

Biological Analysis Report

NW-DIST-2019-10-23-01

Florida Department of Environmental Protection
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DOH Accreditation E31780

Overflow Analyses Performed By:
University of West Florida
11000 University Parkway
Pensacola, FL 32514
DOH Accreditation E71969

Event Description: **Dune Lakes**
Request ID: **RQ-2019-10-21-25**
Customer: **NW-DIST**
Project ID: **SMP**

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Date Certified: 26-NOV-2019 11:35



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: Eastern Lake off of Center Avenue

Collection Date/Time: 10/22/2019 10:40

Field ID: G3NW0124

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2130576	SM 10200 H (mod.)	Chlorophyll-a, Corrected	7.0		ug/L	P373591	
		Phaeophytin-a	0.90	U	ug/L	P373591	
		Chlorophyll-a, Uncorrected	7.6		ug/L	P373591	RPD
2130580	Enterolert/QT	Enterococci-Quanti-Tray	63		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: Irwin Creek

Collection Date/Time: 10/22/2019 11:25

Field ID: G3NW0175

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2130573	SM 10200 H (mod.)	Chlorophyll-a, Corrected	56		ug/L	P373590	
		Phaeophytin-a	4.8	I	ug/L	P373590	
		Chlorophyll-a, Uncorrected	60		ug/L	P373590	
2130577	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	7270		MPN/100 mL		
2130581	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P372898	
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	U	TSC/100 mL	P372898	MS
	SOP-PCR-1.3	GFD-purified-qPCR**	2.33E+03		TSC/100 mL	P373574	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P372898	LCS
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P372898	LCS

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-1.0: Precision data unavailable due to inhibition in QC sample.

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

SOP-PCR-1.5: Precision data unavailable for Analysis Batch A95726

Sample Location: Allen Lake Input

Collection Date/Time: 10/22/2019 12:00

Field ID: G3NW0177

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2130574	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.93	I	ug/L	P373590	
		Phaeophytin-a	0.90	U	ug/L	P373590	
		Chlorophyll-a, Uncorrected	1.0	I	ug/L	P373590	
2130578	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	15531		MPN/100 mL		
2130582	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P372898	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P372898	MS
	SOP-PCR-1.3	GFD-purified-qPCR**	520	I J	TSC/100 mL	P373574	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P372898	LCS
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P372898	LCS

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-1.0: Precision data unavailable due to inhibition in QC sample.

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.

SOP-PCR-1.5: Precision data unavailable for Analysis Batch A95726

Sample Location: STALWORTH LAKE INPUT

Collection Date/Time: 10/22/2019 12:20

Field ID: G3NW0174

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2130575	SM 10200 H (mod.)	Chlorophyll-a, Corrected	22		ug/L	P373590	
		Phaeophytin-a	26		ug/L	P373590	
		Chlorophyll-a, Uncorrected	39		ug/L	P373590	
2130579	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	1723		MPN/100 mL		
2130583	SOP-PCR-1.0	HF183-qPCR**	260	I	GEU/100 mL	P372898	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P372898	LCS
	SOP-PCR-1.5	DG3-qPCR**	6.1E+03	I	TSC/100 mL	P372898	LCS

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-1.0: Precision data unavailable due to inhibition in QC sample.
SOP-PCR-1.5: Precision data unavailable for Analysis Batch A95726

Quality Assurance Report

Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P373590

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.89	U	ug/L
Chlorophyll-a, Uncorrected	0.65	U	ug/L
Phaeophytin-a	0.98	U	ug/L

Reference Method: SM 10200 H (mod.)
Batch ID: P373591

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

Reference Method: SOP-PCR-1.0
Batch ID: P372898

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

Reference Method: SOP-PCR-1.2
Batch ID: P372898

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

Reference Method: SOP-PCR-1.3
Batch ID: P373574

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

Reference Method: SOP-PCR-1.4
Batch ID: P372898

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.5
Batch ID: P372898

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: P373590

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

Reference Method: SM 10200 H (mod.)
Batch ID: P373591

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

Reference Method: SOP-PCR-1.0
Batch ID: P372898

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	79.3	152	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P372898

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	75.8	288	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P373574

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	109	424	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P372898

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	117	304	P/F	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P372898

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	94.7	249	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P372898

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2130156	HF183-qPCR	110		P	50 - 175
2130207	HF183-qPCR	105		P	50 - 175
2130284	HF183-qPCR	97.8		P	50 - 175
2130285	HF183-qPCR	108		P	50 - 175
2130286	HF183-qPCR	97.8		P	50 - 175
2130342	HF183-qPCR	108		P	50 - 175
2130343	HF183-qPCR	103		P	50 - 175
2130344	HF183-qPCR	109		P	50 - 175
2130581	HF183-qPCR	95.0		P	50 - 175
2130582	HF183-qPCR	97.0		P	50 - 175
2130583	HF183-qPCR	101		P	50 - 175
2130632	HF183-qPCR	112		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P372898

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2130156	GULL2-qPCR	68.4		P	50 - 300
2130581	GULL2-qPCR	61.6		P	50 - 300
2130582	GULL2-qPCR	57.3		P	50 - 300
2132982	GULL2-qPCR	21.2	2.07	F/F	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P373574

