Biological Analysis Report

SO-DIST-2019-01-31-01

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-2019-01-28-53**
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: 06-MAR-2019 11:08

NON-CONFORMANCE REPORT INCLUDED

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: 01/30/2019 09:05**

Field ID: G3SD0011 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2058444	SM 10200 H (mod.)	Chlorophyll-a, Corrected	4.6	J	ug/L	P358523	
		Phaeophytin-a	2.3	J	ug/L	P358523	
		Chlorophyll-a, Uncorrected	6.2	J	ug/L	P358523	
2058446	SOP-PCR-1.0	HF183-qPCR**	450	I	GEU/100 mL	P358030	LCS
2058450	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	1467		MPN/100 mL		

Ref. Method and Comment:
SM 10200 H (mod.): Precision data isn't available for at least one component due to the small amount of analyte in the QC sample.Refer to QA report for precision data.See nonconformance report 7482.Phaeo-a may be biased high Chl-a corr may be biased low

Sample Location: Hog Bay @ CR 763 **Collection Date/Time: 01/30/2019 09:45**

Field ID: G3SD0096 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2058442	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.8	J	ug/L	P358523	
		Phaeophytin-a	2.0	J	ug/L	P358523	
		Chlorophyll-a, Uncorrected	8.3	J	ug/L	P358523	
2058448	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	880		MPN/100 mL		

Ref. Method and Comment:
SM 10200 H (mod.): Precision data isn't available for at least one component due to the small amount of analyte in the QC sample.Refer to QA report for precision data.See nonconformance report 7482.Phaeo-a may be biased high Chl-a corr may be biased low

Sample Location: MyrtleSlough@PineIsland **Collection Date/Time: 01/30/2019 10:30**

Field ID: G3SD0095 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2058445	SM 10200 H (mod.)	Chlorophyll-a, Corrected	7.2	J	ug/L	P358523	
		Phaeophytin-a	1.4	IJ	ug/L	P358523	
		Chlorophyll-a, Uncorrected	8.2	J	ug/L	P358523	
2058447	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P358312	
	SOP-PCR-1.4	BacR-qPCR**	5.37E+05		TSC/100 mL	P358312	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold			P358029	
2058451	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	1935		MPN/100 mL		

Ref. Method and Comment:
SM 10200 H (mod.): Precision data isn't available for at least one component due to the small amount of analyte in the QC sample.Refer to QA report for precision data.See nonconformance report 7482.Phaeo-a may be biased high Chl-a corr may be biased low

Sample Location: Myrtle Slough @ SR 31 **Collection Date/Time: 01/30/2019 11:11**

Field ID: G3SD0097 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2058443	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.1	J	ug/L	P358523	
		Phaeophytin-a	0.66	IJ	ug/L	P358523	
		Chlorophyll-a, Uncorrected	2.6	J	ug/L	P358523	
2058449	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	253		MPN/100 mL		

Ref. Method and Comment:
SM 10200 H (mod.): Precision data isn't available for at least one component due to the small amount of analyte in the QC sample.Refer to QA report for precision data.See nonconformance report 7482.Phaeo-a may be biased high Chl-a corr may be biased low

Non-Conformance Report

NCR ID: 7482

Event(s)	Job(s)	Sample(s)	Test(s)
SO-DIST-2019-01-31-01	TLH-2019-01-31-07		

NCR Type: ANALYSIS **NCR Category: Analytical Measurement**

Observation: Samples were inadvertently allowed to thaw overnight which does not comply with the method.

Resolution: Customers have been notified and results will be "J" qualified.

Authorized by/Date: Cheryl A. Swanson 2/25/2019

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report
Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P358523

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.55	U	ug/L
Chlorophyll-a, Uncorrected	0.40	U	ug/L
Phaeophytin-a	0.60	U	ug/L

Reference Method: SOP-PCR-1.0
Batch ID: P358030

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

Reference Method: SOP-PCR-1.0
Batch ID: P358312

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

Reference Method: SOP-PCR-1.4
Batch ID: P358312

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: P358523

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	114		P	84 - 116

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P358030

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	96.4	186	P/F	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P358312

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	108	124	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P358312

