

Biological Analysis Report

TLH-ROC-2017-11-21-02

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

Event Description: **SMP 2017 kit A-b/t/m PCR-FILTER & PCR-HF183**
Request ID: **RQ-2017-10-30-55**
Customer: **TLH-ROC**
Project ID: **SMP**

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Date Certified: 27-DEC-2017 11:40



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: Chlorophyll/Grain Size/BOD, 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 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: BIG CREEK @ CR 2224

Collection Date/Time: 11/21/2017 12:00

Field ID: G1TLHR0057-2017-08

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1948219	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P336651	
		Phaeophytin-a	0.40	U	ug/L	P336651	
		Chlorophyll-a, Uncorrected	0.44	I	ug/L	P336651	
1948223	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	150.0		MPN/100 mL	P336102	
1948227	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P335385	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

SOP-PCR-1.0: No amplification of HF183 marker.

Sample Location: BLANK QA/QC FIELD BLANK

Collection Date/Time: 11/21/2017 12:10

Field ID: QA/QC FIELD BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1948220	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P336652	
		Phaeophytin-a	0.40	U	ug/L	P336652	
		Chlorophyll-a, Uncorrected	0.40	U	ug/L	P336652	
1948224	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	1.0	U	MPN/100 mL	P336102	
1948228	SOP-PCR-1.0	HF183-qPCR**	71	U	GEU/100 mL	P335440	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

SOP-PCR-1.0: No amplification of HF183 marker.

Sample Location: BIG CREEK @ CR 2224-DUP

Collection Date/Time: 11/21/2017 12:00

Field ID: G1TLHR0057-2017-08-DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1948221	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P336652	
		Phaeophytin-a	0.40	U	ug/L	P336652	
		Chlorophyll-a, Uncorrected	0.40	U	ug/L	P336652	
1948225	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	116.2		MPN/100 mL	P336102	
1948229	SOP-PCR-1.0	HF183-qPCR**	22	T	GEU/100 mL	P335440	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: BEAR CREEK @ SR 267

Collection Date/Time: 11/21/2017 13:30

Field ID: G1TLHR0052-2017-09

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1948222	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.69	I	ug/L	P336652	
		Phaeophytin-a	0.40	U	ug/L	P336652	
		Chlorophyll-a, Uncorrected	0.89	I	ug/L	P336652	
1948226	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	920.8		MPN/100 mL	P336102	

Field ID: G1TLHR0052-2017-09

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1948230	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P335726	LCS
	SOP-PCR-1.4	BacR-qPCR**	7.65E+05		TSC/100 mL	P335726	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

SOP-PCR-1.0: No amplification of HF183 marker.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P336651

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.55	U	ug/L
Chlorophyll-a, Uncorrected	0.40	U	ug/L
Phaeophytin-a	0.40	U	ug/L

Reference Method: SM 10200 H (mod.)

Batch ID: P336652

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.55	U	ug/L
Chlorophyll-a, Uncorrected	0.40	U	ug/L
Phaeophytin-a	0.40	U	ug/L

Reference Method: SM 9223 Quanti-Tray

Batch ID: P336102

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

Reference Method: SOP-PCR-1.0

Batch ID: P335385

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

Reference Method: SOP-PCR-1.0

Batch ID: P335440

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

Reference Method: SOP-PCR-1.0

Batch ID: P335726

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.4
Batch ID: P335726

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P336651

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	103		P	84 - 116

Reference Method: SM 10200 H (mod.)
Batch ID: P336652

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	103		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P335385

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	89.0	92.6	P/P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P335440

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	82.6	89.9	P/P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P335726

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	41.5	127	F/P	50 - 175
HF183-qPCR	124	124	P/P	50 - 175
HF183-qPCR	65.9	72.4	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P335726

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	138	99.5	P/P	50 - 175
BacR-qPCR	170	91.1	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P335385

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1946706	HF183-qPCR	64.9	87.3	P	50 - 175
1946707	HF183-qPCR	76.3		P/P	50 - 175
1946906	HF183-qPCR	68.6	87.3	P	50 - 175
1946944	HF183-qPCR	79.8		P	50 - 175
1946945	HF183-qPCR	62.1	87.3	P	50 - 175
1946946	HF183-qPCR	82.0		P	50 - 175
1946947	HF183-qPCR	77.8	87.3	P	50 - 175
1946948	HF183-qPCR	63.8		P	50 - 175
1947000	HF183-qPCR	57.2	87.3	P	50 - 175
1947028	HF183-qPCR	72.0		P	50 - 175
1947029	HF183-qPCR	82.0	87.3	P	50 - 175
1947174	HF183-qPCR	85.2		P	50 - 175
1948227	HF183-qPCR	66.9	87.3	P	50 - 175

