

Biological Analysis Report

WQAP-2017-04-13-02

Florida Department of Environmental Protection
Central Laboratory
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DOH Accreditation E31780

Overflow Analyses Performed By:
Advanced Environmental Laboratories - Tampa
9610 Princess Palm Avenue
Tampa, Florida 33619
DOH Accreditation E84589

Event Description: **RUN 11 A-kits**
Request ID: **RQ-2017-04-10-24**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
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Certified by: Daisys Matthews,

Date Certified: 01-JUN-2017 07:33

A handwritten signature in black ink, appearing to read "D Matthews". The signature is stylized with a large, sweeping initial "D" and a cursive "Matthews".

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, 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: Stevenson Crk				Collection Date/Time: 04/12/2017 11:11			
Field ID: G5SW0002				Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1888672	EPA 1603	Escherichia coli-Membrane Filter**	127	B	cfu/100 mL		

Sample Location: Cedar Creek				Collection Date/Time: 04/12/2017 13:50			
Field ID: G5SW0129				Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1888670	SM 10200 H (mod.)	Chlorophyll-a, Corrected	8.2		ug/L	P323660	
		Phaeophytin-a	2.6		ug/L	P323660	
		Chlorophyll/Phaeophytin Ratio	1.5			P323660	
		Chlorophyll-a, Uncorrected	10		ug/L	P323660	

Sample Location: Cedar Creek				Collection Date/Time: 04/12/2017 13:50			
Field ID: G5SW0129				Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1888671	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P324401	
	SOP-PCR-1.2	GULL2-qPCR**	5.6E+03	U	TSC/100 mL	P324401	
	SOP-PCR-1.3	GFD-purified-qPCR**	460	T	TSC/100 mL	P324456	LCS, MS, RPD
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P324401	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
Ref. Method and Comment: SOP-PCR-1.0: No amplification of HF183 marker. SOP-PCR-1.2: No amplification of GULL2 marker. SOP-PCR-1.3: Analyte detected at a level below the current nominal MDL. SOP-PCR-1.4: No amplification of BACR marker.							

Sample Location: Cedar Creek				Collection Date/Time: 04/12/2017 13:50			
Field ID: G5SW0129				Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1888673	SM 9230 C	Enterococci-Membrane Filter	210		cfu/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P323660

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: SOP-PCR-1.0
Batch ID: P324401

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.2
Batch ID: P324401

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

Reference Method: SOP-PCR-1.3
Batch ID: P324456

Component	Result	Code	Units
GFD-purified-qPCR	4.0E+04	U	TSC/100 mL

Reference Method: SOP-PCR-1.4
Batch ID: P324401

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P323660

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	102		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P324401

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	80.7	92.7	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P324401

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	90.0	142	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P324456

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	118	18.6	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P324401

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	79.1	69.0	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P324401

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1887856	HF183-qPCR	67.0		P	50 - 175
1888120	HF183-qPCR	88.4		P	50 - 175
1888121	HF183-qPCR	86.8		P	50 - 175
1888122	HF183-qPCR	83.5		P	50 - 175
1888123	HF183-qPCR	168		P	50 - 175
1888671	HF183-qPCR	89.3		P	50 - 175
1888808	HF183-qPCR	78.4		P	50 - 175
1888810	HF183-qPCR	87.5		P	50 - 175
1888886	HF183-qPCR	95.0		P	50 - 175
1895469	HF183-qPCR	107		P	50 - 175
1895470	HF183-qPCR	70.6		P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P324401

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1888121	GULL2-qPCR	63.6		P	50 - 300
1888122	GULL2-qPCR	60.5		P	50 - 300
1888123	GULL2-qPCR	78.0		P	50 - 300
1888671	GULL2-qPCR	146		P	50 - 300
1888808	GULL2-qPCR	56.1		P	50 - 300
1888810	GULL2-qPCR	79.4	105	P/P	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P324456

