Biological Analysis Report

SW-DIST-2020-12-01-01

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

Overflow Analyses Performed By:
Benchmark EnvironAnalytical, Inc.
1711 12th Street East
Palmetto, FL 34221
DOH Accreditation E84167

Event Description: **Run 7 Whitaker Bayou**
Request ID: **RQ-2020-11-09-04**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Ben Pawater

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Certified by: Puja Jasrotia, Environmental Manager

Date Certified: 17-DEC-2020 15:09

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: Whitaker Bayou @ Ringling College Of Art **Collection Date/Time: 11/30/2020 13:30**

Field ID: G3SW0060 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2209585	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.5		ug/L	P390826	
		Phaeophytin-a	1.0	I	ug/L	P390826	
		Chlorophyll-a, Uncorrected	7.3		ug/L	P390826	
2209586	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P390168	
	SOP-PCR-1.2	GULL2-qPCR**	3.8E+03	I	TSC/100 mL	P390168	
	SOP-PCR-1.3	GFD-qPCR**	2.1E+03		TSC/100 mL	P390168	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P390168	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P390168	
2209587	Enterolert/QT	Enterococci-Quanti-Tray	960		MPN/100 mL		

Ref. Method and Comment:
SOP-PCR-1.2: Precision data unavailable for Analysis Batch A102392
SOP-PCR-1.3: Precision data unavailable for Analysis Batch A102410

Quality Assurance Report
Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P390826

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: P390168

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

Reference Method: SOP-PCR-1.2
Batch ID: P390168

Component	Result	Code	Units
GULL2-qPCR	3.6E+03	U	TSC/100 mL

Reference Method: SOP-PCR-1.3
Batch ID: P390168

Component	Result	Code	Units
GFD-qPCR	720	U	TSC/100 mL

Reference Method: SOP-PCR-1.4
Batch ID: P390168

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

Reference Method: SOP-PCR-1.5
Batch ID: P390168

Component	Result	Code	Units

Quality Assurance Report
Method Blank Results

Reference Method: SOP-PCR-1.5
Batch ID: P390168

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: P390826

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	107		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P390168

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	115	96.3	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P390168

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	101	105	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P390168

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	98.6	97.2	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P390168

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	98.5	97.0	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P390168

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	89.9	96.7	P/P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P390168

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2207937	HF183-qPCR	111		P	50 - 175
2209090	HF183-qPCR	86.7	97.9	P/P	50 - 175
2209091	HF183-qPCR	103		P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P390168

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2209300	HF183-qPCR	110		P	50 - 175
2209586	HF183-qPCR	94.5		P	50 - 175
2209611	HF183-qPCR	105		P	50 - 175
2209612	HF183-qPCR	77.7		P	50 - 175
2209632	HF183-qPCR	78.3		P	50 - 175
2209650	HF183-qPCR	103		P	50 - 175
2209651	HF183-qPCR	109		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P390168

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2209091	GULL2-qPCR	82.0		P	50 - 300
2209215	GULL2-qPCR	92.4		P	50 - 300
2209216	GULL2-qPCR	96.0		P	50 - 300
2209217	GULL2-qPCR	92.7		P	50 - 300
2209300	GULL2-qPCR	94.6		P	50 - 300
2209586	GULL2-qPCR	78.6		P	50 - 300
2209611	GULL2-qPCR	78.7		P	50 - 300
2209612	GULL2-qPCR	66.1		P	50 - 300
2209632	GULL2-qPCR	53.7		P	50 - 300
2209651	GULL2-qPCR	66.9		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P390168

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2207937	GFD-qPCR	107		P	50 - 175
2209091	GFD-qPCR	90.3		P	50 - 175
2209215	GFD-qPCR	99.2		P	50 - 175
2209216	GFD-qPCR	105		P	50 - 175
2209217	GFD-qPCR	100		P	50 - 175
2209300	GFD-qPCR	101		P	50 - 175
2209586	GFD-qPCR	91.9		P	50 - 175
2209611	GFD-qPCR	90.4		P	50 - 175
2209612	GFD-qPCR	91.0		P	50 - 175
2209632	GFD-qPCR	95.0		P	50 - 175
2209651	GFD-qPCR	87.0		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P390168

