

Biological Analysis Report

CEN-DIST-2022-11-15-03

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Soldiers Creek**
Request ID: **RQ-2022-11-14-37**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Matthew Bearden

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Certified by: Puja Jasrotia, Environmental Administrator

Date Certified: 21-DEC-2022 08:18

A handwritten signature in black ink, appearing to be 'Puja Jasrotia', written over a horizontal line.

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: Soldier Creek @ 150m Upstream of SR HWY 419

Collection Date/Time: 11/14/2022 12:54

Field ID: G2CE0071

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2369435	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	134.0	Q	MPN/100 mL	P422599	
2369436	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P422269	
	SOP-PCR-1.2	GULL2-qPCR**	3.6E+03	U	TSC/100 mL	P422269	
	SOP-PCR-1.3	GFD-qPCR**	720	U	TSC/100 mL	P422269	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P422269	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P422269	

Ref. Method and Comment:

SM 9223 B Quanti-Tray: Precision data is unavailable for E. coli due to the small amount of analyte in the QC sample for the batch.

Quality Assurance Report Method Blank Results

Reference Method: SM 9223 B Quanti-Tray

Batch ID: P422599

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

Reference Method: SOP-PCR-1.0

Batch ID: P422269

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

Reference Method: SOP-PCR-1.2

Batch ID: P422269

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

Reference Method: SOP-PCR-1.3

Batch ID: P422269

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

Reference Method: SOP-PCR-1.4

Batch ID: P422269

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

Reference Method: SOP-PCR-1.5

Batch ID: P422269

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: P422269

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	88.9	85.8	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P422269

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	99.5	96.4	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P422269

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	105	75.7	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P422269

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	111	76.9	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P422269

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	109	74.6	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P422269

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2368535	HF183-qPCR	87.8	90.4	P	50 - 175
2368798	HF183-qPCR	84.8		P	50 - 175
2369357	HF183-qPCR	93.6		P/P	50 - 175
2369358	HF183-qPCR	92.0		P	50 - 175
2369359	HF183-qPCR	95.6	90.4	P	50 - 175
2369436	HF183-qPCR	84.0		P	50 - 175
2369529	HF183-qPCR	82.3		P	50 - 175
2369945	HF183-qPCR	111		P	50 - 175
2369946	HF183-qPCR	82.6	90.4	P	50 - 175
2369947	HF183-qPCR	104		P	50 - 175
2369948	HF183-qPCR	97.0		P	50 - 175
2369949	HF183-qPCR	102		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P422269

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2368535	GULL2-qPCR	98.4		P	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2

Batch ID: P422269

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2368798	GULL2-qPCR	102	112	P	50 - 300
2369357	GULL2-qPCR	110		P/P	50 - 300
2369358	GULL2-qPCR	83.3	112	P	50 - 300
2369359	GULL2-qPCR	85.0		P	50 - 300
2369436	GULL2-qPCR	71.3	112	P	50 - 300
2369529	GULL2-qPCR	98.0		P	50 - 300
2369945	GULL2-qPCR	95.4	112	P	50 - 300
2369946	GULL2-qPCR	75.4		P	50 - 300
2369947	GULL2-qPCR	93.1	112	P	50 - 300
2369948	GULL2-qPCR	110		P	50 - 300
2369949	GULL2-qPCR	101	112	P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P422269

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2368535	GFD-qPCR	105	111	P	50 - 175
2368798	GFD-qPCR	104		P	50 - 175
2369357	GFD-qPCR	109	111	P/P	50 - 175
2369358	GFD-qPCR	104		P	50 - 175
2369359	GFD-qPCR	92.9	111	P	50 - 175
2369436	GFD-qPCR	103		P	50 - 175
2369529	GFD-qPCR	97.4	111	P	50 - 175
2369945	GFD-qPCR	111		P	50 - 175
2369946	GFD-qPCR	101	111	P	50 - 175
2369947	GFD-qPCR	101		P	50 - 175
2369948	GFD-qPCR	97.7	111	P	50 - 175
2369949	GFD-qPCR	99.4		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P422269

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2368535	BacR-qPCR	83.8	94.0	P	50 - 175
2368798	BacR-qPCR	82.5		P	50 - 175
2369357	BacR-qPCR	95.6	94.0	P/P	50 - 175
2369358	BacR-qPCR	76.7		P	50 - 175
2369359	BacR-qPCR	66.5	94.0	P	50 - 175
2369436	BacR-qPCR	63.4		P	50 - 175
2369529	BacR-qPCR	67.2	94.0	P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P422269

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2368535	DG3-qPCR	100	104	P	50 - 175
2368798	DG3-qPCR	97.8		P	50 - 175
2369357	DG3-qPCR	102	104	P/P	50 - 175
2369358	DG3-qPCR	87.1		P	50 - 175
2369359	DG3-qPCR	87.0	104	P	50 - 175
2369436	DG3-qPCR	71.5		P	50 - 175
2369529	DG3-qPCR	84.5	104	P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P422269

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2369945	DG3-qPCR	110		P	50 - 175
2369946	DG3-qPCR	84.0		P	50 - 175
2369947	DG3-qPCR	99.5		P	50 - 175
2369948	DG3-qPCR	97.0		P	50 - 175
2369949	DG3-qPCR	116		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P422269

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2369357	HF183-qPCR	3.48	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P422269

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2369357	GULL2-qPCR	1.33	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P422269

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2369357	GFD-qPCR	1.54	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P422269

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2369357	BacR-qPCR	1.71	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P422269

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2369357	DG3-qPCR	2.65	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: 2369436
 Field Sample ID: G2CE0071

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	57.0	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	97.7	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	66.7	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	84.3	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	52.1	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	85.8	88.9	87.8	84.8	93.6			3.48
SOP-PCR-1.2	GULL2-qPCR	96.4	99.5	98.4	102	110			1.33
SOP-PCR-1.3	GFD-qPCR	75.7	105	105	104	109			1.54
SOP-PCR-1.4	BacR-qPCR	76.9	111	83.8	82.5	95.6			1.71
SOP-PCR-1.5	DG3-qPCR	74.6	109	100	97.8	102			2.65

Reference Method Descriptions

Method	Description	Associated Samples
SM 9223 B Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2369435
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2369436
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2369436
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2369436
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2369436
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2369436

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 9223 B Quanti-Tray	11/15/2022	11/15/2022 16:39	Tynan A Branch	11/16/2022 11:41	Callie Williams	2369435
SOP-PCR-1.0	11/15/2022	11/15/2022 14:45	Claudia Castro	12/06/2022 08:39	Roberta Tatti	2369436
SOP-PCR-1.2	11/15/2022	11/15/2022 14:45	Claudia Castro	12/07/2022 14:50	Roberta Tatti	2369436
SOP-PCR-1.3	11/15/2022	11/15/2022 14:45	Claudia Castro	12/08/2022 09:15	DeAsia Armster	2369436
SOP-PCR-1.4	11/15/2022	11/15/2022 14:45	Claudia Castro	12/06/2022 13:30	Roberta Tatti	2369436
SOP-PCR-1.5	11/15/2022	11/15/2022 14:45	Claudia Castro	12/07/2022 08:41	DeAsia Armster	2369436