

Biological Analysis Report

SW-DIST-2019-10-25-03

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Overflow Analyses Performed By:
Advanced Environmental Laboratories - Tampa
9610 Princess Palm Avenue
Tampa, Florida 33619
DOH Accreditation E84589

Event Description: **McKay Tidal**
Request ID: **RQ-2019-10-28-19**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Jacqueline Savage, Environmental Administrator

Date Certified: 04-DEC-2019 10:02

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: McKay Tidal @ Mouth

Collection Date/Time: 10/24/2019 12:00

Field ID: G5SW0151

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2131864	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.9		ug/L	P373716	
		Phaeophytin-a	4.5		ug/L	P373716	
		Chlorophyll-a, Uncorrected	9.9		ug/L	P373716	
2131866	SOP-PCR-1.0	HF183-qPCR**	140	UJ	GEU/100 mL	P373145	LCS, SUR
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	U	TSC/100 mL	P373145	MS
	SOP-PCR-1.3	GFD-purified-qPCR**	1.91E+03	J	TSC/100 mL	P374479	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	UJ	TSC/100 mL	P373145	LCS, SUR
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	UJ	TSC/100 mL	P373145	SUR
2131868	Enterolert/QT	Enterococci-Quanti-Tray	10		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.

SOP-PCR-1.0: Precision data unavailable due to inhibition in QC sample. Quality control failure(s) observed. See QA report for details. Refer to the Lab Analysis Report for an explanation of QC Codes.

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

SOP-PCR-1.4: Quality control failure(s) observed. See QA report for details. Refer to the Lab Analysis Report for an explanation of QC Codes.

SOP-PCR-1.5: Precision data unavailable due to inhibition in QC sample. Quality control failure(s) observed. See QA report for details. Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: McKay Tidal South of Harbor Cir

Collection Date/Time: 10/24/2019 11:45

Field ID: G5SW0152

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2131865	SM 10200 H (mod.)	Chlorophyll-a, Corrected	7.1		ug/L	P373716	
		Phaeophytin-a	5.7		ug/L	P373716	
		Chlorophyll-a, Uncorrected	11		ug/L	P373716	
2131867	SOP-PCR-1.0	HF183-qPCR**	140	UJ	GEU/100 mL	P373145	LCS, SUR
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	U	TSC/100 mL	P373145	MS
	SOP-PCR-1.3	GFD-purified-qPCR**	3.55E+03	AJ	TSC/100 mL	P374479	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	UJ	TSC/100 mL	P373145	LCS, SUR
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	UJ	TSC/100 mL	P373145	SUR
2131869	Enterolert/QT	Enterococci-Quanti-Tray	324		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.

SOP-PCR-1.0: Precision data unavailable due to inhibition in QC sample. Quality control failure(s) observed. See QA report for details. Refer to the Lab Analysis Report for an explanation of QC Codes.

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

SOP-PCR-1.4: Quality control failure(s) observed. See QA report for details. Refer to the Lab Analysis Report for an explanation of QC Codes.

SOP-PCR-1.5: Precision data unavailable due to inhibition in QC sample. Quality control failure(s) observed. See QA report for details. Refer to the Lab Analysis Report for an explanation of QC Codes.

Quality Assurance Report

Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P373716

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
 Batch ID: P373145

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

Reference Method: SOP-PCR-1.2
 Batch ID: P373145

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

Reference Method: SOP-PCR-1.3
 Batch ID: P374479

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

Reference Method: SOP-PCR-1.4
 Batch ID: P373145

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

Reference Method: SOP-PCR-1.5
 Batch ID: P373145

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: P373716

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	105		P	84 - 116

Reference Method: SOP-PCR-1.0
 Batch ID: P373145

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	117	175	P/F	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P373145

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	75.8	279	P/P	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P374479

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: P374479

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	139	49.5	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P373145

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	148	200	P/F	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P373145

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	79.3	129	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P373145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2131758	HF183-qPCR	112		P	50 - 175
2131760	HF183-qPCR	97.8		P	50 - 175
2131762	HF183-qPCR	107		P	50 - 175
2131763	HF183-qPCR	124		P	50 - 175
2131866	HF183-qPCR	77.4		P	50 - 175
2131867	HF183-qPCR	71.2	50.5	P/P	50 - 175
2132062	HF183-qPCR	94.7		P	50 - 175
2132063	HF183-qPCR	88.7		P	50 - 175
2132064	HF183-qPCR	87.4		P	50 - 175
2132065	HF183-qPCR	111		P	50 - 175
2132066	HF183-qPCR	106		P	50 - 175
2132067	HF183-qPCR	109		P	50 - 175
2132068	HF183-qPCR	117		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P373145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2131866	GULL2-qPCR	56.7		P	50 - 300
2131867	GULL2-qPCR	59.5	61.0	P/P	50 - 300
2132062	GULL2-qPCR	48.4		F	50 - 300
2132063	GULL2-qPCR	53.2		P	50 - 300
2132064	GULL2-qPCR	58.2		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P374479

