

Biological Analysis Report

WQAP-2017-03-30-07

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

Event Description: **SMP 2017 Freshwater Kit A with B/T/M**
Request ID: **RQ-2017-03-20-34**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
MS #3560
Tallahassee, FL 32399-2400
Attn: Mike Eckles

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

Certified by: Cheryl A. Swanson, Environmental Manager

Date Certified: 17-MAY-2017 16:54



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: MOORE BRANCH @ CODY CHURCH RD.

Collection Date/Time: 03/30/2017 10:20

Field ID: G2TLHR0041-2017-02

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1884890	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.6	I	ug/L	P322833	
		Phaeophytin-a	0.50	U	ug/L	P322833	
		Chlorophyll/Phaeophytin Ratio	1.6			P322833	
		Chlorophyll-a, Uncorrected	1.8		ug/L	P322833	
1884893	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	579.4		MPN/100 mL	P322862	
1884896	SOP-PCR-1.0	HF183-qPCR**	24	UJ	GEU/100 mL	P324012	LCS, SUR
	SOP-PCR-1.2	GULL2-qPCR**	1.4E+03	UJ	TSC/100 mL	P324012	LCS, MS, RPD, SUR
	SOP-PCR-1.3	GFD-purified-qPCR**	2.0E+04	U	TSC/100 mL	P324012	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	UJ	TSC/100 mL	P323751	MS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:

SM 10200 H (mod.): Lab dup result is 1.5 for Chl:Ph Ratio, 1.0 I for Chl-a Corrected, 1.3 I for Chl-a Uncorrected, and 0.50 U for Phaeophytin-a.

Precision data is unavailable due to the small amount of analyte in the QC sample.

SOP-PCR-1.0: No amplification of HF183 marker. Sample processed with an additional purification step to reduce inhibition, which can reduce overall DNA recovery. See QA report.

SOP-PCR-1.2: No amplification of GULL2 marker. Sample processed with an additional purification step to reduce inhibition, which can reduce overall DNA recovery. See QA report.

SOP-PCR-1.3: No amplification of GFD marker.

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

Sample Location: SWEETWATER BRANCH @ CODY CHURCH RD.

Collection Date/Time: 03/30/2017 10:45

Field ID: G2TLHR0040-2017-02

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1884891	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.69	I	ug/L	P322833	
		Phaeophytin-a	0.40	U	ug/L	P322833	
		Chlorophyll/Phaeophytin Ratio	1.6			P322833	
		Chlorophyll-a, Uncorrected	0.83	I	ug/L	P322833	
1884894	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	727.0		MPN/100 mL	P322862	
1884897	SOP-PCR-1.0	HF183-qPCR**	10	T	GEU/100 mL	P323751	
	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.

Sample Location: FIELD BLANK 1

Collection Date/Time: 03/30/2017 12:15

Field ID: FIELD BLANK 1

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1884892	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P322833	
		Phaeophytin-a	0.40	U	ug/L	P322833	
		Chlorophyll/Phaeophytin Ratio	0.83			P322833	
		Chlorophyll-a, Uncorrected	0.40	U	ug/L	P322833	
1884895	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	1.0	U	MPN/100 mL	P322862	
1884898	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.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P322833

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: P322862

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

Reference Method: SOP-PCR-1.0
Batch ID: P323751

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

Reference Method: SOP-PCR-1.0
Batch ID: P324012

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

Reference Method: SOP-PCR-1.2
Batch ID: P324012

Component	Result	Code	Units
GULL2-qPCR	2.8E+03	U	TSC/100 mL

Reference Method: SOP-PCR-1.3
Batch ID: P324012

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

Reference Method: SOP-PCR-1.4
Batch ID: P323751

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: P322833

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	85.1		P	84 - 116

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P323751

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	81.5	88.5	P/P	50 - 175

Reference Method: SOP-PCR-1.0
 Batch ID: P324012

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	85.0	4.06	P/F	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P324012

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	72.0	18.0	P/F	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P324012

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	86.6	17.9	P/F	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P323751

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	60.2		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P323751

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1882563	HF183-qPCR	103		P	50 - 175
1883845	HF183-qPCR	121		P	50 - 175
1884032	HF183-qPCR	130		P	50 - 175
1884561	HF183-qPCR	83.6		P	50 - 175
1884897	HF183-qPCR	93.6		P	50 - 175
1891013	HF183-qPCR	92.3		P	50 - 175
1891014	HF183-qPCR	91.7	82.6	P/P	50 - 175
1891015	HF183-qPCR	93.5		P	50 - 175
1891016	HF183-qPCR	77.2		P	50 - 175
1891018	HF183-qPCR	84.2		P	50 - 175

