

Biological Analysis Report

SO-DIST-2019-10-09-03

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

Overflow Analyses Performed By:
Benchmark EnviroAnalytical, Inc. - North Port
1001 Corporate Avenue, Suite 102
North Port, FL 34289
DOH Accreditation E85086

Event Description: **2019 SMP SARA CRICKS**
Request ID: **RQ-2019-10-07-74**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Nicole Reistad

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: 15-NOV-2019 15:58



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: PhillippeCreek@Proctor

Collection Date/Time: 10/08/2019 10:00

Field ID: G3SD0091

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2126455	SM 10200 H (mod.)	Chlorophyll-a, Corrected	52		ug/L	P372787	
		Phaeophytin-a	1.8	U	ug/L	P372787	
		Chlorophyll-a, Uncorrected	54		ug/L	P372787	
2126457	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	504		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.

Sample Location: South Creek @HonoreAve

Collection Date/Time: 10/08/2019 10:35

Field ID: G3SD0090

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2126459	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	41		MPN/100 mL		

Sample Location: NorthCreek@OaksCreekCt

Collection Date/Time: 10/08/2019 11:05

Field ID: G3SD0064

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2126458	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	359		MPN/100 mL		

Sample Location: NorthCreek(Tidal)@41

Collection Date/Time: 10/08/2019 11:25

Field ID: G3SD0089

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2126456	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P371831	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P371831	
	SOP-PCR-1.3	GFD-purified-qPCR**	4.81E+03	J	TSC/100 mL	P372558	MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P371831	LCS, MS
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P371831	LCS
2126460	Enterolert/QT	Enterococci-Quanti-Tray	6131		MPN/100 mL		

Ref. Method and Comment:

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

SOP-PCR-1.5: Precision data unavailable for Analysis Batch A95308.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P372787

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

Reference Method: SOP-PCR-1.0

Batch ID: P371831

Component	Result	Code	Units
-----------	--------	------	-------

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P371831

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

Reference Method: SOP-PCR-1.2
Batch ID: P371831

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

Reference Method: SOP-PCR-1.3
Batch ID: P372558

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

Reference Method: SOP-PCR-1.4
Batch ID: P371831

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

Reference Method: SOP-PCR-1.5
Batch ID: P371831

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: P372787

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	97.3		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P371831

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	108	148	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P371831

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	87.8	181	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P372558

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.3
 Batch ID: P372558

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	163	137	P/P	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P371831

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	124	179	P/F	50 - 175

Reference Method: SOP-PCR-1.5
 Batch ID: P371831

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	127	200	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P371831

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2124679	HF183-qPCR	119		P	50 - 175
2124716	HF183-qPCR	72.4	76.8	P/P	50 - 175
2125171	HF183-qPCR	120		P	50 - 175
2125205	HF183-qPCR	109		P	50 - 175
2125206	HF183-qPCR	79.0		P	50 - 175
2126456	HF183-qPCR	97.6		P	50 - 175
2126981	HF183-qPCR	107		P	50 - 175
2126982	HF183-qPCR	80.8		P	50 - 175
2127162	HF183-qPCR	108		P	50 - 175
2127163	HF183-qPCR	119		P	50 - 175
2127304	HF183-qPCR	117		P	50 - 175
2127750	HF183-qPCR	115		P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P371831

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2126456	GULL2-qPCR	51.6		P	50 - 300
2127162	GULL2-qPCR	58.4		P	50 - 300
2127750	GULL2-qPCR	85.2		P	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P372558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2123207	GFD-purified-qPCR	343		F	50 - 175
2123983	GFD-purified-qPCR	415		F	50 - 175
2123984	GFD-purified-qPCR	377		F	50 - 175
2126456	GFD-purified-qPCR	107		P	50 - 175
2127162	GFD-purified-qPCR	330		F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3

