

Biological Analysis Report

SW-DIST-2019-08-27-01

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

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

Event Description: **SMP: Cedar, Mocassin**

Request ID: **RQ-2019-08-26-04**

Customer: **SW-DIST**

Project ID: **SMP**

Send Reports to:

FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Bne Paswater

For additional information please contact

Cheryl Swanson - Administrator
Jacqueline Savage - Microbiology
Diane Power - Bench Biology
Andrew Tintle - Aquatic Toxicology
Puja Jasrotia, Ph.D. - Molecular Biology
Amelia Rankin - Taxonomy (Invertebrate & Algal)
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 01-OCT-2019 15:55



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 by the Florida Department of Health Environmental Laboratory Certification Program 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: CEDAR CREEK @ PINEHURST (PC09-02)

Collection Date/Time: 08/26/2019 12:35

Field ID: G5SW0129

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2114849	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P369488	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P369488	MS
	SOP-PCR-1.3	GFD-purified-qPCR**	170	UJ	TSC/100 mL	P370609	MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P369488	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P369488	LCS
2114852	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	411		MPN/100 mL		

Ref. Method and Comment:
 SOP-PCR-1.3: Quality control failure(s) observed. See QA report for details.

Sample Location: CEDAR CREEK ABOVE PATRICIA AVE

Collection Date/Time: 08/26/2019 12:45

Field ID: G5SW0147

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2114846	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.7		ug/L	P370327	
		Phaeophytin-a	0.96	I	ug/L	P370327	
		Chlorophyll-a, Uncorrected	7.5		ug/L	P370327	
2114850	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	2420		MPN/100 mL		
2114909	SOP-PCR-1.0	HF183-qPCR**	170	I	GEU/100 mL	P369488	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P369488	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P369488	LCS

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: MOCCASIN CREEK TIDAL

Collection Date/Time: 08/26/2019 11:55

Field ID: G1SW0051

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2114847	SM 10200 H (mod.)	Chlorophyll-a, Corrected	7.8		ug/L	P370327	
		Phaeophytin-a	1.0	U	ug/L	P370327	
		Chlorophyll-a, Uncorrected	8.3		ug/L	P370327	
2114848	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P369488	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P369488	
	SOP-PCR-1.5	DG3-qPCR**	4.3E+03	I	TSC/100 mL	P369488	LCS
2114851	Enterolert/QT	Enterococci-Quanti-Tray	579		MPN/100 mL		

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: P370327

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.82	U	ug/L
Chlorophyll-a, Uncorrected	0.60	U	ug/L
Phaeophytin-a	0.90	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P369488

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

Reference Method: SOP-PCR-1.2
Batch ID: P369488

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

Reference Method: SOP-PCR-1.3
Batch ID: P370609

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

Reference Method: SOP-PCR-1.4
Batch ID: P369488

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

Reference Method: SOP-PCR-1.5
Batch ID: P369488

Component	Result	Code	Units
DG3-qPCR	2.6E+03	U	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P370327

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	90.2		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P369488

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	137	172	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P369488

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	185	129	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P370609

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
-----------	---------	---------	-----------	----------------

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P370609

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	166	107	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P369488

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	98.4	61.4	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P369488

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	181	123	F/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P369488

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2113560	HF183-qPCR	125		P	50 - 175
2113561	HF183-qPCR	117		P	50 - 175
2113562	HF183-qPCR	117		P	50 - 175
2113563	HF183-qPCR	127		P	50 - 175
2114355	HF183-qPCR	125		P	50 - 175
2114582	HF183-qPCR	128	117	P/P	50 - 175
2114583	HF183-qPCR	136		P	50 - 175
2114584	HF183-qPCR	61.0		P	50 - 175
2114786	HF183-qPCR	87.8		P	50 - 175
2114808	HF183-qPCR	97.4		P	50 - 175
2114848	HF183-qPCR	122		P	50 - 175
2114849	HF183-qPCR	124		P	50 - 175
2114909	HF183-qPCR	125		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P369488

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2114584	GULL2-qPCR	8.95		F	50 - 300
2114849	GULL2-qPCR	112		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P370609

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112421	GFD-purified-qPCR	545	505	F/F	50 - 175
2113066	GFD-purified-qPCR	475		F	50 - 175
2114584	GFD-purified-qPCR	459		F	50 - 175
2114849	GFD-purified-qPCR	519		F	50 - 175
2116097	GFD-purified-qPCR	559		F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3

