

Biological Analysis Report

SO-DIST-2018-05-15-02

Florida Department of Environmental Protection
Central Laboratory
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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 Streams**
Request ID: **RQ-2018-05-07-44**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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FLDEP South District Office
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Date Certified: 28-SEP-2018 12:56



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: Phillippi Creek@Proctor

Collection Date/Time: 05/14/2018 10:15

Field ID: G3SD0091

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992840	SM 10200 H (mod.)	Chlorophyll-a, Corrected	23		ug/L	P345818	
		Phaeophytin-a	4.4		ug/L	P345818	
		Chlorophyll-a, Uncorrected	27		ug/L	P345818	
1992845	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	231		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. Lab blank failure. Chl-a Corr and Uncorr results >10 times blank.

Sample Location: Matheny Creek @BenevaRd

Collection Date/Time: 05/14/2018 10:45

Field ID: G3SD0092

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992842	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P346382	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P346382	
	SOP-PCR-1.3	GFD-purified-qPCR**	3.02E+03		TSC/100 mL	P346882	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P346382	RPD
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1992847	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	8164		MPN/100 mL		

Sample Location: North Creek(Tidal)@US41

Collection Date/Time: 05/14/2018 11:15

Field ID: G3SD0089

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992844	SOP-PCR-1.0	HF183-qPCR**	140	I	GEU/100 mL	P346382	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1992849	Enterolert/QT	Enterococci-Quanti-Tray	697		MPN/100 mL		

Sample Location: North Creek byOaksCrkCt

Collection Date/Time: 05/14/2018 12:15

Field ID: G3SD0064

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992841	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.73	IV	ug/L	P345818	
		Phaeophytin-a	1.1	I	ug/L	P345818	
		Chlorophyll-a, Uncorrected	1.4	V	ug/L	P345818	
1992846	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	120		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. Result V-qualified due to lab blank failure for Chl-a Corr and Uncorr.

Sample Location: South Creek @ HonoreAve

Collection Date/Time: 05/14/2018 11:30

Field ID: G3SD0090

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992843	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1992848	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	41		MPN/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P345818

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.76	I	ug/L
Chlorophyll-a, Uncorrected	0.71	I	ug/L
Phaeophytin-a	0.40	U	ug/L

Reference Method: SOP-PCR-1.0
Batch ID: P346382

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

Reference Method: SOP-PCR-1.2
Batch ID: P346382

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

Reference Method: SOP-PCR-1.3
Batch ID: P346882

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

Reference Method: SOP-PCR-1.4
Batch ID: P346382

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: P345818

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	94.8		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P346382

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	114	130	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P346382

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	90.4	88.4	P/P	50 - 300

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P346882

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	82.1	65.0	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P346382

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	87.7	144	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P346382

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992752	HF183-qPCR	84.4		P	50 - 175
1992753	HF183-qPCR	85.2		P	50 - 175
1992754	HF183-qPCR	94.5		P	50 - 175
1992842	HF183-qPCR	85.7		P	50 - 175
1992844	HF183-qPCR	76.5		P	50 - 175
1997118	HF183-qPCR	89.6	101	P/P	50 - 175
1997119	HF183-qPCR	95.6		P	50 - 175
1997900	HF183-qPCR	72.5		P	50 - 175
1997901	HF183-qPCR	87.8		P	50 - 175
1997902	HF183-qPCR	93.8		P	50 - 175
1997903	HF183-qPCR	87.8		P	50 - 175
1997904	HF183-qPCR	93.2		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P346382

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992752	GULL2-qPCR	66.3		P	50 - 300
1992753	GULL2-qPCR	71.0		P	50 - 300
1992754	GULL2-qPCR	61.7		P	50 - 300
1992842	GULL2-qPCR	91.8		P	50 - 300
1997118	GULL2-qPCR	93.7	73.8	P/P	50 - 300
1997119	GULL2-qPCR	83.1		P	50 - 300
1997901	GULL2-qPCR	81.7		P	50 - 300
1997902	GULL2-qPCR	76.9		P	50 - 300
1997903	GULL2-qPCR	90.0		P	50 - 300
1997904	GULL2-qPCR	79.9		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P346882