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2131866	GFD-purified-qPCR	370		F	50 - 175
2131867	GFD-purified-qPCR	320	314	F/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3

Batch ID: P374479

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2132062	GFD-purified-qPCR	326		F	50 - 175
2132063	GFD-purified-qPCR	330		F	50 - 175
2132064	GFD-purified-qPCR	309		F	50 - 175
2133882	GFD-purified-qPCR	297		F	50 - 175
2138823	GFD-purified-qPCR	348		F	50 - 175
2138824	GFD-purified-qPCR	329		F	50 - 175
2138825	GFD-purified-qPCR	312		F	50 - 175
2138829	GFD-purified-qPCR	316		F	50 - 175
2138830	GFD-purified-qPCR	279		F	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P373145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2131758	BacR-qPCR	121		P	50 - 175
2131760	BacR-qPCR	98.9		P	50 - 175
2131762	BacR-qPCR	112		P	50 - 175
2131763	BacR-qPCR	108		P	50 - 175
2131866	BacR-qPCR	133		P	50 - 175
2131867	BacR-qPCR	124	111	P/P	50 - 175
2132062	BacR-qPCR	100		P	50 - 175
2132063	BacR-qPCR	102		P	50 - 175
2132064	BacR-qPCR	120		P	50 - 175
2132065	BacR-qPCR	104		P	50 - 175
2132066	BacR-qPCR	129		P	50 - 175
2132067	BacR-qPCR	115		P	50 - 175
2132068	BacR-qPCR	113		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P373145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2131866	DG3-qPCR	79.0		P	50 - 175
2131867	DG3-qPCR	141	74.4	P/P	50 - 175
2132062	DG3-qPCR	68.7		P	50 - 175
2132063	DG3-qPCR	67.5		P	50 - 175
2132064	DG3-qPCR	60.1		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.2

Batch ID: P373145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131867	GULL2-qPCR	2.53	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.3
Batch ID: P374479

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131867	GFD-purified-qPCR	2.03	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P373145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131867	BacR-qPCR	10.9	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2131866
Field Sample ID: G5SW0151

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	39.4	F	50 - 300
SOP-PCR-1.2	SKETA-qPCR	84.7	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	26.8	F	50 - 300
SOP-PCR-1.5	SKETA-qPCR	27.5	F	50 - 300

Lab Sample ID: 2131867
Field Sample ID: G5SW0152

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	32.2	F	50 - 300
SOP-PCR-1.2	SKETA-qPCR	68.8	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	18.8	F	50 - 300
SOP-PCR-1.5	SKETA-qPCR	19.4	F	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	105							
SOP-PCR-1.0	HF183-qPCR	175	117	112	97.8	107			
				124					
SOP-PCR-1.2	GULL2-qPCR	279	75.8	56.7	59.5	61.0			2.53
				48.4					
SOP-PCR-1.3	GFD-purified-qPCR	49.5	139	370	320	314			2.03
				326					
SOP-PCR-1.4	BacR-qPCR	200	148	121	98.9	112			10.9
				108					
SOP-PCR-1.5	DG3-qPCR	129	79.3	79.0	141	74.4			
				68.7					

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
Enterolert/QT / E84589	Enterococci by Enterolert/QT by AEL in Tampa	2131868, 2131869
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2131864, 2131865
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2131866, 2131867
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2131866, 2131867
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2131866, 2131867
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2131866, 2131867
SOP-PCR-1.5 / E31780	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2131866, 2131867

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	10/24/2019	10/24/2019 15:39		10/25/2019 15:39	AEL - Tampa	2131868, 2131869
SM 10200 H (mod.)	10/25/2019	10/25/2019 14:15	Jessica Fetgatter	11/05/2019 08:25	Yuliya Danyuk	2131864, 2131865
SOP-PCR-1.0	10/25/2019	10/25/2019 14:45	Angela Smith	11/14/2019 12:55	Lauren Campbell	2131866, 2131867
SOP-PCR-1.2	10/25/2019	10/25/2019 14:45	Angela Smith	11/18/2019 12:41	Mailin Lopez	2131866, 2131867
SOP-PCR-1.3	10/25/2019	10/25/2019 14:45	Lauren Campbell	12/03/2019 08:22	Mailin Lopez	2131866, 2131867
SOP-PCR-1.4	10/25/2019	10/25/2019 14:45	Angela Smith	11/14/2019 15:32	Lauren Campbell	2131866, 2131867
SOP-PCR-1.5	10/25/2019	10/25/2019 14:45	Angela Smith	11/19/2019 14:25	Lauren Campbell	2131866, 2131867