

Biological Analysis Report

SO-DIST-2019-03-19-01

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: **2019 SMP : P Cricks Part 2**

Request ID: **RQ-2019-03-11-29**

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: 25-APR-2019 13:16



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: HawthorneCreek@Reynolds

Collection Date/Time: 03/18/2019 10:05

Field ID: G3SD0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071056	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.6	I	ug/L	P361519	
		Phaeophytin-a	1.4	U	ug/L	P361519	
		Chlorophyll-a, Uncorrected	2.0	I	ug/L	P361519	
2071058	SOP-PCR-1.0	HF183-qPCR**	320	I	GEU/100 mL	P360512	
2071064	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	836		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: Hog Bay @ CR 763

Collection Date/Time: 03/18/2019 10:45

Field ID: G3SD0096

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071054	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.0	I	ug/L	P361686	
		Phaeophytin-a	1.2	U	ug/L	P361686	
		Chlorophyll-a, Uncorrected	2.7		ug/L	P361686	
2071062	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	521		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: MyrtleSlough@PinelIsland

Collection Date/Time: 03/18/2019 11:40

Field ID: G3SD0095

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071057	SM 10200 H (mod.)	Chlorophyll-a, Corrected	5.8		ug/L	P361519	
		Phaeophytin-a	1.2	U	ug/L	P361519	
		Chlorophyll-a, Uncorrected	6.7		ug/L	P361519	
2071059	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P361140	
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	UJ	TSC/100 mL	P361140	SUR
	SOP-PCR-1.3	GFD-purified-qPCR**	170	U	TSC/100 mL	P361911	LCS, MS, RPD
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P361140	MS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold			P360637	
2071065	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	3255		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.

SOP-PCR-1.2: Precision data unavailable for Analysis Batch # A90582. Quality control failure(s) observed. See QA report for details.

Sample Location: Myrtle Slough @ SR 31

Collection Date/Time: 03/18/2019 12:25

Field ID: G3SD0097

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071055	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.72	I	ug/L	P361686	
		Phaeophytin-a	0.60	U	ug/L	P361686	
		Chlorophyll-a, Uncorrected	1.0	I	ug/L	P361686	
2071063	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	51		MPN/100 mL		

Field ID: G3SD0097

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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: P361519

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.62	U	ug/L
Chlorophyll-a, Uncorrected	0.45	U	ug/L
Phaeophytin-a	0.68	U	ug/L

Reference Method: SM 10200 H (mod.)
Batch ID: P361686

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.62	U	ug/L
Chlorophyll-a, Uncorrected	0.45	U	ug/L
Phaeophytin-a	0.68	U	ug/L

Reference Method: SOP-PCR-1.0
Batch ID: P360512

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

Reference Method: SOP-PCR-1.0
Batch ID: P361140

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

Reference Method: SOP-PCR-1.2
Batch ID: P361140

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

Reference Method: SOP-PCR-1.3
Batch ID: P361911

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

Reference Method: SOP-PCR-1.4
Batch ID: P361140

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P361519

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	99.8		P	84 - 116

Reference Method: SM 10200 H (mod.)
Batch ID: P361686

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	105		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P360512

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	112	143	P/P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P361140

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	131	110	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P361140

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	137	210	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P361911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	151	13.2	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P361140

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	109	121	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P360512

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2065677	HF183-qPCR	87.5		P	50 - 175
2065678	HF183-qPCR	90.2		P	50 - 175
2065679	HF183-qPCR	93.5		P	50 - 175
2066131	HF183-qPCR	85.4		P	50 - 175
2066948	HF183-qPCR	95.6		P	50 - 175
2067539	HF183-qPCR	91.3		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P360512

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2067540	HF183-qPCR	67.4	96.7	P	50 - 175
2070613	HF183-qPCR	97.5		P/P	50 - 175
2070872	HF183-qPCR	102		P	50 - 175
2071058	HF183-qPCR	106		P	50 - 175
2071543	HF183-qPCR	98.5		P	50 - 175
2071722	HF183-qPCR	99.9	96.1	P	50 - 175
2071723	HF183-qPCR	96.1		P	50 - 175

Reference Method: SOP-PCR-1.0

Batch ID: P361140

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068511	HF183-qPCR	71.5	95.7	P	50 - 175
2068767	HF183-qPCR	98.2		P	50 - 175
2068768	HF183-qPCR	95.3		P	50 - 175
2070871	HF183-qPCR	96.3		P	50 - 175
2070981	HF183-qPCR	93.0		P	50 - 175
2070982	HF183-qPCR	102		P	50 - 175
2070983	HF183-qPCR	114		P	50 - 175
2071059	HF183-qPCR	96.7		P	50 - 175
2073222	HF183-qPCR	92.1		P	50 - 175
2073223	HF183-qPCR	112		P	50 - 175
2073224	HF183-qPCR	83.9		P	50 - 175
2073225	HF183-qPCR	93.8		P/P	50 - 175
2073226	HF183-qPCR	68.8		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P361140

