

Biological Analysis Report

SO-DIST-2019-04-16-01

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: **Sarasota Cricks**
Request ID: **RQ-2019-04-22-15**
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: Maryann Dugan

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: 17-MAY-2019 15:19



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: South Creek @HonoreAve

Collection Date/Time: 04/15/2019 10:00

Field ID: G3SD0090

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2078232	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	134		MPN/100 mL		

Sample Location: NorthCreek@OaksCreekCt

Collection Date/Time: 04/15/2019 10:30

Field ID: G3SD0064

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2078229	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold			P362063	
2078233	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	146		MPN/100 mL		

Sample Location: NorthCreek(Tidal)@41

Collection Date/Time: 04/15/2019 10:55

Field ID: G3SD0089

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2078231	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P363172	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P363172	
	SOP-PCR-1.3	GFD-purified-qPCR**	3.83E+04	J	TSC/100 mL	P363659	MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P363172	MS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold			P362063	
2078235	Enterolert/QT	Enterococci-Quanti-Tray	1354		MPN/100 mL		

Ref. Method and Comment:

SOP-PCR-1.2: Precision data unavailable for Analysis Batch A91446.

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

Sample Location: Walker Creek @32ndSt

Collection Date/Time: 04/15/2019 11:30

Field ID: G3SD0094

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2078230	SOP-PCR-1.0	HF183-qPCR**	930		GEU/100 mL	P363172	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold			P362063	
2078234	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	1333		MPN/100 mL		

Sample Location: PhillippeCreek@Proctor

Collection Date/Time: 04/15/2019 12:30

Field ID: G3SD0091

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2078228	SM 10200 H (mod.)	Chlorophyll-a, Corrected	11		ug/L	P363026	
		Phaeophytin-a	1.8	U	ug/L	P363026	
		Chlorophyll-a, Uncorrected	11		ug/L	P363026	
2078236	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	1022		MPN/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P363026

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

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P363026

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: P363172

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

Reference Method: SOP-PCR-1.2
Batch ID: P363172

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

Reference Method: SOP-PCR-1.3
Batch ID: P363659

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

Reference Method: SOP-PCR-1.4
Batch ID: P363172

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: P363026

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	88.1		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P363172

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	130	123	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P363172

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	97.4	111	P/P	50 - 300

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P363659

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	158	92.5	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P363172

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	104	84.2	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P363172

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076372	HF183-qPCR	103		P	50 - 175
2078230	HF183-qPCR	95.8		P	50 - 175
2078231	HF183-qPCR	97.9		P	50 - 175
2079339	HF183-qPCR	100		P	50 - 175
2082371	HF183-qPCR	91.4		P	50 - 175
2082372	HF183-qPCR	90.3		P	50 - 175
2082373	HF183-qPCR	75.0		P	50 - 175
2082374	HF183-qPCR	69.4	62.6	P/P	50 - 175
2083121	HF183-qPCR	86.8		P	50 - 175
2083122	HF183-qPCR	108		P	50 - 175
2083298	HF183-qPCR	95.4		P	50 - 175
2084684	HF183-qPCR	114		P	50 - 175
2084685	HF183-qPCR	87.0		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P363172

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076372	GULL2-qPCR	59.2		P	50 - 300
2078231	GULL2-qPCR	75.0		P	50 - 300
2083298	GULL2-qPCR	90.2		P	50 - 300
2084684	GULL2-qPCR	87.5		P	50 - 300
2084685	GULL2-qPCR	145		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P363659

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076372	GFD-purified-qPCR	921		F	50 - 175
2078231	GFD-purified-qPCR	855		F	50 - 175
2082297	GFD-purified-qPCR	447		F	50 - 175
2082300	GFD-purified-qPCR	681		F	50 - 175
2084684	GFD-purified-qPCR	1120		F	50 - 175
2084685	GFD-purified-qPCR	1330		F	50 - 175
2084686	GFD-purified-qPCR	1040	1010	F/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P363172

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076372	BacR-qPCR	75.8		P	50 - 175
2078231	BacR-qPCR	85.8		P	50 - 175
2079339	BacR-qPCR	78.6		P	50 - 175
2082371	BacR-qPCR	69.5		P	50 - 175
2082372	BacR-qPCR	69.6		P	50 - 175
2082373	BacR-qPCR	54.5		P	50 - 175
2082374	BacR-qPCR	48.0	38.9	F/F	50 - 175
2083121	BacR-qPCR	79.7		P	50 - 175
2083122	BacR-qPCR	107		P	50 - 175
2083298	BacR-qPCR	78.6		P	50 - 175
2084684	BacR-qPCR	83.6		P	50 - 175
2084685	BacR-qPCR	74.1		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P363026

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2078143	Chlorophyll-a, Corrected	6.66	Sample	P	0 - 25
2078143	Chlorophyll-a, Uncorrected	6.38	Sample	P	0 - 25
2078143	Phaeophytin-a	4.77	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P363172

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082374	HF183-qPCR	10.4	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P363659

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084686	GFD-purified-qPCR	3.56	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P363172

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082374	BacR-qPCR	22.0	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

Quality Assurance Report Surrogates

Lab Sample ID: 2078230
Field Sample ID: G3SD0094

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	101	P	50 - 300

Lab Sample ID: 2078231
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	109	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	104	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	88.1			6.66	
	Chlorophyll-a, Uncorrected				6.38	
	Phaeophytin-a				4.77	
SOP-PCR-1.0	HF183-qPCR	123 130	75.0 69.4 62.6 91.4			10.4
SOP-PCR-1.2	GULL2-qPCR	111 97.4	90.2 59.2 75.0 87.5			
SOP-PCR-1.3	GFD-purified-qPCR	92.5 158	1120 1330 1040 1010			3.56
SOP-PCR-1.4	BacR-qPCR	84.2 104	54.5 48.0 38.9 69.5			22.0

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
Enterolert/QT / E85086	Enterococci by Enterolert Quanti-Tray method by Benchmark EA South in North Port	2078235
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2078228
SM 9223 Quanti-Tray / E85086	Escherichia coli by Colilert 18 Quanti-Tray method by Benchmark EA South in North Port	2078232, 2078233, 2078234, 2078236
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2078230, 2078231
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2078231
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2078231
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2078231
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2078229, 2078230, 2078231

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	04/15/2019	04/15/2019 14:09		04/16/2019 15:37	Benchmark EnviroAnalytical in North Port	2078235
SM 10200 H (mod.)	04/16/2019	04/16/2019 13:15	Edwin Gonzalez-Soto	04/29/2019 08:32	Carina A. Tull	2078228
SM 9223 Quanti-Tray	04/15/2019	04/15/2019 14:18		04/16/2019 15:31	Benchmark EnviroAnalytical in North Port	2078232, 2078233, 2078234, 2078236
SOP-PCR-1.0	04/16/2019	04/16/2019 15:15	Angela Smith	05/13/2019 10:08	Sarah Menz	2078230, 2078231
SOP-PCR-1.2	04/16/2019	04/16/2019 15:15	Angela Smith	05/15/2019 10:25	Sarah Menz	2078231
SOP-PCR-1.3	04/16/2019	04/16/2019 15:15	Angela Smith	05/17/2019 09:40	Sarah Menz	2078231
SOP-PCR-1.4	04/16/2019	04/16/2019 15:15	Angela Smith	05/13/2019 15:40	Sarah Menz	2078231
SOP-PCR-4.0	04/16/2019	04/16/2019 15:15	Angela Smith	05/06/2019 09:16	Sarah Menz	2078229, 2078230, 2078231