

Biological Analysis Report

WQAP-2016-07-22-08

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

Event Description: **Hogan/Miller Source ID**
Request ID: **RQ-2016-07-18-50**
Customer: **WQAP**
Project ID: **BMAP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399-2400
Attn: anita nash

For additional information please contact
Cheryl Swanson - Administrator
J. Marshall Faircloth - Aquatic Toxicology
Jacqueline Savage - Bench Biology
Jacqueline Savage - Microbiology
Daisys Matthews - Molecular Biology
Cheryl Swanson - Taxonomy (Invertebrate & Algal)
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8177

Certified by: Daisys Matthews,

Date Certified: 08-SEP-2016 15:59

A handwritten signature in black ink that reads "D Matthews". The signature is written in a cursive style with a large, stylized "D" and "M".

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: Microbiology.

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: SS BHSC Miller

Collection Date/Time: 07/21/2016 08:15

Field ID: SS BHSC Miller

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1818705	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	2419.6	JQ	MPN/100 mL	P308559	
1818711	SM 9222 D	Fecal Coliforms-Membrane Filter	5.1E+03	Q	cfu/100 mL	P308576	
1818736	SOP-PCR01	HF183-qPCR**	1.0E+03	U	GEU/100 mL	P308455	

Ref. Method and Comment:

SM 9223 Quanti-Tray: All Quanti-Tray wells were positive. Result is an estimate and may be higher than result reported.

SM 9222 D: Precision data for QC sample is unavailable due to the colony count falling outside of method acceptable range.

SOP-PCR01: No amplification of HF183 marker.

Sample Location: Hogan A2 Culvert

Collection Date/Time: 07/21/2016 08:45

Field ID: Hogan A2 Culvert

Matrix: WATER

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1818706	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	2419.6	JQ	MPN/100 mL	P308559	
1818712	SM 9222 D	Fecal Coliforms-Membrane Filter	6.7E+03	BQ	cfu/100 mL	P308576	
1818737	SOP-PCR01	HF183-qPCR**	2.58E+05		GEU/100 mL	P308455	

Ref. Method and Comment:

SM 9223 Quanti-Tray: All Quanti-Tray wells were positive. Result is an estimate and may be higher than result reported.

SM 9222 D: Precision data for QC sample is unavailable due to the colony count falling outside of method acceptable range.

Sample Location: Hogan A3 Ditch

Collection Date/Time: 07/21/2016 08:55

Field ID: Hogan A3 Ditch

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1818707	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	201.4	Q	MPN/100 mL	P308559	
1818713	SM 9222 D	Fecal Coliforms-Membrane Filter	340	Q	cfu/100 mL	P308576	
1818738	SOP-PCR01	HF183-qPCR**	2.0E+03	U	GEU/100 mL	P308455	

Ref. Method and Comment:

SM 9222 D: Precision data for QC sample is unavailable due to the colony count falling outside of method acceptable range.

SOP-PCR01: No amplification of HF183 marker.

Sample Location: A2B1 (16th)

Collection Date/Time: 07/21/2016 09:15

Field ID: A2B1 (16th)

Matrix: WATER

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1818708	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	2419.6	JQ	MPN/100 mL	P308559	
1818714	SM 9222 D	Fecal Coliforms-Membrane Filter	1.0E+04	BQ	cfu/100 mL	P308576	
1818739	SOP-PCR01	HF183-qPCR**	3.77E+05		GEU/100 mL	P308455	

Ref. Method and Comment:

SM 9223 Quanti-Tray: All Quanti-Tray wells were positive. Result is an estimate and may be higher than result reported.

SM 9222 D: Precision data for QC sample is unavailable due to the colony count falling outside of method acceptable range.

Sample Location: A2B2 (16th & Perry)

Collection Date/Time: 07/21/2016 09:30

Field ID: A2B2 (16th & Perry)

Matrix: WATER

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1818709	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	2419.6	JQ	MPN/100 mL	P308559	
1818715	SM 9222 D	Fecal Coliforms-Membrane Filter	5.3E+03	Q	cfu/100 mL	P308576	
1818740	SOP-PCR01	HF183-qPCR**	1.14E+06		GEU/100 mL	P308455	

Field ID: A2B2 (16th & Perry)

Matrix: WATER

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
-----------	-------------	-----------	--------	------	-------	----------	----------

Ref. Method and Comment:

SM 9223 Quanti-Tray: All Quanti-Tray wells were positive. Result is an estimate and may be higher than result reported.

