

Biological Analysis Report

SO-DIST-2020-01-29-03

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: **2020 SMP : Peace River**

Request ID: **RQ-2020-01-27-48**

Customer: **SO-DIST**

Project ID: **SMP**

Send Reports to:

FL Dept. of Environmental Protection
FLDEP South District Office
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Certified by: Jacqueline Savage, Environmental Administrator

Date Certified: 18-MAR-2020 16:57

A handwritten signature in black ink that reads "Jackie Savage". The signature is written in a cursive, flowing style.

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: Peace River Estuary

Collection Date/Time: 01/28/2020 10:00

Field ID: G3SD0148

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2152636	SM 10200 H (mod.)	Chlorophyll-a, Corrected	17		ug/L	P379096	
		Phaeophytin-a	4.7	I	ug/L	P379096	
		Chlorophyll-a, Uncorrected	20		ug/L	P379096	
2152640	Enterolert/QT	Enterococci-Quanti-Tray	20		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: BobcatCreekPreserveEast

Collection Date/Time: 01/28/2020 10:45

Field ID: G3SD0131

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2152637	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.4	I	ug/L	P379096	
		Phaeophytin-a	0.90	U	ug/L	P379096	
		Chlorophyll-a, Uncorrected	1.4	I	ug/L	P379096	
2152639	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P377896	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P377896	MS
	SOP-PCR-1.3	GFD-purified-qPCR**	170	U	TSC/100 mL	P378218	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P377896	LCS
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P377896	
2152641	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	987		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: PeaceRiver HorseCreek2

Collection Date/Time: 01/28/2020 12:05

Field ID: G3SD0154

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2152638	SM 10200 H (mod.)	Chlorophyll-a, Corrected	19		ug/L	P379096	
		Phaeophytin-a	2.6	I	ug/L	P379096	
		Chlorophyll-a, Uncorrected	21		ug/L	P379096	
2152642	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	52		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.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P379096

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P377896

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

Reference Method: SOP-PCR-1.2
Batch ID: P377896

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

Reference Method: SOP-PCR-1.3
Batch ID: P378218

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

Reference Method: SOP-PCR-1.4
Batch ID: P377896

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

Reference Method: SOP-PCR-1.5
Batch ID: P377896

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: P379096

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	108		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P377896

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	115	123	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P377896

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	103	73.1	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P378218

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P378218

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	68.6	48.7	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P377896

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	168	247	P/F	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P377896

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	80.4	137	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P377896

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2152610	HF183-qPCR	113	104	P/P	50 - 175
2152611	HF183-qPCR	115		P	50 - 175
2152639	HF183-qPCR	109		P	50 - 175
2152984	HF183-qPCR	109		P	50 - 175
2152985	HF183-qPCR	109		P	50 - 175
2154235	HF183-qPCR	67.3		P	50 - 175
2154236	HF183-qPCR	99.6		P	50 - 175
2154752	HF183-qPCR	88.5		P	50 - 175
2155017	HF183-qPCR	92.3		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P377896

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2152610	GULL2-qPCR	107	109	P/P	50 - 300
2152611	GULL2-qPCR	87.7		P	50 - 300
2152639	GULL2-qPCR	88.2		P	50 - 300
2152985	GULL2-qPCR	92.6		P	50 - 300
2154235	GULL2-qPCR	16.4		F	50 - 300
2154236	GULL2-qPCR	91.1		P	50 - 300
2154752	GULL2-qPCR	15.5		F	50 - 300
2155017	GULL2-qPCR	75.1		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P378218

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2152610	GFD-purified-qPCR	178		F	50 - 175
2152611	GFD-purified-qPCR	137		P	50 - 175
2152639	GFD-purified-qPCR	156		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3

Batch ID: P378218

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2152985	GFD-purified-qPCR	132		P	50 - 175
2154235	GFD-purified-qPCR	150		P	50 - 175
2154236	GFD-purified-qPCR	186	174	F/P	50 - 175
2154752	GFD-purified-qPCR	163		P	50 - 175
2155017	GFD-purified-qPCR	159		P	50 - 175
2156535	GFD-purified-qPCR	90.4		P	50 - 175
2156536	GFD-purified-qPCR	152		P	50 - 175
2156537	GFD-purified-qPCR	99.7		P	50 - 175
2156538	GFD-purified-qPCR	164		P	50 - 175
2156539	GFD-purified-qPCR	167		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P377896