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P358030

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057014	HF183-qPCR	59.8		P	50 - 175
2058129	HF183-qPCR	85.2		P	50 - 175
2058284	HF183-qPCR	97.0		P	50 - 175
2058446	HF183-qPCR	79.0		P	50 - 175
2058642	HF183-qPCR	95.0		P	50 - 175
2058643	HF183-qPCR	79.3		P	50 - 175
2058644	HF183-qPCR	83.6		P	50 - 175
2058645	HF183-qPCR	89.6		P	50 - 175
2058899	HF183-qPCR	74.8		P	50 - 175
2058900	HF183-qPCR	78.4		P	50 - 175
2059326	HF183-qPCR	80.1	71.8	P/P	50 - 175
2059327	HF183-qPCR	86.0		P	50 - 175
2059329	HF183-qPCR	81.6		P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P358312

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2058130	HF183-qPCR	84.8		P	50 - 175
2058447	HF183-qPCR	63.6		P	50 - 175
2058484	HF183-qPCR	86.3		P	50 - 175
2058676	HF183-qPCR	61.5		P	50 - 175
2058677	HF183-qPCR	65.5		P	50 - 175
2059328	HF183-qPCR	93.6		P	50 - 175
2059330	HF183-qPCR	75.8		P	50 - 175
2059331	HF183-qPCR	91.4		P	50 - 175
2059332	HF183-qPCR	97.2	96.9	P/P	50 - 175
2060474	HF183-qPCR	109		P	50 - 175
2060793	HF183-qPCR	89.4		P	50 - 175
2061286	HF183-qPCR	91.4		P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P358312

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061287	HF183-qPCR	88.0		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P358312

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2058130	BacR-qPCR	80.4		P	50 - 175
2058447	BacR-qPCR	83.5		P	50 - 175
2058484	BacR-qPCR	86.1		P	50 - 175
2058676	BacR-qPCR	75.7		P	50 - 175
2058677	BacR-qPCR	70.1		P	50 - 175
2059328	BacR-qPCR	68.1		P	50 - 175
2059330	BacR-qPCR	63.0		P	50 - 175
2059331	BacR-qPCR	72.6		P	50 - 175
2059332	BacR-qPCR	101	100	P/P	50 - 175
2060474	BacR-qPCR	97.9		P	50 - 175
2060793	BacR-qPCR	89.8		P	50 - 175
2061286	BacR-qPCR	91.1		P	50 - 175
2061287	BacR-qPCR	88.9		P	50 - 175

Quality Assurance Report
Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P358523

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2058230	Chlorophyll-a, Corrected	4.37	Sample	P	0 - 25
2058230	Chlorophyll-a, Uncorrected	3.34	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P358030

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2059326	HF183-qPCR	11.0	Spike	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P358312

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2059332	HF183-qPCR	0.315	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P358312

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2059332	BacR-qPCR	0.749	Spike	P	0 - 25

Quality Assurance Report
Precision

* 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: 2058446
Field Sample ID: G3SD0011

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	91.6	P	50 - 300

Lab Sample ID: 2058447
Field Sample ID: G3SD0095

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	69.2	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	92.3	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	114			4.37	
	Chlorophyll-a, Uncorrected				3.34	
SOP-PCR-1.0	HF183-qPCR	186 96.4	85.2 97.0 59.8 79.0			11.0
	HF183-qPCR	124 108	93.6 75.8 91.4 97.2			0.315
SOP-PCR-1.4	BacR-qPCR	102 102	68.1 63.0 72.6 101			0.749

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2058442, 2058443, 2058444, 2058445
SM 9223 Quanti-Tray / E85086	Escherichia coli by Colilert 18 Quanti-Tray method by Benchmark EA South in North Port	2058448, 2058449, 2058450, 2058451
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2058446, 2058447
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2058447
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2058447

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	01/31/2019	01/31/2019 14:50	Edwin Gonzalez-Soto	02/05/2019 15:55	Jennifer Mihalic	2058442, 2058443, 2058444, 2058445
SM 9223 Quanti-Tray	01/30/2019	01/30/2019 14:54		01/31/2019 15:30	Benchmark EnviroAnalytical in North Port	2058448, 2058449, 2058450, 2058451
SOP-PCR-1.0	01/31/2019	01/31/2019 11:20	Angela Smith	02/06/2019 14:45	Mailin Lopez	2058446
	01/31/2019	01/31/2019 11:20	Angela Smith	02/26/2019 11:19	Mailin Lopez	2058447
SOP-PCR-1.4	01/31/2019	01/31/2019 11:20	Angela Smith	02/27/2019 11:28	Mailin Lopez	2058447
SOP-PCR-4.0	01/31/2019	01/31/2019 11:20	Angela Smith	02/13/2019 13:02	Sarah Menz	2058447