SM 9222 D: Precision data for QC sample is unavailable due to the colony count falling outside of method acceptable range.

Sample Location: Blank

Collection Date/Time: 07/21/2016 10:50

Field ID: Equipment Blank

Matrix: W-EQPMT-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
-----------	-------------	-----------	--------	------	-------	----------	----------

1818710 SM 9223 Quanti-Tray

Escherichia Coli-Quanti-Tray

1.0

UQ

MPN/100 mL P308559

1818741 SOP-PCR01

HF183-qPCR**

1.0E+03

U

GEU/100 mL P308455

Ref. Method and Comment:

SOP-PCR01: No amplification of HF183 marker.

Quality Assurance Report Method Blank Results

Reference Method: SM 9222 D

Batch ID: P308576

Component

Fecal Coliforms-Membrane Filter

Result

2

Code

U

Units

cfu/100 mL

Reference Method: SM 9223 Quanti-Tray

Batch ID: P308559

Component

Escherichia Coli-Quanti-Tray

Result

1.0

Code

U

Units

MPN/100 mL

Reference Method: SOP-PCR01

Batch ID: P308455

Component

HF183-qPCR

Result

4.1E+03

Code

U

Units

GEU/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR01

Batch ID: P308455

Component

HF183-qPCR

% Rec.1

119

% Rec.2

86.2

Pass/Fail

P/P

Control Limits

50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR01

Batch ID: P308455

Spiked Sample

Component

1818736

HF183-qPCR

% Rec.1

152

% Rec.2

Pass/Fail

P

Control Limits

50 - 175

1818737

HF183-qPCR

119

P

50 - 175

1818738

HF183-qPCR

128

122

P/P

50 - 175

1818739

HF183-qPCR

147

P

50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR01
Batch ID: P308455

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1818740	HF183-qPCR	120		P	50 - 175
1818741	HF183-qPCR	141		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 9223 Quanti-Tray
Batch ID: P308559

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1818481	Escherichia Coli-Quanti-Tray	41.1	Sample	P	0 - 80

Reference Method: SOP-PCR01
Batch ID: P308455

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1818738	HF183-qPCR	4.48	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: 1818736
Field Sample ID: SS BHSC Miller

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR01	SKETA-qPCR	118	P	50 - 300

Lab Sample ID: 1818737
Field Sample ID: Hogan A2 Culvert

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR01	SKETA-qPCR	115	P	50 - 300

Lab Sample ID: 1818738
Field Sample ID: Hogan A3 Ditch

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR01	SKETA-qPCR	127	P	50 - 300

Lab Sample ID: 1818739
Field Sample ID: A2B1 (16th)

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR01	SKETA-qPCR	132	P	50 - 300

Quality Assurance Report Surrogates

Lab Sample ID: 1818740
 Field Sample ID: A2B2 (16th & Perry)

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR01	SKETA-qPCR	132	P	50 - 300

Lab Sample ID: 1818741
 Field Sample ID: Equipment Blank

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR01	SKETA-qPCR	129	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
SM 9223 Quanti-Tray SOP-PCR01	Escherichia Coli-Quanti-Tray HF183-qPCR	86.2 119	152 119 128 122		41.1	4.48

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 9222 D / E31780	Fecal coliforms by membrane filter method - non-chlorinated water systems	1818711, 1818712, 1818713, 1818714, 1818715
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	1818705, 1818706, 1818707, 1818708, 1818709, 1818710
SOP-PCR01 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1818736, 1818737, 1818738, 1818739, 1818740, 1818741

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 9222 D	07/22/2016	07/22/2016 14:10	Brian Cumbie	07/23/2016 14:25	Kim M. Spencer	1818711, 1818712
	07/22/2016	07/22/2016 14:25	Brian Cumbie	07/23/2016 14:25	Kim M. Spencer	1818713, 1818714, 1818715
SM 9223 Quanti-Tray	07/22/2016	07/22/2016 16:30	Brian Cumbie	07/23/2016 14:25	Kim M. Spencer	1818705, 1818706, 1818707, 1818708, 1818709, 1818710
SOP-PCR01	07/22/2016	07/22/2016 12:32	Puja Jasrotia	07/28/2016	Sarah Menz	1818736, 1818737, 1818738, 1818739, 1818740, 1818741