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2127749	GFD-purified-qPCR	208		F	50 - 175
2127902	GFD-purified-qPCR	281		F	50 - 175
2128287	GFD-purified-qPCR	223		F	50 - 175
2130153	GFD-purified-qPCR	249		F	50 - 175
2130156	GFD-purified-qPCR	293		F	50 - 175
2130581	GFD-purified-qPCR	162		P	50 - 175
2130582	GFD-purified-qPCR	232		F	50 - 175
2132982	GFD-purified-qPCR	258	261	F/F	50 - 175
2133850	GFD-purified-qPCR	262		F	50 - 175
2133851	GFD-purified-qPCR	315		F	50 - 175
2133852	GFD-purified-qPCR	243		F	50 - 175
2135501	GFD-purified-qPCR	260		F	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P372898

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2130156	BacR-qPCR	90.3		P	50 - 175
2130207	BacR-qPCR	103		P	50 - 175
2130284	BacR-qPCR	70.1		P	50 - 175
2130285	BacR-qPCR	98.2		P	50 - 175
2130286	BacR-qPCR	78.1		P	50 - 175
2130581	BacR-qPCR	72.4		P	50 - 175
2130582	BacR-qPCR	80.1		P	50 - 175
2130583	BacR-qPCR	79.0		P	50 - 175
2132982	BacR-qPCR	68.7	60.9	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P372898

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2130156	DG3-qPCR	83.2		P	50 - 175
2130581	DG3-qPCR	71.3		P	50 - 175
2130582	DG3-qPCR	77.3		P	50 - 175
2130583	DG3-qPCR	74.6		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P373590

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2130550	Chlorophyll-a, Corrected	1.81	Sample	P	0 - 25
2130550	Chlorophyll-a, Uncorrected	1.11	Sample	P	0 - 25

Reference Method: SM 10200 H (mod.)
Batch ID: P373591

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2130622	Chlorophyll-a, Corrected	24.7	Sample	P	0 - 25
2130622	Chlorophyll-a, Uncorrected	28.5	Sample	F	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P373574

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2132982	GFD-purified-qPCR	0.932	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P372898

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2132982	BacR-qPCR	12.0	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2130581
Field Sample ID: G3NW0175

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	78.8	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	140	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	72.1	P	50 - 300

Quality Assurance Report Surrogates

Lab Sample ID: 2130581
Field Sample ID: G3NW0175

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.5	SKETA-qPCR	54.7	P	50 - 300

Lab Sample ID: 2130582
Field Sample ID: G3NW0177

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	87.0	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	152	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	91.4	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	83.3	P	50 - 300

Lab Sample ID: 2130583
Field Sample ID: G3NW0174

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	95.9	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	96.6	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	86.1	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					1.81		
	Chlorophyll-a, Corrected	87.4					24.7		
	Chlorophyll-a, Uncorrected						1.11		
	Chlorophyll-a, Uncorrected						28.5		
SOP-PCR-1.0	HF183-qPCR	152	79.3	110	105	97.8			
				108					
SOP-PCR-1.2	GULL2-qPCR	288	75.8	68.4	61.6	57.3			
				21.2					
SOP-PCR-1.3	GFD-purified-qPCR	424	109	258	261	208		0.932	
				281					
SOP-PCR-1.4	BacR-qPCR	304	117	90.3	103	70.1		12.0	
				98.2					
SOP-PCR-1.5	DG3-qPCR	249	94.7	83.2	71.3	77.3			
				74.6					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
Enterolert/QT / E71969	Enterococci by Enterolert/QT by UWF in Pensacola	2130580
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2130573, 2130574, 2130575, 2130576
SM 9223 B Quanti-Tray / E71969	E. coli by Colilert-18/QT by UWF in Pensacola	2130577, 2130578, 2130579
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2130581, 2130582, 2130583
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2130581, 2130582

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	2130581, 2130582
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2130581, 2130582, 2130583
SOP-PCR-1.5 / E31780	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2130581, 2130582, 2130583

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	10/22/2019	10/22/2019 15:15		10/23/2019 15:46	UWF Lab	2130580
SM 10200 H (mod.)	10/23/2019	10/23/2019 14:18	Jessica Fetgatter	10/31/2019 15:15	Carina A. Tull	2130573, 2130574, 2130575
	10/23/2019	10/23/2019 14:18	Jessica Fetgatter	10/31/2019 16:02	Carina A. Tull	2130576
SM 9223 B Quanti-Tray	10/22/2019	10/22/2019 15:20		10/23/2019 11:52	UWF Lab	2130577, 2130578, 2130579
SOP-PCR-1.0	10/23/2019	10/23/2019 14:15	Angela Smith	11/12/2019 11:27	Lauren Campbell	2130581, 2130582, 2130583
SOP-PCR-1.2	10/23/2019	10/23/2019 14:15	Angela Smith	11/18/2019 12:41	Mailin Lopez	2130581, 2130582
SOP-PCR-1.3	10/23/2019	10/23/2019 14:15	Angela Smith	11/18/2019 08:37	Mailin Lopez	2130581, 2130582
SOP-PCR-1.4	10/23/2019	10/23/2019 14:15	Angela Smith	11/13/2019 14:38	Lauren Campbell	2130581, 2130582, 2130583
SOP-PCR-1.5	10/23/2019	10/23/2019 14:15	Angela Smith	11/14/2019 08:31	Mailin Lopez	2130581, 2130582, 2130583