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2307879
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2307879

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	02/24/2022	02/24/2022 15:08	Jillian G Hanley	03/02/2022 09:05	Ethan Wickline	2307877
SM 9223 B Quanti-Tray	02/23/2022	02/23/2022 15:15		02/24/2022 11:34	UWF Lab	2307878
SOP-PCR-1.0	02/24/2022	02/24/2022 14:20	Luke Hudson	04/01/2022 12:35	DeAsia Armster	2307879
SOP-PCR-1.2	02/24/2022	02/24/2022 14:20	Luke Hudson	04/06/2022 09:33	DeAsia Armster	2307879
SOP-PCR-1.3	02/24/2022	02/24/2022 14:20	Luke Hudson	04/06/2022 10:40	DeAsia Armster	2307879
SOP-PCR-1.4	02/24/2022	02/24/2022 14:20	Luke Hudson	04/05/2022 09:18	DeAsia Armster	2307879
SOP-PCR-1.5	02/24/2022	02/24/2022 14:20	Luke Hudson	04/05/2022 10:52	DeAsia Armster	2307879