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991767	GFD-purified-qPCR	88.8		P	50 - 175
1992753	GFD-purified-qPCR	64.0		P	50 - 175
1992754	GFD-purified-qPCR	56.9	67.9	P/P	50 - 175
1992842	GFD-purified-qPCR	62.5		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P346882

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1995474	GFD-purified-qPCR	133		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P346382

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992752	BacR-qPCR	64.9		P	50 - 175
1992753	BacR-qPCR	62.9		P	50 - 175
1992754	BacR-qPCR	64.1		P	50 - 175
1992842	BacR-qPCR	71.9		P	50 - 175
1997118	BacR-qPCR	59.6	77.5	P/P	50 - 175
1997119	BacR-qPCR	62.1		P	50 - 175
1997901	BacR-qPCR	82.5		P	50 - 175
1997902	BacR-qPCR	59.8		P	50 - 175
1997903	BacR-qPCR	86.6		P	50 - 175
1997904	BacR-qPCR	84.3		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P345818

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992784	Chlorophyll-a, Uncorrected	2.27	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P346382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997118	HF183-qPCR	12.2	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P346382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997118	GULL2-qPCR	23.8	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P346882

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992754	GFD-purified-qPCR	7.40	Sample	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.4
 Batch ID: P346382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997118	BacR-qPCR	26.2	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: 1992842
 Field Sample ID: G3SD0092

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	108	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	96.8	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	95.0	P	50 - 300

Lab Sample ID: 1992844
 Field Sample ID: G3SD0089

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	102	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	94.8							
	Chlorophyll-a, Uncorrected							2.27	
SOP-PCR-1.0	HF183-qPCR	130	114	89.6	101	95.6			12.2
				72.5					
SOP-PCR-1.2	GULL2-qPCR	88.4	90.4	93.7	73.8	83.1			23.8
				81.7					
SOP-PCR-1.3	GFD-purified-qPCR	65.0	82.1	133	64.0	56.9		7.40	
				67.9					
SOP-PCR-1.4	BacR-qPCR	144	87.7	59.6	77.5	62.1			26.2
				82.5					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
Enterolert/QT / E85086	Enterococci by Enterolert Quanti-Tray method by Benchmark EA South for SD	1992849
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1992840, 1992841
SM 9223 Quanti-Tray / E85086	Escherichia coli by Colilert 18 Quanti-Tray method by Benchmark EA South	1992845, 1992846, 1992847, 1992848
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1992842, 1992844
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1992842

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1992842
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1992842
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1992842, 1992843, 1992844

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	05/14/2018	05/14/2018 14:54		05/15/2018 15:32	Benchmark EnviroAnalytical in North Port	1992849
SM 10200 H (mod.)	05/15/2018	05/15/2018 13:30	Mariam Hanna	05/23/2018 09:15	Carina A. Tull	1992840, 1992841
SM 9223 Quanti-Tray	05/14/2018	05/14/2018 15:17		05/15/2018 15:38	Benchmark EnviroAnalytical in North Port	1992845, 1992846, 1992847, 1992848
SOP-PCR-1.0	05/15/2018	05/15/2018 13:25	Angela Smith	06/13/2018 12:42	Mailin Lopez	1992842, 1992844
SOP-PCR-1.2	05/15/2018	05/15/2018 13:25	Angela Smith	06/15/2018 17:29	Mailin Lopez	1992842
SOP-PCR-1.3	05/15/2018	05/15/2018 13:25	Sarah Menz	06/20/2018 12:44	Sarah Menz	1992842
SOP-PCR-1.4	05/15/2018	05/15/2018 13:25	Angela Smith	06/14/2018 11:34	Mailin Lopez	1992842
SOP-PCR-4.0	05/15/2018	05/15/2018 13:25	Angela Smith	06/07/2018 09:21	Puja Jasrotia	1992842, 1992843, 1992844