Batch ID: P372558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2127750	GFD-purified-qPCR	331		F	50 - 175
2129915	GFD-purified-qPCR	377		F	50 - 175
2129917	GFD-purified-qPCR	385	366	F/F	50 - 175
2132423	GFD-purified-qPCR	367		F	50 - 175
2132424	GFD-purified-qPCR	372		F	50 - 175
2132425	GFD-purified-qPCR	325		F	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P371831

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2124679	BacR-qPCR	86.9		P	50 - 175
2124716	BacR-qPCR	65.3	73.5	P/P	50 - 175
2125171	BacR-qPCR	76.1		P	50 - 175
2125205	BacR-qPCR	75.6		P	50 - 175
2125206	BacR-qPCR	68.8		P	50 - 175
2126456	BacR-qPCR	71.5		P	50 - 175
2127162	BacR-qPCR	34.8		F	50 - 175
2127163	BacR-qPCR	53.9		P	50 - 175
2127750	BacR-qPCR	92.6		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P371831

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2126456	DG3-qPCR	120		P	50 - 175
2127162	DG3-qPCR	109		P	50 - 175
2127163	DG3-qPCR	110		P	50 - 175
2127750	DG3-qPCR	116		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)

Batch ID: P372787

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2126518	Chlorophyll-a, Corrected	12.3	Sample	P	0 - 25
2126518	Chlorophyll-a, Uncorrected	9.68	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0

Batch ID: P371831

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2124716	HF183-qPCR	5.85	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.2
Batch ID: P371831

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2123304	GULL2-qPCR	3.19	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P372558

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2129917	GFD-purified-qPCR	5.25	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P371831

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2124716	BacR-qPCR	12.0	Spike	P	0 - 25

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Surrogates

Lab Sample ID: 2126456
Field Sample ID: G3SD0089

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	102	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	124	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	67.1	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	95.4	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	97.3							12.3	
	Chlorophyll-a, Uncorrected								9.68	
SOP-PCR-1.0	HF183-qPCR	148	108		119	72.4	76.8			5.85
					120					
SOP-PCR-1.2	GULL2-qPCR	181	87.8		51.6	58.4	85.2			3.19
SOP-PCR-1.3	GFD-purified-qPCR	137	163		415	377	377			5.25
					385					
SOP-PCR-1.4	BacR-qPCR	179	124		86.9	65.3	73.5			12.0
					76.1					
SOP-PCR-1.5	DG3-qPCR	200	127		120	109	110			
					116					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
Enterolert/QT / E85086	Enterococci by Enterolert/QT by BEA South in North Port	2126460
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2126455
SM 9223 Quanti-Tray / E85086	E. coli by Colilert/QT by BEA South in North Port	2126457, 2126458, 2126459
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2126456
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2126456
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2126456
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2126456
SOP-PCR-1.5 / E31780	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2126456

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	10/08/2019	10/08/2019 13:50		10/09/2019 14:48	Benchmark EnviroAnalytical in North Port	2126460
SM 10200 H (mod.)	10/09/2019	10/09/2019 13:42	Anthony Mirabito	10/15/2019 10:05	Carina A. Tull	2126455
SM 9223 Quanti-Tray	10/08/2019	10/08/2019 13:37		10/09/2019 14:40	Benchmark EnviroAnalytical in North Port	2126457, 2126458, 2126459
SOP-PCR-1.0	10/09/2019	10/09/2019 13:30	Angela Smith	10/25/2019 15:14	Lauren Campbell	2126456
SOP-PCR-1.2	10/09/2019	10/09/2019 13:30	Angela Smith	10/31/2019 08:25	Mailin Lopez	2126456
SOP-PCR-1.3	10/09/2019	10/09/2019 13:30	Lauren Campbell	11/01/2019 08:15	Mailin Lopez	2126456
SOP-PCR-1.4	10/09/2019	10/09/2019 13:30	Angela Smith	10/30/2019 08:28	Mailin Lopez	2126456
SOP-PCR-1.5	10/09/2019	10/09/2019 13:30	Angela Smith	10/29/2019 10:44	Lauren Campbell	2126456