Biological Analysis Report

NW-DIST-2021-03-24-01

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: **Santa Rosa Run**
Request ID: **RQ-2021-03-22-39**
Customer: **NW-DIST**
Project ID: **SMP**

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

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Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 23-APR-2021 13:01

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: Discharge from Tiger Point Golf Course at Maplewood Drive **Collection Date/Time: 03/23/2021 10:40**

Field ID: G4NW0211 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2233483	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.0		ug/L	P395685	
		Phaeophytin-a	3.2		ug/L	P395685	
		Chlorophyll-a, Uncorrected	8.1		ug/L	P395685	
2233495	Enterolert/QT	Enterococci-Quanti-Tray	1223		MPN/100 mL		
2233499	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P395427	
	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	UJ	TSC/100 mL	P395427	MS
	SOP-PCR-1.3	GFD-qPCR**	880	I	TSC/100 mL	P395427	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P395427	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P395427	

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-1.2: Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: Williams Creek upstream of Hwy 98 **Collection Date/Time: 03/23/2021 12:30**

Field ID: G4NW0531 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2233484	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.5	I	ug/L	P395685	
		Phaeophytin-a	0.90	U	ug/L	P395685	
		Chlorophyll-a, Uncorrected	2.1		ug/L	P395685	
2233496	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	31		MPN/100 mL		

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: Dean Creek, West Head at Natalie Lane **Collection Date/Time: 03/23/2021 12:00**

Field ID: G4NW0278 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2233497	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	350		MPN/100 mL		

Sample Location: Tom King Creek **Collection Date/Time: 03/23/2021 11:35**

Field ID: G4NW0193 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2233498	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	121		MPN/100 mL		

Quality Assurance Report
Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P395685

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: SOP-PCR-1.0
Batch ID: P395427

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

Reference Method: SOP-PCR-1.2
Batch ID: P395427

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

Reference Method: SOP-PCR-1.3
Batch ID: P395427

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

Reference Method: SOP-PCR-1.4
Batch ID: P395427

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

Reference Method: SOP-PCR-1.5
Batch ID: P395427

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: P395685

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	92.4		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P395427

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	95.5	99.1	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P395427

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	87.3	89.3	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P395427

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P395427

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	84.6	93.0	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P395427

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	90.4	92.5	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P395427

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	86.4	94.6	P/P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P395427

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2233396	HF183-qPCR	92.0	101	P/P	50 - 175
2233397	HF183-qPCR	87.3		P	50 - 175
2233398	HF183-qPCR	87.7		P	50 - 175
2233399	HF183-qPCR	94.5		P	50 - 175
2233400	HF183-qPCR	96.7		P	50 - 175
2233499	HF183-qPCR	77.5		P	50 - 175
2233628	HF183-qPCR	98.4		P	50 - 175
2233652	HF183-qPCR	87.1		P	50 - 175
2234082	HF183-qPCR	94.1		P	50 - 175
2234083	HF183-qPCR	91.0		P	50 - 175
2234084	HF183-qPCR	93.5		P	50 - 175
2234085	HF183-qPCR	99.4		P	50 - 175
2234086	HF183-qPCR	98.5		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P395427

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2233396	GULL2-qPCR	81.5	88.1	P/P	50 - 300
2233397	GULL2-qPCR	72.6		P	50 - 300
2233399	GULL2-qPCR	69.9		P	50 - 300
2233400	GULL2-qPCR	69.0		P	50 - 300
2233499	GULL2-qPCR	40.2		F	50 - 300
2233628	GULL2-qPCR	91.3		P	50 - 300
2234082	GULL2-qPCR	69.8		P	50 - 300
2234083	GULL2-qPCR	69.7		P	50 - 300
2234084	GULL2-qPCR	88.2		P	50 - 300
2234085	GULL2-qPCR	86.1		P	50 - 300
2234086	GULL2-qPCR	86.4		P	50 - 300

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P395427

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2233396	GFD-qPCR	90.3	86.5	P/P	50 - 175
2233397	GFD-qPCR	103		P	50 - 175
2233399	GFD-qPCR	100		P	50 - 175
2233400	GFD-qPCR	86.2		P	50 - 175
2233499	GFD-qPCR	88.5		P	50 - 175
2233628	GFD-qPCR	96.1		P	50 - 175
2234082	GFD-qPCR	93.8		P	50 - 175
2234083	GFD-qPCR	98.7		P	50 - 175
2234084	GFD-qPCR	87.8		P	50 - 175
2234085	GFD-qPCR	87.9		P	50 - 175
2234086	GFD-qPCR	92.2		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P395427

