

Biological Analysis Report

NW-DIST-2020-03-19-02

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

Event Description: **Wrights Creek (TREND)**
Request ID: **RQ-2020-03-16-20**
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

For additional information please contact
Cheryl Swanson - Administrator
Jacqueline Savage - Microbiology
Diane Power - Bench Biology
Jacqueline Savage - Aquatic Toxicology
Puja Jasrotia, Ph.D. - Molecular Biology
Amelia Rankin - Taxonomy (Invertebrate & Algal)
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 15-APR-2020 13:05



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 group are included in this report: 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: Wrights Creek above Highway 177A

Collection Date/Time: 03/18/2020 13:30

Field ID: G3NW0444

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2166971	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P380471	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P380471	
	SOP-PCR-1.3	GFD-purified-qPCR**	210	I	TSC/100 mL	P381169	LCS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P380471	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P380471	

Ref. Method and Comment:

SOP-PCR-1.5: Precision data unavailable for Analysis Batch A98392

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0

Batch ID: P380471

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

Reference Method: SOP-PCR-1.2

Batch ID: P380471

Component	Result	Code	Units
GULL2-qPCR	1.7E+04	U	TSC/100 mL

Reference Method: SOP-PCR-1.3

Batch ID: P381169

Component	Result	Code	Units
GFD-purified-qPCR	340	U	TSC/100 mL

Reference Method: SOP-PCR-1.4

Batch ID: P380471

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

Reference Method: SOP-PCR-1.5

Batch ID: P380471

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P380471

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	90.7	111	P/P	50 - 175

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P380471

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	82.9	114	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P381169

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	88.9	13.3	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P380471

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	129	96.6	P/P	50 - 175
BacR-qPCR	129	96.6	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P380471

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	97.6	130	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P380471

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163989	HF183-qPCR	88.6		P	50 - 175
2163990	HF183-qPCR	98.4	113	P/P	50 - 175
2164411	HF183-qPCR	106		P	50 - 175
2164412	HF183-qPCR	106		P	50 - 175
2164759	HF183-qPCR	99.4		P	50 - 175
2164760	HF183-qPCR	90.3		P	50 - 175
2164761	HF183-qPCR	92.1		P	50 - 175
2164762	HF183-qPCR	96.9		P	50 - 175
2164763	HF183-qPCR	95.4		P	50 - 175
2165179	HF183-qPCR	84.7		P	50 - 175
2165180	HF183-qPCR	100		P	50 - 175
2165332	HF183-qPCR	92.7		P	50 - 175
2166971	HF183-qPCR	94.1		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P380471

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163989	GULL2-qPCR	84.4		P	50 - 300
2163990	GULL2-qPCR	87.7	77.2	P/P	50 - 300
2164759	GULL2-qPCR	71.6		P	50 - 300
2164760	GULL2-qPCR	59.7		P	50 - 300
2164761	GULL2-qPCR	71.6		P	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2

Batch ID: P380471

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2164762	GULL2-qPCR	66.5		P	50 - 300
2164763	GULL2-qPCR	70.6		P	50 - 300
2165180	GULL2-qPCR	71.2		P	50 - 300
2165332	GULL2-qPCR	59.1		P	50 - 300
2166971	GULL2-qPCR	74.0		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P381169

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2165180	GFD-purified-qPCR	73.2		P	50 - 175
2165332	GFD-purified-qPCR	88.3		P	50 - 175
2166971	GFD-purified-qPCR	93.9		P	50 - 175
2167645	GFD-purified-qPCR	99.7	90.0	P/P	50 - 175
2167646	GFD-purified-qPCR	95.7		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P380471

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163989	BacR-qPCR	71.9	71.9	P/P	50 - 175
2163990	BacR-qPCR	86.4	86.4	P/P	50 - 175
2163990	BacR-qPCR	84.1	84.1	P/P	50 - 175
2164411	BacR-qPCR	74.3	74.3	P/P	50 - 175
2164412	BacR-qPCR	81.8	81.8	P/P	50 - 175
2164759	BacR-qPCR	71.6	71.6	P/P	50 - 175
2164760	BacR-qPCR	71.6	71.6	P/P	50 - 175
2164761	BacR-qPCR	67.7	67.7	P/P	50 - 175
2164762	BacR-qPCR	77.8	77.8	P/P	50 - 175
2164763	BacR-qPCR	84.6	84.6	P/P	50 - 175
2165179	BacR-qPCR	71.1	71.1	P/P	50 - 175
2165180	BacR-qPCR	77.3	77.3	P/P	50 - 175
2165332	BacR-qPCR	68.6	68.6	P/P	50 - 175
2166971	BacR-qPCR	74.2	74.2	P/P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P380471

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2164411	DG3-qPCR	78.5		P	50 - 175
2164412	DG3-qPCR	92.3		P	50 - 175
2165179	DG3-qPCR	85.1		P	50 - 175
2165180	DG3-qPCR	96.8		P	50 - 175
2165332	DG3-qPCR	100		P	50 - 175
2166971	DG3-qPCR	112		P	50 - 175

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P380471

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163990	HF183-qPCR	13.8	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P380471

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163990	GULL2-qPCR	12.7	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P381169

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2167645	GFD-purified-qPCR	10.2	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P380471

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163990	BacR-qPCR	2.78	Spike	P	0 - 25
2163990	BacR-qPCR	2.78	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2166971
Field Sample ID: G3NW0444

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	82.5	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	99.7	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	88.1	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	88.1	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	80.9	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	111	90.7	88.6	98.4	113		13.8
SOP-PCR-1.2	GULL2-qPCR	114	82.9	84.4	87.7	77.2		12.7
				106				
				71.6				

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery			MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.3	GFD-purified-qPCR	13.3	88.9		73.2	88.3	93.9			10.2
SOP-PCR-1.4	BacR-qPCR	129	96.6	129	71.9	86.4	84.1			2.78
		96.6			74.3					2.78
SOP-PCR-1.5	DG3-qPCR	130	97.6		78.5	92.3	85.1			
					96.8					

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	2166971
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2166971
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2166971
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2166971
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2166971

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SOP-PCR-1.0	03/19/2020	03/19/2020 15:30	Angela Smith	03/23/2020 10:21	Mailin Lopez	2166971
SOP-PCR-1.2	03/19/2020	03/19/2020 15:30	Angela Smith	03/24/2020 12:59	Mailin Lopez	2166971
SOP-PCR-1.3	03/19/2020	03/19/2020 15:30	Mailin Lopez	04/13/2020 08:59	Mailin Lopez	2166971
SOP-PCR-1.4	03/19/2020	03/19/2020 15:30	Angela Smith	03/23/2020 14:46	Mailin Lopez	2166971
SOP-PCR-1.5	03/19/2020	03/19/2020 15:30	Angela Smith	03/24/2020 08:21	Mailin Lopez	2166971