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068767	GULL2-qPCR	106	95.7	P	50 - 300
2068768	GULL2-qPCR	81.9		P	50 - 300
2070871	GULL2-qPCR	81.0		P	50 - 300
2070983	GULL2-qPCR	82.4		P	50 - 300
2071059	GULL2-qPCR	102		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P361911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068767	GFD-purified-qPCR	239	95.7	F	50 - 175
2068768	GFD-purified-qPCR	253		F	50 - 175
2069251	GFD-purified-qPCR	234		F	50 - 175
2069252	GFD-purified-qPCR	152		P	50 - 175
2069253	GFD-purified-qPCR	260		F	50 - 175
2069298	GFD-purified-qPCR	146		P	50 - 175
2070024	GFD-purified-qPCR	143		P	50 - 175
2070548	GFD-purified-qPCR	153		P	50 - 175
2070871	GFD-purified-qPCR	231		F	50 - 175
2070983	GFD-purified-qPCR	182		F	50 - 175
2071059	GFD-purified-qPCR	141		P	50 - 175
2071300	GFD-purified-qPCR	138		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3

Batch ID: P361911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071762	GFD-purified-qPCR	140		P	50 - 175
2072205	GFD-purified-qPCR	133		P	50 - 175
2077083	GFD-purified-qPCR	137		P	50 - 175
2077084	GFD-purified-qPCR	210		F	50 - 175
2077085	GFD-purified-qPCR	183		F	50 - 175
2077086	GFD-purified-qPCR	293	218	F/F	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P361140

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068767	BacR-qPCR	102		P	50 - 175
2068768	BacR-qPCR	85.2		P	50 - 175
2070871	BacR-qPCR	86.0		P	50 - 175
2070981	BacR-qPCR	85.1		P	50 - 175
2070982	BacR-qPCR	92.6		P	50 - 175
2070983	BacR-qPCR	85.7		P	50 - 175
2071059	BacR-qPCR	88.5		P	50 - 175
2073222	BacR-qPCR	56.9		P	50 - 175
2073223	BacR-qPCR	68.9		P	50 - 175
2073224	BacR-qPCR	56.8		P	50 - 175
2073225	BacR-qPCR	69.1	61.4	P/P	50 - 175
2073226	BacR-qPCR	47.6		F	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)

Batch ID: P361519

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071136	Chlorophyll-a, Corrected	6.99	Sample	P	0 - 25
2071136	Chlorophyll-a, Uncorrected	5.92	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0

Batch ID: P360512

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2070613	HF183-qPCR	0.766	Spike	P	0 - 25

Reference Method: SOP-PCR-1.0

Batch ID: P361140

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2073225	HF183-qPCR	2.00	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

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	97.7	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	315	F	50 - 300
SOP-PCR-1.4	SKETA-qPCR	102	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision		
							LCS	SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	99.8					6.99		
	Chlorophyll-a, Corrected	105							
	Chlorophyll-a, Uncorrected						5.92		
SOP-PCR-1.0	HF183-qPCR	143	112	97.5	96.7	87.5		0.766	
				90.2					
	HF183-qPCR	110	131	71.5	92.1	112		2.00	
				83.9					
SOP-PCR-1.2	GULL2-qPCR	210	137	106	81.9	81.0			
				82.4					
SOP-PCR-1.3	GFD-purified-qPCR	13.2	151	137	210	183		29.4	
SOP-PCR-1.4				293					
	BacR-qPCR	121	109	56.9	68.9	56.8		11.7	
				69.1					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2071054, 2071055, 2071056, 2071057
SM 9223 Quanti-Tray / E85086	Escherichia coli by Colilert 18 Quanti-Tray method by Benchmark EA South in North Port	2071062, 2071063, 2071064, 2071065
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2071058, 2071059
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2071059
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2071059
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2071059
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2071059

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	03/19/2019	03/19/2019 14:20	Edwin Gonzalez-Soto	04/03/2019 08:48	Jennifer Mihalic	2071054, 2071055
	03/19/2019	03/19/2019 14:20	Edwin Gonzalez-Soto	04/03/2019 10:05	Jennifer Mihalic	2071056, 2071057
SM 9223 Quanti-Tray	03/18/2019	03/18/2019 15:19		03/19/2019 15:39	Benchmark EnviroAnalytical in North Port	2071062, 2071063, 2071064, 2071065
SOP-PCR-1.0	03/19/2019	03/19/2019 12:25	Angela Smith	03/28/2019 08:40	Mailin Lopez	2071058
	03/19/2019	03/19/2019 12:25	Sarah Menz	04/04/2019 07:48	Mailin Lopez	2071059
SOP-PCR-1.2	03/19/2019	03/19/2019 12:25	Sarah Menz	04/10/2019 12:46	Mailin Lopez	2071059
SOP-PCR-1.3	03/19/2019	03/19/2019 12:25	Angela Smith	04/22/2019 10:54	Sarah Menz	2071059
SOP-PCR-1.4	03/19/2019	03/19/2019 12:25	Sarah Menz	04/04/2019 11:55	Mailin Lopez	2071059
SOP-PCR-4.0	03/19/2019	03/19/2019 12:25	Angela Smith	04/01/2019 11:32	Sarah Menz	2071059