

Biological Analysis Report

NW-DIST-2021-10-12-02

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

Event Description: **Yellow River TREND Run**
Request ID: **RQ-2021-10-11-33**
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

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Certified by: Puja Jasrotia, Environmental Administrator

Date Certified: 16-NOV-2021 09:36

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 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: Yellow River at Oak Grove Boat Ramp

Collection Date/Time: 10/11/2021 12:15

Field ID: G4NW0526

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2282745	SOP-PCR-1.0	HF183-qPCR**	2.2E+03	U	TSC/100 mL	P404723	
	SOP-PCR-1.2	GULL2-qPCR**	2.4E+03	U	TSC/100 mL	P404723	
	SOP-PCR-1.3	GFD-qPCR**	490	I	TSC/100 mL	P404723	
	SOP-PCR-1.4	BacR-qPCR**	2.0E+03	U	TSC/100 mL	P404723	
	SOP-PCR-1.5	DG3-qPCR**	1.7E+03	U	TSC/100 mL	P404723	

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P404723

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

Reference Method: SOP-PCR-1.2
Batch ID: P404723

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

Reference Method: SOP-PCR-1.3
Batch ID: P404723

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

Reference Method: SOP-PCR-1.4
Batch ID: P404723

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

Reference Method: SOP-PCR-1.5
Batch ID: P404723

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: P404723

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	58.9	99.6	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P404723

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.2
 Batch ID: P404723

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	111	105	P/P	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P404723

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	96.3	110	P/P	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P404723

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	92.3	88.1	P/P	50 - 175

Reference Method: SOP-PCR-1.5
 Batch ID: P404723

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	80.8	90.4	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P404723

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2281562	HF183-qPCR	88.0		P	50 - 175
2281563	HF183-qPCR	80.3		P	50 - 175
2281564	HF183-qPCR	76.1		P	50 - 175
2281565	HF183-qPCR	86.8		P	50 - 175
2281566	HF183-qPCR	78.7		P	50 - 175
2281567	HF183-qPCR	81.4		P	50 - 175
2281648	HF183-qPCR	74.3	65.9	P/P	50 - 175
2282162	HF183-qPCR	70.2		P	50 - 175
2282463	HF183-qPCR	64.7		P	50 - 175
2282464	HF183-qPCR	61.3		P	50 - 175
2282651	HF183-qPCR	47.6		F	50 - 175
2282652	HF183-qPCR	73.7		P	50 - 175
2282745	HF183-qPCR	67.0		P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P404723

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2281562	GULL2-qPCR	85.1		P	50 - 300
2281563	GULL2-qPCR	73.5		P	50 - 300
2281564	GULL2-qPCR	65.8		P	50 - 300
2281565	GULL2-qPCR	67.9		P	50 - 300
2281566	GULL2-qPCR	61.3		P	50 - 300
2281567	GULL2-qPCR	70.4		P	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2

Batch ID: P404723

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2281648	GULL2-qPCR	76.7	69.8	P/P	50 - 300
2282162	GULL2-qPCR	72.5		P	50 - 300
2282651	GULL2-qPCR	61.1		P	50 - 300
2282652	GULL2-qPCR	83.3		P	50 - 300
2282745	GULL2-qPCR	69.3		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P404723

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2281562	GFD-qPCR	107		P	50 - 175
2281563	GFD-qPCR	106		P	50 - 175
2281564	GFD-qPCR	94.0		P	50 - 175
2281565	GFD-qPCR	99.1		P	50 - 175
2281566	GFD-qPCR	101		P	50 - 175
2281567	GFD-qPCR	99.3		P	50 - 175
2281648	GFD-qPCR	98.5	97.4	P/P	50 - 175
2282162	GFD-qPCR	97.2		P	50 - 175
2282651	GFD-qPCR	84.5		P	50 - 175
2282652	GFD-qPCR	87.0		P	50 - 175
2282745	GFD-qPCR	89.2		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P404723

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2281562	BacR-qPCR	81.1		P	50 - 175
2281563	BacR-qPCR	82.2		P	50 - 175
2281564	BacR-qPCR	72.3		P	50 - 175
2281565	BacR-qPCR	81.6		P	50 - 175
2281566	BacR-qPCR	76.2		P	50 - 175
2281567	BacR-qPCR	74.7		P	50 - 175
2281648	BacR-qPCR	71.0	70.0	P/P	50 - 175
2282162	BacR-qPCR	71.6		P	50 - 175
2282463	BacR-qPCR	66.8		P	50 - 175
2282464	BacR-qPCR	69.7		P	50 - 175
2282651	BacR-qPCR	67.4		P	50 - 175
2282652	BacR-qPCR	77.8		P	50 - 175
2282745	BacR-qPCR	60.5		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P404723

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2281562	DG3-qPCR	85.4		P	50 - 175
2281563	DG3-qPCR	80.8		P	50 - 175
2281564	DG3-qPCR	78.3		P	50 - 175
2281565	DG3-qPCR	81.8		P	50 - 175
2281566	DG3-qPCR	79.4		P	50 - 175
2281567	DG3-qPCR	82.9		P	50 - 175
2281648	DG3-qPCR	75.8	76.3	P/P	50 - 175
2282162	DG3-qPCR	77.1		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P404723

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2282463	DG3-qPCR	73.9		P	50 - 175
2282464	DG3-qPCR	75.5		P	50 - 175
2282651	DG3-qPCR	68.1		P	50 - 175
2282652	DG3-qPCR	81.7		P	50 - 175
2282745	DG3-qPCR	73.3		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P404723

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2281648	HF183-qPCR	12.1	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P404723

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2281648	GULL2-qPCR	9.31	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P404723

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2281648	GFD-qPCR	1.15	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P404723

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2281648	BacR-qPCR	1.38	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P404723

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2281648	DG3-qPCR	0.722	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Quality Assurance Report Surrogates

Lab Sample ID: 2282745
Field Sample ID: G4NW0526

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	78.1	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	92.4	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	98.2	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	76.3	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	67.9	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	99.6	58.9	88.0	80.3	76.1			12.1
SOP-PCR-1.2	GULL2-qPCR	105	111	85.1	73.5	65.8			9.31
SOP-PCR-1.3	GFD-qPCR	110	96.3	107	106	94.0			1.15
SOP-PCR-1.4	BacR-qPCR	88.1	92.3	81.1	82.2	72.3			1.38
SOP-PCR-1.5	DG3-qPCR	90.4	80.8	85.4	80.8	78.3			0.722

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	2282745
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2282745
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2282745
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2282745
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2282745

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SOP-PCR-1.0	10/12/2021	10/12/2021 13:45	Luke Hudson	10/15/2021 11:31	DeAsia Armster	2282745
SOP-PCR-1.2	10/12/2021	10/12/2021 13:45	Luke Hudson	10/20/2021 09:36	DeAsia Armster	2282745
SOP-PCR-1.3	10/12/2021	10/12/2021 13:45	Luke Hudson	10/20/2021 11:45	Mailin Lopez	2282745
SOP-PCR-1.4	10/12/2021	10/12/2021 13:45	Luke Hudson	10/18/2021 10:58	DeAsia Armster	2282745
SOP-PCR-1.5	10/12/2021	10/12/2021 13:45	Luke Hudson	10/19/2021 09:25	DeAsia Armster	2282745