

Biological Analysis Report

SO-DIST-2018-07-24-01

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: **Myakka Streams**
Request ID: **RQ-2018-07-09-29**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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FLDEP South District Office
2295 Victoria Ave. Suite 364
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Date Certified: 21-AUG-2018 15:49



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 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: MyakkaRiver(Tidal)@US41

Collection Date/Time: 07/23/2018 10:15

Field ID: G3SD0068

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2010189	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P349283	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P349283	
	SOP-PCR-1.3	GFD-purified-qPCR**	170	UJ	TSC/100 mL	P349731	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P349283	LCS, RPD
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
2010191	Enterolert/QT	Enterococci-Quanti-Tray	820		MPN/100 mL		

Ref. Method and Comment:

SOP-PCR-1.2: Precision data unavailable due to inhibition in QC sample.

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

Sample Location: Rock Creek@EisenhowerDr

Collection Date/Time: 07/23/2018 11:05

Field ID: G3SD0070

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2010185	SM 10200 H (mod.)	Chlorophyll-a, Corrected	7.5		ug/L	P349473	
		Phaeophytin-a	1.4		ug/L	P349473	
		Chlorophyll-a, Uncorrected	8.6		ug/L	P349473	
2010190	Enterolert/QT	Enterococci-Quanti-Tray	1789		MPN/100 mL		

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for Phaeophytin-a due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: Apollo Waterway @ Bend

Collection Date/Time: 07/23/2018 11:35

Field ID: G3SD0069

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2010187	SM 10200 H (mod.)	Chlorophyll-a, Corrected	12		ug/L	P349530	
		Phaeophytin-a	2.1		ug/L	P349530	
		Chlorophyll-a, Uncorrected	13		ug/L	P349530	
2010192	Enterolert/QT	Enterococci-Quanti-Tray	30		MPN/100 mL		

Sample Location: Apollo Waterwat @ Bend

Collection Date/Time: 07/23/2018 11:40

Field ID: BLANK_07232018

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2010188	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.69	U	ug/L	P349530	
		Phaeophytin-a	0.50	U	ug/L	P349530	
		Chlorophyll-a, Uncorrected	0.50	U	ug/L	P349530	

Sample Location: Little Alligator@Midway

Collection Date/Time: 07/23/2018 12:20

Field ID: G3SD0071

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2010186	SM 10200 H (mod.)	Chlorophyll-a, Corrected	4.2		ug/L	P349473	
		Phaeophytin-a	1.5		ug/L	P349473	
		Chlorophyll-a, Uncorrected	5.2		ug/L	P349473	

Field ID: G3SD0071

Matrix: W-SURF-SLT

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 Phaeophytin-a 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: P349473

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

Reference Method: SM 10200 H (mod.)
Batch ID: P349530

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

Reference Method: SOP-PCR-1.0
Batch ID: P349283

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

Reference Method: SOP-PCR-1.2
Batch ID: P349283

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

Reference Method: SOP-PCR-1.3
Batch ID: P349731

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

Reference Method: SOP-PCR-1.4
Batch ID: P349283

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: P349473

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	87.4		P	84 - 116

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P349530

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	92.9		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P349283

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	88.7	156	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P349283

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	90.3	218	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P349731

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	128	36.5	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P349283

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	92.3	297	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P349283

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009106	HF183-qPCR	77.3		P	50 - 175
2009107	HF183-qPCR	100		P	50 - 175
2009108	HF183-qPCR	98.9		P	50 - 175
2009110	HF183-qPCR	90.9		P	50 - 175
2009364	HF183-qPCR	101		P	50 - 175
2009392	HF183-qPCR	86.3		P	50 - 175
2010189	HF183-qPCR	108		P	50 - 175
2010538	HF183-qPCR	78.3		P	50 - 175
2010541	HF183-qPCR	120		P	50 - 175
2010655	HF183-qPCR	55.0		P	50 - 175
2011037	HF183-qPCR	83.8		P	50 - 175
2012341	HF183-qPCR	61.7	56.8	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P349283

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009106	GULL2-qPCR	71.5		P	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2

Batch ID: P349283

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009108	GULL2-qPCR	89.2		P	50 - 300
2010189	GULL2-qPCR	111		P	50 - 300
2010538	GULL2-qPCR	86.0		P	50 - 300
2010541	GULL2-qPCR	98.0		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P349731

