

Biological Analysis Report

SO-DIST-2019-07-09-01

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-2019-06-17-19**
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

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Certified by: Puja Jasrotia, Environmental Manager

Date Certified: 19-AUG-2019 08:03



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: UnnamedDitch@IndianaAve

Collection Date/Time: 07/08/2019 10:40

Field ID: G2SD0022

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100802	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	228		MPN/100 mL		

Sample Location: WoodmereCreek@HeronRd

Collection Date/Time: 07/08/2019 11:00

Field ID: G2SD0027

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100796	SOP-PCR-1.0	HF183-qPCR**	800	I	GEU/100 mL	P367377	LCS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold			P366861	
2100806	Enterolert/QT	Enterococci-Quanti-Tray	613		MPN/100 mL		

Sample Location: South Creek @HonoreAve

Collection Date/Time: 07/08/2019 11:35

Field ID: G3SD0090

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100803	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	74		MPN/100 mL		

Sample Location: NorthCreek(Tidal)@41

Collection Date/Time: 07/08/2019 12:25

Field ID: G3SD0089

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100797	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P367741	LCS
	SOP-PCR-1.2	GULL2-qPCR**	1.1E+04	U	TSC/100 mL	P367741	LCS
	SOP-PCR-1.3	GFD-purified-qPCR**	110	U	TSC/100 mL	P367816	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P367741	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold			P366861	
2100807	Enterolert/QT	Enterococci-Quanti-Tray	355		MPN/100 mL		

Ref. Method and Comment:

SOP-PCR-1.0: Precision data unavailable for Analysis batch A93200

SOP-PCR-1.4: Precision data unavailable for Analysis batch A93238

Sample Location: Walker Creek @32ndSt

Collection Date/Time: 07/08/2019 13:10

Field ID: G3SD0094

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100794	SOP-PCR-1.0	HF183-qPCR**	3.98E+03		GEU/100 mL	P367377	LCS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold			P366861	
2100804	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	857		MPN/100 mL		

Sample Location: PhillippeCreek@Proctor

Collection Date/Time: 07/08/2019 14:05

Field ID: G3SD0091

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100780	SM 10200 H (mod.)	Chlorophyll-a, Corrected	25		ug/L	P367432	
		Phaeophytin-a	3.6	I	ug/L	P367432	
		Chlorophyll-a, Uncorrected	28		ug/L	P367432	
2100808	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	148		MPN/100 mL		

Field ID: G3SD0091

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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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: PhillippeCreek@Proctor

Collection Date/Time: 07/08/2019 14:10

Field ID: G3SD0091_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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2100781	SM 10200 H (mod.)	Chlorophyll-a, Corrected	23		ug/L	P367432	
		Phaeophytin-a	2.8	I	ug/L	P367432	
		Chlorophyll-a, Uncorrected	25		ug/L	P367432	
2100809	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	145		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: NorthCreek@OaksCreekCt

Collection Date/Time: 07/08/2019 12:00

Field ID: G3SD0064

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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2100795	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold			P366861	
2100805	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	134		MPN/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P367432

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.89	U	ug/L
Chlorophyll-a, Uncorrected	0.65	U	ug/L
Phaeophytin-a	0.98	U	ug/L

Reference Method: SOP-PCR-1.0

Batch ID: P367377

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

Reference Method: SOP-PCR-1.0

Batch ID: P367741

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

Reference Method: SOP-PCR-1.2

Batch ID: P367741

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.3
Batch ID: P367816

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

Reference Method: SOP-PCR-1.4
Batch ID: P367741

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: P367432

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	91.2		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P367377

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	148	258	P/F	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P367741

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	100	294	P/F	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P367741

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	292	475	P/F	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P367816

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	94.3	20.8	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P367741

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	88.9	102	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P367377

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100794	HF183-qPCR	126	125	P	50 - 175
2100796	HF183-qPCR	124		P	50 - 175
2101217	HF183-qPCR	133		P	50 - 175
2103714	HF183-qPCR	142		P/P	50 - 175
2103715	HF183-qPCR	142		P	50 - 175
2103716	HF183-qPCR	140		P	50 - 175
2103717	HF183-qPCR	130		P	50 - 175
2104382	HF183-qPCR	121	125	P	50 - 175
2104383	HF183-qPCR	112		P	50 - 175
2104384	HF183-qPCR	134		P	50 - 175
2104641	HF183-qPCR	111		P	50 - 175
2104642	HF183-qPCR	124		P	50 - 175
2104643	HF183-qPCR	132		P	50 - 175

Reference Method: SOP-PCR-1.0

Batch ID: P367741

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100797	HF183-qPCR	75.2	125	P	50 - 175
2105472	HF183-qPCR	81.1		P	50 - 175
2105473	HF183-qPCR	78.8		P	50 - 175
2105474	HF183-qPCR	69.0		P	50 - 175
2105647	HF183-qPCR	62.7		P	50 - 175
2105648	HF183-qPCR	71.7		P	50 - 175
2105840	HF183-qPCR	70.7		P	50 - 175
2106039	HF183-qPCR	78.2		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P367741