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2233396	BacR-qPCR	83.0	76.5	P/P	50 - 175
2233397	BacR-qPCR	76.5		P	50 - 175
2233398	BacR-qPCR	83.8		P	50 - 175
2233399	BacR-qPCR	72.1		P	50 - 175
2233400	BacR-qPCR	75.5		P	50 - 175
2233499	BacR-qPCR	57.6		P	50 - 175
2233628	BacR-qPCR	87.5		P	50 - 175
2233652	BacR-qPCR	75.7		P	50 - 175
2234082	BacR-qPCR	77.2		P	50 - 175
2234083	BacR-qPCR	85.5		P	50 - 175
2234084	BacR-qPCR	81.3		P	50 - 175
2234085	BacR-qPCR	70.0		P	50 - 175
2234086	BacR-qPCR	78.3		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P395427

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2233396	DG3-qPCR	93.7	93.8	P/P	50 - 175
2233397	DG3-qPCR	94.3		P	50 - 175
2233398	DG3-qPCR	85.6		P	50 - 175
2233399	DG3-qPCR	90.1		P	50 - 175
2233400	DG3-qPCR	89.3		P	50 - 175
2233499	DG3-qPCR	72.4		P	50 - 175
2233628	DG3-qPCR	93.3		P	50 - 175
2233652	DG3-qPCR	83.9		P	50 - 175
2234082	DG3-qPCR	87.2		P	50 - 175
2234083	DG3-qPCR	85.2		P	50 - 175
2234084	DG3-qPCR	89.3		P	50 - 175
2234085	DG3-qPCR	86.6		P	50 - 175
2234086	DG3-qPCR	88.2		P	50 - 175

Quality Assurance Report
Precision

Quality Assurance Report
Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P395685

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2233320	Chlorophyll-a, Corrected	2.29	Sample	P	0 - 25
2233320	Chlorophyll-a, Uncorrected	3.05	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P395427

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2233396	HF183-qPCR	9.62	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P395427

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2233396	GULL2-qPCR	7.71	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P395427

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2233396	GFD-qPCR	4.35	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P395427

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2233396	BacR-qPCR	8.14	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P395427

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2233396	DG3-qPCR	0.0886	Spike	P	0 - 25

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2233499
Field Sample ID: G4NW0211

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	67.9	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	62.0	P	50 - 300

Quality Assurance Report
Surrogates

Lab Sample ID: 2233499
Field Sample ID: G4NW0211

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.3	SKETA-qPCR	63.0	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	74.4	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	62.9	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	92.4			2.29	
	Chlorophyll-a, Uncorrected				3.05	
SOP-PCR-1.0	HF183-qPCR	99.1 95.5	92.0 101 87.3 87.7			9.62
SOP-PCR-1.2	GULL2-qPCR	89.3 87.3	81.5 88.1 72.6 69.9			7.71
SOP-PCR-1.3	GFD-qPCR	93.0 84.6	90.3 86.5 103 100			4.35
SOP-PCR-1.4	BacR-qPCR	92.5 90.4	83.0 76.5 76.5 83.8			8.14
SOP-PCR-1.5	DG3-qPCR	94.6 86.4	93.7 93.8 94.3 85.6			0.0886

Reference Method Descriptions

Method	Description	Associated Samples
Enterolert/QT	Enterococci by Enterolert/QT by UWF in Pensacola	2233495
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2233483, 2233484
SM 9223 B Quanti-Tray	E. coli by Colilert-18/QT by UWF in Pensacola	2233496, 2233497, 2233498
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2233499
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2233499
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2233499
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2233499
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2233499

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	03/23/2021	03/23/2021 15:15		03/24/2021 15:40	UWF Lab	2233495
SM 10200 H (mod.)	03/24/2021	03/24/2021 12:25	Yuliya Danyuk	03/30/2021 09:06	Yuliya Danyuk	2233483, 2233484
SM 9223 B Quanti-Tray	03/23/2021	03/23/2021 16:10		03/24/2021 12:20	UWF Lab	2233496, 2233497, 2233498
SOP-PCR-1.0	03/24/2021	03/24/2021 13:15	DeAsia Armster	03/30/2021 12:15	Mailin Lopez	2233499
SOP-PCR-1.2	03/24/2021	03/24/2021 13:15	DeAsia Armster	04/05/2021 12:20	Mailin Lopez	2233499
SOP-PCR-1.3	03/24/2021	03/24/2021 13:15	DeAsia Armster	04/01/2021 10:28	Mailin Lopez	2233499
SOP-PCR-1.4	03/24/2021	03/24/2021 13:15	DeAsia Armster	03/31/2021 08:26	Mailin Lopez	2233499
SOP-PCR-1.5	03/24/2021	03/24/2021 13:15	DeAsia Armster	03/31/2021 09:08	Mailin Lopez	2233499