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2152610	BacR-qPCR	156	152	P/P	50 - 175
2152611	BacR-qPCR	140		P	50 - 175
2152639	BacR-qPCR	155		P	50 - 175
2152984	BacR-qPCR	145		P	50 - 175
2152985	BacR-qPCR	124		P	50 - 175
2154235	BacR-qPCR	91.0		P	50 - 175
2154236	BacR-qPCR	152		P	50 - 175
2154752	BacR-qPCR	123		P	50 - 175
2155017	BacR-qPCR	134		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P377896

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2152610	DG3-qPCR	94.3	85.3	P/P	50 - 175
2152611	DG3-qPCR	87.7		P	50 - 175
2152639	DG3-qPCR	88.5		P	50 - 175
2152984	DG3-qPCR	95.1		P	50 - 175
2152985	DG3-qPCR	89.7		P	50 - 175
2154235	DG3-qPCR	72.2		P	50 - 175
2154236	DG3-qPCR	85.0		P	50 - 175
2154752	DG3-qPCR	79.1		P	50 - 175
2155017	DG3-qPCR	82.4		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0

Batch ID: P377896

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2152610	HF183-qPCR	8.23	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.2
Batch ID: P377896

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2152610	GULL2-qPCR	1.99	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P378218

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2154236	GFD-purified-qPCR	6.95	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P377896

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2152610	BacR-qPCR	3.03	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P377896

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2152610	DG3-qPCR	10.0	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2152639
Field Sample ID: G3SD0131

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	85.2	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	91.7	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	85.1	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	79.3	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	108							
SOP-PCR-1.0	HF183-qPCR	123	115	113	104	115			8.23
				109					
SOP-PCR-1.2	GULL2-qPCR	73.1	103	107	109	87.7			1.99
				88.2					
SOP-PCR-1.3	GFD-purified-qPCR	48.7	68.6	150	186	174			6.95
				163					

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.4	BacR-qPCR	247	168	156	152	140			3.03
SOP-PCR-1.5	DG3-qPCR	137	80.4	94.3	85.3	87.7			10.0
				155		88.5			

Reference Method Descriptions

Method	Description	Associated Samples
Enterolert/QT	Enterococci by Enterolert/QT by BEA South in North Port	2152640
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2152636, 2152637, 2152638
SM 9223 Quanti-Tray	E. coli by Colilert/QT by BEA South in North Port	2152641, 2152642
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2152639
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2152639
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2152639
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2152639
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2152639

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	01/28/2020	01/28/2020 14:18		01/29/2020 14:57	Benchmark EnviroAnalytical in North Port	2152640
SM 10200 H (mod.)	01/29/2020	01/29/2020 14:46	Anthony Mirabito	01/31/2020 10:30	Jessica Fetgatter	2152636, 2152637, 2152638
SM 9223 Quanti-Tray	01/28/2020	01/28/2020 13:50		01/29/2020 14:19	Benchmark EnviroAnalytical in North Port	2152641, 2152642
SOP-PCR-1.0	01/29/2020	01/29/2020 15:30	Angela Smith	02/07/2020 11:24	Lauren Campbell	2152639
SOP-PCR-1.2	01/29/2020	01/29/2020 15:30	Angela Smith	02/12/2020 10:10	Mailin Lopez	2152639
SOP-PCR-1.3	01/29/2020	01/29/2020 15:30	Angela Smith	02/13/2020 08:23	Mailin Lopez	2152639
SOP-PCR-1.4	01/29/2020	01/29/2020 15:30	Angela Smith	02/10/2020 14:08	Lauren Campbell	2152639
SOP-PCR-1.5	01/29/2020	01/29/2020 15:30	Angela Smith	02/11/2020 11:04	Lauren Campbell	2152639