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100797	GULL2-qPCR	214	198	P	50 - 300
2105440	GULL2-qPCR	195		P/P	50 - 300
2105441	GULL2-qPCR	250		P	50 - 300
2105442	GULL2-qPCR	192		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P367816

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100797	GFD-purified-qPCR	89.3	179	P	50 - 175
2105440	GFD-purified-qPCR	150		P/F	50 - 175
2105441	GFD-purified-qPCR	178		F	50 - 175
2105442	GFD-purified-qPCR	155		P	50 - 175
2108270	GFD-purified-qPCR	188		F	50 - 175
2108495	GFD-purified-qPCR	211		F	50 - 175
2108496	GFD-purified-qPCR	203		F	50 - 175
2108497	GFD-purified-qPCR	217	179	F	50 - 175
2109426	GFD-purified-qPCR	200		F	50 - 175
2109427	GFD-purified-qPCR	211		F	50 - 175
2109428	GFD-purified-qPCR	182		F	50 - 175
2109921	GFD-purified-qPCR	177		F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3
 Batch ID: P367816

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109922	GFD-purified-qPCR	194		F	50 - 175
2109923	GFD-purified-qPCR	191		F	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P367741

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100797	BacR-qPCR	63.4		P	50 - 175
2105428	BacR-qPCR	59.5		P	50 - 175
2105647	BacR-qPCR	50.5		P	50 - 175
2105648	BacR-qPCR	76.7		P	50 - 175
2105841	BacR-qPCR	56.5		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
 Batch ID: P367432

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100690	Chlorophyll-a, Corrected	0.0496	Sample	P	0 - 25
2100690	Chlorophyll-a, Uncorrected	2.51	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
 Batch ID: P367377

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2103714	HF183-qPCR	12.7	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
 Batch ID: P367741

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2105440	GULL2-qPCR	1.68	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P367816

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2105440	GFD-purified-qPCR	17.7	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: 2100794
Field Sample ID: G3SD0094

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	105	P	50 - 300

Lab Sample ID: 2100796
Field Sample ID: G2SD0027

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	104	P	50 - 300

Lab Sample ID: 2100797
Field Sample ID: G3SD0089

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	78.6	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	80.9	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	73.5	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	91.2			0.0496	
	Chlorophyll-a, Uncorrected				2.51	
SOP-PCR-1.0	HF183-qPCR	258 148	142 125 142			12.7
	HF183-qPCR	294 100	75.2 81.1 78.8			
			69.0			
SOP-PCR-1.2	GULL2-qPCR	475 292	214 195 198			1.68
			250			
SOP-PCR-1.3	GFD-purified-qPCR	20.8 94.3	150 179 178			17.7
			155			
SOP-PCR-1.4	BacR-qPCR	102 88.9	63.4 59.5 50.5			
			76.7			

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
Enterolert/QT / E85086	Enterococci by Enterolert/QT by BEA South in North Port	2100806, 2100807
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2100780, 2100781
SM 9223 Quanti-Tray / E85086	E. coli by Colilert/QT by BEA South in North Port	2100802, 2100803, 2100804, 2100805, 2100808, 2100809
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2100794, 2100796, 2100797
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2100797
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2100797
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2100797
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2100794, 2100795, 2100796, 2100797

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	07/08/2019	07/08/2019 16:25		07/09/2019 16:55	Benchmark EnviroAnalytical in North Port	2100806, 2100807
SM 10200 H (mod.)	07/09/2019	07/09/2019 13:01	Yuliya Danyuk	07/17/2019 09:52	Yuliya Danyuk	2100780, 2100781
SM 9223 Quanti-Tray	07/08/2019	07/08/2019 16:32		07/09/2019 16:49	Benchmark EnviroAnalytical in North Port	2100802, 2100803, 2100804, 2100805, 2100808, 2100809
SOP-PCR-1.0	07/09/2019	07/09/2019 15:30	Angela Smith	08/01/2019 15:05	Mailin Lopez	2100794, 2100796
	07/09/2019	07/09/2019 15:30	Sarah Menz	08/01/2019 08:40	Mailin Lopez	2100797
SOP-PCR-1.2	07/09/2019	07/09/2019 15:30	Sarah Menz	08/09/2019 14:37	Mailin Lopez	2100797
SOP-PCR-1.3	07/09/2019	07/09/2019 15:30	Angela Smith	08/13/2019 14:57	Mailin Lopez	2100797
SOP-PCR-1.4	07/09/2019	07/09/2019 15:30	Sarah Menz	08/02/2019 13:03	Mailin Lopez	2100797
SOP-PCR-4.0	07/09/2019	07/09/2019 15:30	Angela Smith	07/23/2019 11:29	Sarah Menz	2100794, 2100795, 2100796, 2100797