

Biological Analysis Report

CEN-DIST-2018-10-25-06

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

Overflow Analyses Performed By:
3419 Trentwood Blvd.
Suite 102
Belle Isle (Orlando), FL 32812-4864
DOH Accreditation E1031026

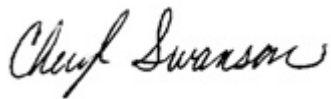
Event Description: **Long Branch**
Request ID: **RQ-2018-10-22-40**
Customer: **CEN-DIST**
Project ID: **SMP**

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

For additional information please contact
Cheryl Swanson - Administrator
Jacqueline Savage - Microbiology
Diane Power - Bench Biology
Andrew Tintle - 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: 06-DEC-2018 17:53



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: 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 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: Long Branch @ 0.7 mi DS of CR 13

Collection Date/Time: 10/24/2018 10:55

Field ID: G2CE0036

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036292	EPA 1603	Escherichia coli-Membrane Filter	456	B	cfu/100 mL		
2036293	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P355013	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P355013	MS, RPD
	SOP-PCR-1.3	GFD-purified-qPCR**	170	UJ	TSC/100 mL	P355456	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P355013	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:

SOP-PCR-1.3: Quality control failure(s) observed. See QA report for details.

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0

Batch ID: P355013

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

Reference Method: SOP-PCR-1.2

Batch ID: P355013

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

Reference Method: SOP-PCR-1.3

Batch ID: P355456

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

Reference Method: SOP-PCR-1.4

Batch ID: P355013

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P355013

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	120	148	P/P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P355013

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	80.6	190	P/P	50 - 300

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.3
 Batch ID: P355456

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	130	38.2	P/F	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P355013

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	87.1	147	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P355013

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035505	HF183-qPCR	119		P	50 - 175
2035507	HF183-qPCR	111		P	50 - 175
2035508	HF183-qPCR	104		P	50 - 175
2036293	HF183-qPCR	110		P	50 - 175
2037699	HF183-qPCR	111		P	50 - 175
2037700	HF183-qPCR	113		P	50 - 175
2038085	HF183-qPCR	116		P	50 - 175
2038086	HF183-qPCR	118		P	50 - 175
2038121	HF183-qPCR	122		P	50 - 175
2038736	HF183-qPCR	108		P	50 - 175
2038738	HF183-qPCR	123		P	50 - 175
2038739	HF183-qPCR	106		P	50 - 175
2039235	HF183-qPCR	105	113	P/P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P355013

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036293	GULL2-qPCR	78.7		P	50 - 300
2037699	GULL2-qPCR	88.0		P	50 - 300
2037700	GULL2-qPCR	79.6		P	50 - 300
2038086	GULL2-qPCR	66.2		P	50 - 300
2038121	GULL2-qPCR	96.3		F	50 - 300
2038738	GULL2-qPCR	93.5		P	50 - 300
2038739	GULL2-qPCR	74.4		P	50 - 300
2039235	GULL2-qPCR	151	74.6	P/P	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P355456

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036293	GFD-purified-qPCR	202		F	50 - 175
2037699	GFD-purified-qPCR	232		F	50 - 175
2037700	GFD-purified-qPCR	138		P	50 - 175
2038086	GFD-purified-qPCR	159		P	50 - 175
2038121	GFD-purified-qPCR	162		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P355456

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2038738	GFD-purified-qPCR	146		P	50 - 175
2038739	GFD-purified-qPCR	158		P	50 - 175
2039235	GFD-purified-qPCR	166	163	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P355013

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036293	BacR-qPCR	64.5		P	50 - 175
2037699	BacR-qPCR	69.8		P	50 - 175
2037700	BacR-qPCR	64.2		P	50 - 175
2038086	BacR-qPCR	68.1		P	50 - 175
2038121	BacR-qPCR	69.3		P	50 - 175
2038738	BacR-qPCR	68.5		P	50 - 175
2038739	BacR-qPCR	60.4		P	50 - 175
2039235	BacR-qPCR	66.6	63.8	P/P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P355013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2039235	HF183-qPCR	6.67	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P355013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2039235	GULL2-qPCR	67.9	Spike	F	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P355456

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2039235	GFD-purified-qPCR	1.93	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P355013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2039235	BacR-qPCR	4.33	Spike	P	0 - 25

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Surrogates

Lab Sample ID: 2036293
Field Sample ID: G2CE0036

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	109	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	107	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	152	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	148	120	110	111	113			6.67
SOP-PCR-1.2	GULL2-qPCR	190	80.6	78.7	88.0	79.6			67.9
SOP-PCR-1.3	GFD-purified-qPCR	38.2	130	202	232	138			1.93
SOP-PCR-1.4	BacR-qPCR	147	87.1	64.5	69.8	64.2			4.33

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 1603 / E1031026	Escherichia coli by membrane filter method by ERD Laboratory	2036292
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2036293
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalum Gull2 genetic marker with quantitative polymerase chain reaction	2036293
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2036293
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2036293
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2036293

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	10/24/2018	10/24/2018 15:15		10/25/2018 15:15	Environmental Research & Design, Inc.	2036292
SOP-PCR-1.0	10/25/2018	10/25/2018 15:15	Sarah Menz	11/29/2018 08:33	Mailin Lopez	2036293
SOP-PCR-1.2	10/25/2018	10/25/2018 15:15	Sarah Menz	12/03/2018 09:14	Mailin Lopez	2036293
SOP-PCR-1.3	10/25/2018	10/25/2018 15:15	Mailin Lopez	12/04/2018 12:22	Sarah Menz	2036293
SOP-PCR-1.4	10/25/2018	10/25/2018 15:15	Sarah Menz	11/29/2018 13:05	Mailin Lopez	2036293
SOP-PCR-4.0	10/25/2018	10/25/2018 15:15	Angela Smith	11/21/2018 08:59	Sarah Menz	2036293