Reference Method: SOP-PCR-1.0

Batch ID: P335440

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1946905	HF183-qPCR	96.3	78.0	P	50 - 175
1946907	HF183-qPCR	61.3		P	50 - 175
1946908	HF183-qPCR	66.5	78.0	P	50 - 175
1947119	HF183-qPCR	56.8		P	50 - 175
1947120	HF183-qPCR	92.2	78.0	P	50 - 175
1947121	HF183-qPCR	65.9		P	50 - 175
1947122	HF183-qPCR	78.4	78.0	P/P	50 - 175
1947123	HF183-qPCR	68.0		P	50 - 175
1947561	HF183-qPCR	62.8	78.0	P	50 - 175
1947921	HF183-qPCR	93.2		P	50 - 175
1948228	HF183-qPCR	76.6	78.0	P	50 - 175
1948229	HF183-qPCR	68.9		P	50 - 175

Reference Method: SOP-PCR-1.0

Batch ID: P335726

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1938668	HF183-qPCR	86.8	97.6	P	50 - 175
1938753	HF183-qPCR	94.9		P	50 - 175
1938892	HF183-qPCR	98.0	97.6	P	50 - 175
1940025	HF183-qPCR	54.0		P	50 - 175
1940311	HF183-qPCR	86.3	97.6	P	50 - 175
1940312	HF183-qPCR	83.3		P	50 - 175
1948201	HF183-qPCR	105	97.6	P/P	50 - 175
1948202	HF183-qPCR	100		P	50 - 175
1948230	HF183-qPCR	99.9	97.6	P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P335726

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948201	BacR-qPCR	54.5	57.9	P/P	50 - 175
1948202	BacR-qPCR	66.7	57.9	P	50 - 175
1948230	BacR-qPCR	63.0	57.9	P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 9223 Quanti-Tray
Batch ID: P336102

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948187	Escherichia Coli-Quanti-Tray	68.9	Sample	P	0 - 80
1948199	Escherichia Coli-Quanti-Tray	8.12	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
Batch ID: P335385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1946707	HF183-qPCR	13.4	Spike	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P335440

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947122	HF183-qPCR	0.530	Spike	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P335726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948201	HF183-qPCR	7.07	Spike	P	0 - 25
1948201	HF183-qPCR	7.07	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P335726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948201	BacR-qPCR	6.07	Spike	P	0 - 25
1951443	BacR-qPCR	3.04	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: 1948227
Field Sample ID: G1TLHR0057-2017-08

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	92.6	P	50 - 300

Lab Sample ID: 1948228
Field Sample ID: QA/QC FIELD BLANK

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	105	P	50 - 300

Quality Assurance Report Surrogates

Lab Sample ID: 1948229

Field Sample ID: G1TLHR0057-2017-08-DUP

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	99.7	P	50 - 300

Lab Sample ID: 1948230

Field Sample ID: G1TLHR0052-2017-09

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	54.1	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	64.7	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery			MS % Recovery			LCS	Precision SMP		MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	103									
	Chlorophyll-a, Corrected	103									
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray								68.9	8.12	
SOP-PCR-1.0	HF183-qPCR	92.6	89.0		64.9	76.3	87.3				13.4
					79.8						
	HF183-qPCR	89.9	82.6		68.0	62.8	93.2				0.530
					76.6						
	HF183-qPCR	41.5	127	72.4	54.0	94.9	105				7.07
		124			97.6						7.07
SOP-PCR-1.4	BacR-qPCR	138	91.1	170	54.5	57.9	66.7				6.07
		99.5			63.0						3.04

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1948219, 1948220, 1948221, 1948222
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	1948223, 1948224, 1948225, 1948226
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1948227, 1948228, 1948229, 1948230
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1948230
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1948227, 1948228, 1948229, 1948230

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	11/21/2017	11/21/2017 15:20	Cathy Sherrer	12/07/2017	Kim M. Spencer	1948219, 1948220, 1948221, 1948222
SM 9223 Quanti-Tray	11/21/2017	11/21/2017 15:55	Peterson Janvier	11/22/2017 11:25	Carina A. Tull	1948223, 1948224, 1948225, 1948226
SOP-PCR-1.0	11/21/2017	11/21/2017 16:00	Sarah Menz	12/01/2017	Sarah Menz	1948227
	11/21/2017	11/21/2017 16:00	Sarah Menz	12/05/2017	Sarah Menz	1948229
	11/21/2017	11/22/2017 15:30	Sarah Menz	11/28/2017	Sarah Menz	1948230
	11/21/2017	11/22/2017 15:30	Sarah Menz	12/05/2017	Sarah Menz	1948228
	11/21/2017	11/22/2017 15:30	Sarah Menz	12/21/2017	Sarah Menz	1948230
SOP-PCR-1.4	11/21/2017	11/22/2017 15:30	Sarah Menz	12/21/2017	Sarah Menz	1948227, 1948229
SOP-PCR-4.0	11/21/2017	11/21/2017 16:00	Sarah Menz	12/21/2017	Puja Jasrotia	1948228, 1948230
	11/21/2017	11/22/2017 15:30	Sarah Menz	12/21/2017	Puja Jasrotia	1948228, 1948230