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1888121	GFD-purified-qPCR	73.8	118	P/P	50 - 175
1888671	GFD-purified-qPCR	85.6		P	50 - 175
1888810	GFD-purified-qPCR	46.9		F	50 - 175
1889571	GFD-purified-qPCR	141		P	50 - 175
1892528	GFD-purified-qPCR	41.0		F	50 - 175
1892629	GFD-purified-qPCR	13.7		F	50 - 175
1892632	GFD-purified-qPCR	87.5		P	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P324401

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1888121	BacR-qPCR	71.5		P	50 - 175
1888122	BacR-qPCR	73.7		P	50 - 175
1888123	BacR-qPCR	71.8		P	50 - 175
1888671	BacR-qPCR	72.9		P	50 - 175
1888808	BacR-qPCR	72.3		P	50 - 175
1888810	BacR-qPCR	61.3	67.9	P/P	50 - 175

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P323660

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888549	Chlorophyll/Phaeophytin Ratio	6.45	Sample	P	0 - 25
1888549	Chlorophyll-a, Corrected	1.48	Sample	P	0 - 25
1888549	Chlorophyll-a, Uncorrected	2.49	Sample	P	0 - 25
1888549	Phaeophytin-a	8.62	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P324401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1895471	HF183-qPCR	21.8	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P324401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888810	GULL2-qPCR	15.7	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P324456

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888121	GFD-purified-qPCR	46.3	Spike	F	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P324401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888810	BacR-qPCR	10.3	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: 1888671
Field Sample ID: G5SW0129

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	89.7	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	102	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	97.5	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll/Phaeophytin Ratio							6.45	
	Chlorophyll-a, Corrected	102						1.48	
	Chlorophyll-a, Uncorrected							2.49	
	Phaeophytin-a							8.62	
SOP-PCR-1.0	HF183-qPCR	92.7	80.7	86.8	83.5	168			21.8
				89.3					
SOP-PCR-1.2	GULL2-qPCR	142	90.0	79.4	105	146			15.7
				63.6					
SOP-PCR-1.3	GFD-purified-qPCR	18.6	118	141	73.8	118			46.3
				46.9					
SOP-PCR-1.4	BacR-qPCR	69.0	79.1	71.5	73.7	71.8			10.3
				72.3					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 1603 / E84589	Escherichia coli by membrane filter method using modified mTEC by Advanced Environmental Tampa Lab for SWD	1888672
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, phaeophytin and ratio by spectrophotometry	1888670
SM 9230 C / E31780	Enterococci by membrane filter method by Advanced Environmental Overflow Laboratories for SWD	1888673
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1888671
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium genetic marker with quantitative polymerase chain reaction	1888671
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter genetic marker with quantitative polymerase chain reaction	1888671
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes genetic marker with quantitative polymerase chain reaction	1888671
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1888671

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	04/12/2017			04/12/2017 16:52	AEL - Tampa	1888672
SM 10200 H (mod.)	04/13/2017	04/13/2017 13:45	Carina A. Tull	04/19/2017	Kim M. Spencer	1888670
SM 9230 C	04/12/2017			04/12/2017	AEL - Tampa	1888673
SOP-PCR-1.0	04/13/2017	04/13/2017 13:45	Avril Wood	05/08/2017	Puja Jasrotia	1888671
SOP-PCR-1.2	04/13/2017	04/13/2017 13:45	Puja Jasrotia	05/22/2017	Sarah Menz	1888671
SOP-PCR-1.3	04/13/2017	04/13/2017 13:45	Puja Jasrotia	05/23/2017	Sarah Menz	1888671
SOP-PCR-1.4	04/13/2017	04/13/2017 13:45	Puja Jasrotia	05/22/2017	Sarah Menz	1888671
SOP-PCR-4.0	04/13/2017	04/13/2017 13:45	Avril Wood	05/03/2017	Puja Jasrotia	1888671