Batch ID: P370609

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2116098	GFD-purified-qPCR	444		F	50 - 175
2116099	GFD-purified-qPCR	423		F	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P369488

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2114582	BacR-qPCR	75.3	83.9	P/P	50 - 175
2114583	BacR-qPCR	76.6		P	50 - 175
2114584	BacR-qPCR	53.9		P	50 - 175
2114786	BacR-qPCR	54.3		P	50 - 175
2114848	BacR-qPCR	79.6		P	50 - 175
2114849	BacR-qPCR	73.1		P	50 - 175
2114909	BacR-qPCR	79.6		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P369488

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2114582	DG3-qPCR	150	152	P/P	50 - 175
2114583	DG3-qPCR	135		P	50 - 175
2114584	DG3-qPCR	141		P	50 - 175
2114848	DG3-qPCR	148		P	50 - 175
2114849	DG3-qPCR	129		P	50 - 175
2114909	DG3-qPCR	160		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)

Batch ID: P370327

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2115079	Chlorophyll-a, Corrected	2.56	Sample	P	0 - 25
2115079	Chlorophyll-a, Uncorrected	1.18	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0

Batch ID: P369488

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114582	HF183-qPCR	9.42	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2

Batch ID: P369488

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112421	GULL2-qPCR	6.87	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.3
Batch ID: P370609

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112421	GFD-purified-qPCR	7.27	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P369488

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114582	BacR-qPCR	10.9	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P369488

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2114582	DG3-qPCR	1.17	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: 2114848
Field Sample ID: G1SW0051

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	115	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	198	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	103	P	50 - 300

Lab Sample ID: 2114849
Field Sample ID: G5SW0129

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	123	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	124	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	198	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	97.5	P	50 - 300

Lab Sample ID: 2114909
Field Sample ID: G5SW0147

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	111	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	204	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	99.2	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	90.2						2.56	
	Chlorophyll-a, Uncorrected							1.18	
SOP-PCR-1.0	HF183-qPCR	172	137	117	117	127			9.42
SOP-PCR-1.2	GULL2-qPCR	129	185	8.95	112				6.87
SOP-PCR-1.3	GFD-purified-qPCR	107	166	545	505	475			7.27
SOP-PCR-1.4	BacR-qPCR	61.4	98.4	75.3	83.9	76.6			10.9
SOP-PCR-1.5	DG3-qPCR	123	181	150	152	135			1.17
				141					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
Enterolert/QT / E84589	Enterococci by Enterolert/QT by AEL in Tampa	2114851
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2114846, 2114847
SM 9223 B Quanti-Tray / E84589	E. coli by Colilert-18/QT by AEL in Tampa	2114850, 2114852
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2114848, 2114849, 2114909
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2114849
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2114849
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2114848, 2114849, 2114909
SOP-PCR-1.5 / E31780	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2114848, 2114849, 2114909

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	08/26/2019	08/26/2019 15:19		08/27/2019 15:19	AEL - Tampa	2114851
SM 10200 H (mod.)	08/27/2019	08/27/2019 14:30	Peterson Janvier	09/05/2019 09:08	Yuliya Danyuk	2114846, 2114847
SM 9223 B Quanti-Tray	08/26/2019	08/26/2019 15:19		08/27/2019 09:21	AEL - Tampa	2114850, 2114852
SOP-PCR-1.0	08/27/2019	08/27/2019 12:35	Lauren Campbell	09/17/2019 16:00	Mailin Lopez	2114848, 2114849, 2114909
SOP-PCR-1.2	08/27/2019	08/27/2019 12:35	Lauren Campbell	09/19/2019 10:48	Mailin Lopez	2114849
SOP-PCR-1.3	08/27/2019	08/27/2019 12:35	Mailin Lopez	09/23/2019 09:32	Mailin Lopez	2114849
SOP-PCR-1.4	08/27/2019	08/27/2019 12:35	Lauren Campbell	09/18/2019 08:33	Mailin Lopez	2114848, 2114849, 2114909
SOP-PCR-1.5	08/27/2019	08/27/2019 12:35	Lauren Campbell	09/18/2019 15:05	Mailin Lopez	2114848, 2114849, 2114909