

Biological Analysis Report

WQAP-2017-06-28-10

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

Event Description: **B/T/M only**
Request ID: **RQ-2017-05-22-41**
Customer: **WQAP**
Project ID: **SMP**

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Certified by: Jennifer Walters, Environmental Manager

Date Certified: 16-AUG-2017 16:44

A handwritten signature in black ink, appearing to read "J Walters", is positioned below the printed name and title of the certifier.

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 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: Polk Creek @ End of Merry Robin Rd

Collection Date/Time: 06/28/2017 10:05

Field ID: G1TLHR0055-2017-02

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909888	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	1986.3		MPN/100 mL	P327848	
1909893	SOP-PCR-1.0	HF183-purified-qPCR**	16	UJ	GEU/100 mL	P328245	LCS, SUR
	SOP-PCR-1.2	GULL2-purified-qPCR**	930	UJ	TSC/100 mL	P328245	LCS, SUR
	SOP-PCR-1.3	GFD-purified-qPCR**	14	T	TSC/100 mL	P328245	LCS, MS, RPD
	SOP-PCR-1.4	BacR-purified-qPCR**	170	UJ	TSC/100 mL	P328245	LCS, SUR
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:

SOP-PCR-1.0: No amplification of PURHF marker. Quality control failure(s) observed. See QA report for details. Precision data unavailable.

SOP-PCR-1.2: No amplification of PURG2 marker. Quality control failure(s) observed. See QA report for details. Precision data unavailable.

SOP-PCR-1.4: No amplification of PURBR marker. Quality control failure(s) observed. See QA report for details. Precision data unavailable.

Sample Location: Harvey Creek @ Hwy 20

Collection Date/Time: 06/28/2017 10:35

Field ID: G1TLHR0058-2017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909889	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	25.6		MPN/100 mL	P327848	
1909894	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: Big Creek @ SR 65

Collection Date/Time: 06/28/2017 12:00

Field ID: G1TLHR0056-2017-02

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909890	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	143.9		MPN/100 mL	P327848	
1909895	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: Ocklawaha Creek @ SR 65

Collection Date/Time: 06/28/2017 12:05

Field ID: G1TLHR0054-2017-02

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909891	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	166.4		MPN/100 mL	P327848	
1909896	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Quality Assurance Report Method Blank Results

Reference Method: SM 9223 Quanti-Tray

Batch ID: P327848

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

Reference Method: SOP-PCR-1.0

Batch ID: P328245

Component	Result	Code	Units
HF183-purified-qPCR	47	U	GEU/100 mL

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.2
Batch ID: P328245

Component	Result	Code	Units
GULL2-purified-qPCR	2800	U	TSC/100 mL

Reference Method: SOP-PCR-1.3
Batch ID: P328245

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

Reference Method: SOP-PCR-1.4
Batch ID: P328245

Component	Result	Code	Units
BacR-purified-qPCR	510	U	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P328245

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-purified-qPCR	79.6	30.6	P/F	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P328245

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-purified-qPCR	91.0	7.57	P/F	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P328245

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	14.7	103	F/P	50 - 175
GFD-purified-qPCR	20.1	123	F/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P328245

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-purified-qPCR	67.1	3.80	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P328245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1908823	HF183-purified-qPCR	82.8		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P328245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909893	HF183-purified-qPCR	87.2		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P328245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909893	GULL2-purified-qPCR	148		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P328245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870630	GFD-purified-qPCR	147		P	50 - 175
1879803	GFD-purified-qPCR	146		P	50 - 175
1879804	GFD-purified-qPCR	105		P	50 - 175
1902820	GFD-purified-qPCR	72.0		P	50 - 175
1909295	GFD-purified-qPCR	27.7		F	50 - 175
1909893	GFD-purified-qPCR	116		P	50 - 175
1912403	GFD-purified-qPCR	107		P	50 - 175
1912569	GFD-purified-qPCR	40.0		F	50 - 175
1912910	GFD-purified-qPCR	71.4		P	50 - 175
1913825	GFD-purified-qPCR	94.1		P	50 - 175
1913826	GFD-purified-qPCR	83.0		P	50 - 175
1913827	GFD-purified-qPCR	108		P	50 - 175
1913828	GFD-purified-qPCR	81.2	91.4	P/P	50 - 175
1913829	GFD-purified-qPCR	59.8		P	50 - 175
1913830	GFD-purified-qPCR	60.7		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P328245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909893	BacR-purified-qPCR	59.2		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 9223 Quanti-Tray
Batch ID: P327848

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909603	Escherichia Coli-Quanti-Tray	1.17	Sample	P	0 - 80

Reference Method: SOP-PCR-1.3
Batch ID: P328245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1913828	GFD-purified-qPCR	11.8	Spike	P	0 - 25
1918018	GFD-purified-qPCR	55.0	Spike	F	0 - 25

Quality Assurance Report Precision

* 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: 1909893
Field Sample ID: G1TLHR0055-2017-02

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	3.20	F	30 - 300
SOP-PCR-1.2	SKETA-qPCR	3710	F	30 - 300
SOP-PCR-1.4	SKETA-qPCR	3.62	F	30 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery		LCS	Precision SMP	MS
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray						1.17	
SOP-PCR-1.0	HF183-purified-qPCR	30.6	79.6	82.8	87.2			
SOP-PCR-1.2	GULL2-purified-qPCR	7.57	91.0	148				
SOP-PCR-1.3	GFD-purified-qPCR	14.7	123	20.1	116	107	40.0	55.0 11.8
		103			71.4			
SOP-PCR-1.4	BacR-purified-qPCR	3.80	67.1	59.2				

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	1909888, 1909889, 1909890, 1909891
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1909893
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1909893
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1909893
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1909893
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1909893, 1909894, 1909895, 1909896

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 9223 Quanti-Tray	06/28/2017	06/28/2017 16:30	Morgan Lane	06/29/2017 11:05	Kim M. Spencer	1909888, 1909889, 1909890, 1909891
SOP-PCR-1.0	06/28/2017	06/29/2017 09:22	Puja Jasrotia	07/28/2017	Sarah Menz	1909893
SOP-PCR-1.2	06/28/2017	06/29/2017 09:22	Puja Jasrotia	08/03/2017	Sarah Menz	1909893
SOP-PCR-1.3	06/28/2017	06/29/2017 09:22	Puja Jasrotia	08/04/2017	Sarah Menz	1909893
SOP-PCR-1.4	06/28/2017	06/29/2017 09:22	Puja Jasrotia	08/03/2017	Sarah Menz	1909893
SOP-PCR-4.0	06/28/2017	06/29/2017 09:22	Avril Wood	07/06/2017	Puja Jasrotia	1909893, 1909894, 1909895, 1909896