Reference Method: SOP-PCR-1.0
 Batch ID: P324012

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1884896	HF183-qPCR	85.1		P	50 - 175
1889881	HF183-qPCR	79.3		P	50 - 175
1889882	HF183-qPCR	85.3		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P324012

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1890154	HF183-qPCR	86.5		P	50 - 175
1890155	HF183-qPCR	83.4		P	50 - 175
1891012	HF183-qPCR	79.8		P	50 - 175
1891017	HF183-qPCR	75.9		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P324012

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1882563	GULL2-qPCR	45.8		F	50 - 300
1883005	GULL2-qPCR	61.7	44.3	P/F	50 - 300
1884896	GULL2-qPCR	65.6		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P324012

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1882563	GFD-purified-qPCR	163		P	50 - 175
1883005	GFD-purified-qPCR	179	192	F/F	50 - 175
1884896	GFD-purified-qPCR	169		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P323751

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1884896	BacR-qPCR	32.0		F	50 - 175

Quality Assurance Report Precision

Reference Method: SM 9223 Quanti-Tray
Batch ID: P322862

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884637	Escherichia Coli-Quanti-Tray	8.88	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
Batch ID: P323751

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1891014	HF183-qPCR	10.4	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P324012

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883005	GULL2-qPCR	32.8	Spike	F	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.3
 Batch ID: P324012

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883005	GFD-purified-qPCR	6.92	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
 Batch ID: P323751

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1889883	BacR-qPCR	5.15	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: 1884896
 Field Sample ID: G2TLHR0041-2017-02

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	4.73	F	30 - 300
SOP-PCR-1.2	SKETA-qPCR	4.52	F	30 - 300
SOP-PCR-1.4	SKETA-qPCR	53.1	P	50 - 300

Lab Sample ID: 1884897
 Field Sample ID: G2TLHR0040-2017-02

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	91.3	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	85.1							
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray							8.88	
SOP-PCR-1.0	HF183-qPCR	88.5	81.5	92.3	91.7	82.6			10.4
				93.5					
	HF183-qPCR	4.06	85.0	85.1	79.3	85.3			
				86.5					
SOP-PCR-1.2	GULL2-qPCR	18.0	72.0	45.8	61.7	44.3			32.8
				65.6					
SOP-PCR-1.3	GFD-purified-qPCR	17.9	86.6	163	179	192			6.92
				169					
SOP-PCR-1.4	BacR-qPCR	60.2		32.0					5.15

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
---------------------	-------------	--------------------

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, phaeophytin and ratio by spectrophotometry	1884890, 1884891, 1884892
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	1884893, 1884894, 1884895
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1884896, 1884897
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium genetic marker with quantitative polymerase chain reaction	1884896
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter genetic marker with quantitative polymerase chain reaction	1884896
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes genetic marker with quantitative polymerase chain reaction	1884896
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1884896, 1884897, 1884898

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	03/30/2017	03/31/2017 13:15	Carina A. Tull	04/05/2017	Kim M. Spencer	1884890, 1884891, 1884892
SM 9223 Quanti-Tray	03/30/2017	03/30/2017 14:55	Morgan Lane	03/31/2017 09:50	Morgan Lane	1884893, 1884894, 1884895
SOP-PCR-1.0	03/30/2017	03/31/2017 08:30	Sarah Menz	04/24/2017	Puja Jasrotia	1884897
	03/30/2017	03/31/2017 08:30	Sarah Menz	04/28/2017	Puja Jasrotia	1884896
SOP-PCR-1.2	03/30/2017	03/31/2017 08:30	Sarah Menz	04/28/2017	Sarah Menz	1884896
SOP-PCR-1.3	03/30/2017	03/31/2017 08:30	Sarah Menz	04/28/2017	Sarah Menz	1884896
SOP-PCR-1.4	03/30/2017	03/31/2017 08:30	Sarah Menz	04/25/2017	Sarah Menz	1884896
SOP-PCR-4.0	03/30/2017	03/31/2017 08:30	Sarah Menz	04/20/2017	Puja Jasrotia	1884896, 1884897, 1884898