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009106	GFD-purified-qPCR	79.5		P	50 - 175
2009108	GFD-purified-qPCR	158		P	50 - 175
2010189	GFD-purified-qPCR	211		F	50 - 175
2010538	GFD-purified-qPCR	121		P	50 - 175
2010541	GFD-purified-qPCR	89.6		P	50 - 175
2016356	GFD-purified-qPCR	182		F	50 - 175
2016357	GFD-purified-qPCR	165	163	P/P	50 - 175
2016358	GFD-purified-qPCR	158		P	50 - 175
2016359	GFD-purified-qPCR	140		P	50 - 175
2016360	GFD-purified-qPCR	142		P	50 - 175
2016361	GFD-purified-qPCR	172		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P349283

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009106	BacR-qPCR	69.1		P	50 - 175
2009108	BacR-qPCR	90.4		P	50 - 175
2009364	BacR-qPCR	90.6		P	50 - 175
2010189	BacR-qPCR	77.7		P	50 - 175
2010538	BacR-qPCR	79.2		P	50 - 175
2010541	BacR-qPCR	79.3		P	50 - 175
2012341	BacR-qPCR	94.1	63.1	P/P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)

Batch ID: P349473

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010054	Chlorophyll-a, Corrected	9.77	Sample	P	0 - 25
2010054	Chlorophyll-a, Uncorrected	10.9	Sample	P	0 - 25

Reference Method: SM 10200 H (mod.)

Batch ID: P349530

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010276	Chlorophyll-a, Corrected	2.82	Sample	P	0 - 25
2010276	Chlorophyll-a, Uncorrected	0.613	Sample	P	0 - 25

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P349530

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010276	Phaeophytin-a	6.15	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P349283

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012341	HF183-qPCR	8.08	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P349731

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2016357	GFD-purified-qPCR	1.22	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P349283

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012341	BacR-qPCR	38.8	Spike	F	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

Lab Sample ID: 2010189
Field Sample ID: G3SD0068

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	107	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	109	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	110	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	87.4					9.77	
	Chlorophyll-a, Corrected	92.9					2.82	
	Chlorophyll-a, Uncorrected						10.9	
	Chlorophyll-a, Uncorrected						0.613	
	Phaeophytin-a						6.15	
SOP-PCR-1.0	HF183-qPCR	156	88.7	77.3	100	98.9		8.08
				90.9				

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.2	GULL2-qPCR	218	90.3	71.5	89.2	111			
SOP-PCR-1.3	GFD-purified-qPCR	36.5	128	79.5	158	211			1.22
SOP-PCR-1.4	BacR-qPCR	297	92.3	69.1	90.4	90.6			38.8
				86.0					
				121					
				77.7					

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	2010190, 2010191, 2010192
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2010185, 2010186, 2010187, 2010188
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2010189
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2010189
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2010189
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2010189
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2010189

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	07/23/2018	07/23/2018 13:44		07/24/2018 14:22	Benchmark EnviroAnalytical in North Port	2010190, 2010191, 2010192
SM 10200 H (mod.)	07/24/2018	07/24/2018 15:10	Mariam Hanna	07/30/2018 09:30	Carina A. Tull	2010185, 2010186
	07/24/2018	07/24/2018 15:10	Mariam Hanna	07/31/2018 08:15	Carina A. Tull	2010187, 2010188
SOP-PCR-1.0	07/24/2018	07/24/2018 14:30	Sarah Menz	08/07/2018 11:01	Mailin Lopez	2010189
SOP-PCR-1.2	07/24/2018	07/24/2018 14:30	Sarah Menz	08/09/2018 12:04	Mailin Lopez	2010189
SOP-PCR-1.3	07/24/2018	07/24/2018 14:30	Mailin Lopez	08/16/2018 11:54	Sarah Menz	2010189
SOP-PCR-1.4	07/24/2018	07/24/2018 14:30	Sarah Menz	08/08/2018 14:48	Mailin Lopez	2010189
SOP-PCR-4.0	07/24/2018	07/24/2018 14:30	Sarah Menz	08/01/2018 11:13	Sarah Menz	2010189