

Biological Analysis Report

CEN-DIST-2020-08-04-01

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

Event Description: **Boggy Creek**
Request ID: **RQ-2020-08-03-63**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 26-AUG-2020 12:11



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: 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: Boggy Creek @ 80m SE J Lawson Blvd

Collection Date/Time: 08/03/2020 11:07

Field ID: G4CE0181

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2188148	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	216.1	AQ	MPN/100 mL	P385768	
2188149	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P385394	
	SOP-PCR-1.2	GULL2-qPCR**	5.6E+03	U	TSC/100 mL	P385394	
	SOP-PCR-1.3	GFD-purified-qPCR**	110	U	TSC/100 mL	P386065	LCS
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P385394	
	SOP-PCR-1.5	DG3-qPCR**	860	U	TSC/100 mL	P385394	

Quality Assurance Report Method Blank Results

Reference Method: SM 9223 Quanti-Tray
Batch ID: P385768

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

Reference Method: SOP-PCR-1.0
Batch ID: P385394

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

Reference Method: SOP-PCR-1.2
Batch ID: P385394

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

Reference Method: SOP-PCR-1.3
Batch ID: P386065

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

Reference Method: SOP-PCR-1.4
Batch ID: P385394

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

Reference Method: SOP-PCR-1.5
Batch ID: P385394

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: SOP-PCR-1.0
Batch ID: P385394

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	107	110	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P385394

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	88.2	90.4	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P386065

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	87.7	9.72	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P385394

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	98.0	107	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P385394

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	91.1	114	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P385394

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187213	HF183-qPCR	103	92.7	P/P	50 - 175
2187214	HF183-qPCR	100		P	50 - 175
2187678	HF183-qPCR	94.2		P	50 - 175
2188149	HF183-qPCR	98.7		P	50 - 175
2188152	HF183-qPCR	92.5		P	50 - 175
2188153	HF183-qPCR	90.1		P	50 - 175
2188154	HF183-qPCR	87.4		P	50 - 175
2188155	HF183-qPCR	86.7		P	50 - 175
2188419	HF183-qPCR	104		P	50 - 175
2188511	HF183-qPCR	98.5		P	50 - 175
2189035	HF183-qPCR	98.3		P	50 - 175
2189053	HF183-qPCR	104		P	50 - 175
2189480	HF183-qPCR	90.8		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P385394

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

Reference Method: SOP-PCR-1.2

Batch ID: P385394

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187213	GULL2-qPCR	85.3	82.5	P/P	50 - 300
2187214	GULL2-qPCR	88.3		P	50 - 300
2187678	GULL2-qPCR	66.8		P	50 - 300
2188149	GULL2-qPCR	64.1		P	50 - 300
2188152	GULL2-qPCR	61.6		P	50 - 300
2188155	GULL2-qPCR	59.6		P	50 - 300
2188419	GULL2-qPCR	75.2		P	50 - 300
2188511	GULL2-qPCR	64.7		P	50 - 300
2189035	GULL2-qPCR	64.2		P	50 - 300
2189053	GULL2-qPCR	69.6		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P386065

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187213	GFD-purified-qPCR	112	114	P/P	50 - 175
2187214	GFD-purified-qPCR	116		P	50 - 175
2187678	GFD-purified-qPCR	71.5		P	50 - 175
2188149	GFD-purified-qPCR	124		P	50 - 175
2188152	GFD-purified-qPCR	115		P	50 - 175
2188155	GFD-purified-qPCR	92.9		P	50 - 175
2188419	GFD-purified-qPCR	109		P	50 - 175
2188511	GFD-purified-qPCR	110		P	50 - 175
2189035	GFD-purified-qPCR	89.3		P	50 - 175
2189053	GFD-purified-qPCR	89.0		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P385394

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187213	BacR-qPCR	80.5	84.0	P/P	50 - 175
2187214	BacR-qPCR	94.5		P	50 - 175
2187678	BacR-qPCR	64.4		P	50 - 175
2188149	BacR-qPCR	72.5		P	50 - 175
2188152	BacR-qPCR	86.7		P	50 - 175
2188153	BacR-qPCR	90.7		P	50 - 175
2188154	BacR-qPCR	72.8		P	50 - 175
2188155	BacR-qPCR	73.6		P	50 - 175
2188419	BacR-qPCR	79.1		P	50 - 175
2188511	BacR-qPCR	83.8		P	50 - 175
2189035	BacR-qPCR	78.9		P	50 - 175
2189053	BacR-qPCR	89.2		P	50 - 175
2189480	BacR-qPCR	78.5		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P385394

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187213	DG3-qPCR	84.9	86.6	P/P	50 - 175
2187214	DG3-qPCR	83.5		P	50 - 175
2187678	DG3-qPCR	90.0		P	50 - 175
2188149	DG3-qPCR	88.8		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P385394

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2188152	DG3-qPCR	93.0		P	50 - 175
2188153	DG3-qPCR	82.7		P	50 - 175
2188154	DG3-qPCR	83.9		P	50 - 175
2188155	DG3-qPCR	82.6		P	50 - 175
2188419	DG3-qPCR	84.4		P	50 - 175
2188511	DG3-qPCR	94.7		P	50 - 175
2189035	DG3-qPCR	88.1		P	50 - 175
2189053	DG3-qPCR	92.7		P	50 - 175
2189480	DG3-qPCR	86.2		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 9223 Quanti-Tray
Batch ID: P385768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2188148	Escherichia Coli-Quanti-Tray	5.83	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
Batch ID: P385394

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187213	HF183-qPCR	10.2	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P385394

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187213	GULL2-qPCR	3.32	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P386065

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187213	GFD-purified-qPCR	2.33	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P385394

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187213	BacR-qPCR	4.24	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.5
 Batch ID: P385394

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187213	DG3-qPCR	1.98	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2188149
 Field Sample ID: G4CE0181

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	104	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	88.2	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	103	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	121	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray							5.83	
SOP-PCR-1.0	HF183-qPCR	110	107	103	92.7	100			10.2
				94.2					
SOP-PCR-1.2	GULL2-qPCR	90.4	88.2	85.3	82.5	88.3			3.32
				66.8					
SOP-PCR-1.3	GFD-purified-qPCR	9.72	87.7	112	114	116			2.33
				71.5					
SOP-PCR-1.4	BacR-qPCR	107	98.0	80.5	84.0	94.5			4.24
				64.4					
SOP-PCR-1.5	DG3-qPCR	114	91.1	84.9	86.6	83.5			1.98
				90.0					

Reference Method Descriptions

Method	Description	Associated Samples
SM 9223 Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2188148
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2188149
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2188149
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2188149
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2188149
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2188149

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 9223 Quanti-Tray	08/04/2020	08/04/2020 15:35	Carina A. Tull	08/05/2020 10:12	Jessica Fetgatter	2188148
SOP-PCR-1.0	08/04/2020	08/04/2020 13:30	Lauren Campbell	08/13/2020 10:59	Lauren Campbell	2188149
SOP-PCR-1.2	08/04/2020	08/04/2020 13:30	Lauren Campbell	08/17/2020 09:48	Mailin Lopez	2188149
SOP-PCR-1.3	08/04/2020	08/04/2020 13:30	Lauren Campbell	08/17/2020 14:43	Mailin Lopez	2188149
SOP-PCR-1.4	08/04/2020	08/04/2020 13:30	Lauren Campbell	08/13/2020 12:53	Lauren Campbell	2188149
SOP-PCR-1.5	08/04/2020	08/04/2020 13:30	Lauren Campbell	08/14/2020 11:45	Lauren Campbell	2188149