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2207937	BacR-qPCR	83.7		P	50 - 175
2209090	BacR-qPCR	73.9	70.7	P/P	50 - 175
2209091	BacR-qPCR	63.1		P	50 - 175
2209215	BacR-qPCR	84.4		P	50 - 175
2209216	BacR-qPCR	86.7		P	50 - 175
2209217	BacR-qPCR	87.1		P	50 - 175
2209300	BacR-qPCR	74.7		P	50 - 175
2209586	BacR-qPCR	66.2		P	50 - 175
2209611	BacR-qPCR	82.3		P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P390168

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2209612	BacR-qPCR	65.4		P	50 - 175
2209632	BacR-qPCR	75.1		P	50 - 175
2209650	BacR-qPCR	81.0		P	50 - 175
2209651	BacR-qPCR	61.7		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P390168

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2209090	DG3-qPCR	80.4	76.5	P/P	50 - 175
2209091	DG3-qPCR	99.7		P	50 - 175
2209215	DG3-qPCR	87.2		P	50 - 175
2209216	DG3-qPCR	96.6		P	50 - 175
2209217	DG3-qPCR	107		P	50 - 175
2209300	DG3-qPCR	73.8		P	50 - 175
2209586	DG3-qPCR	86.6		P	50 - 175
2209611	DG3-qPCR	81.8		P	50 - 175
2209612	DG3-qPCR	83.1		P	50 - 175
2209632	DG3-qPCR	81.1		P	50 - 175
2209650	DG3-qPCR	87.3		P	50 - 175
2209651	DG3-qPCR	85.4		P	50 - 175

Quality Assurance Report
Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P390826

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2209597	Chlorophyll-a, Corrected	3.83	Sample	P	0 - 25
2209597	Chlorophyll-a, Uncorrected	3.92	Sample	P	0 - 25
2209597	Phaeophytin-a	5.15	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P390168

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2209090	HF183-qPCR	12.1	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P390168

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2209090	BacR-qPCR	4.38	Spike	P	0 - 25

Quality Assurance Report
Precision

Reference Method: SOP-PCR-1.5
Batch ID: P390168

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2209090	DG3-qPCR	4.90	Spike	P	0 - 25

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2209586
Field Sample ID: G3SW0060

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	96.9	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	96.5	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	96.3	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	110	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	111	P	50 - 300

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision		
				LCS	SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	107			3.83	
	Chlorophyll-a, Uncorrected				3.92	
	Phaeophytin-a				5.15	
SOP-PCR-1.0	HF183-qPCR	96.3 115	111 86.7 97.9 103			12.1
SOP-PCR-1.2	GULL2-qPCR	105 101	82.0 92.4 96.0 92.7			
SOP-PCR-1.3	GFD-qPCR	97.2 98.6	107 90.3 99.2 105			
SOP-PCR-1.4	BacR-qPCR	97.0 98.5	83.7 73.9 70.7 63.1			4.38
SOP-PCR-1.5	DG3-qPCR	96.7 89.9	80.4 76.5 99.7 87.2			4.90

Reference Method Descriptions

Method	Description	Associated Samples
Enterolert/QT	Enterococci by Enterolert/QT by BEA in Palmetto	2209587
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2209585
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2209586
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2209586
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2209586
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2209586

Reference Method Descriptions

Method	Description	Associated Samples
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2209586

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	11/30/2020	11/30/2020 14:24		12/01/2020 15:55	Benchmark EnviroAnalytical - Palmetto	2209587
SM 10200 H (mod.)	12/01/2020	12/01/2020 12:46	Yuliya Danyuk	12/07/2020 14:48	Jessica Sherman	2209585
SOP-PCR-1.0	12/01/2020	12/01/2020 11:30	Lauren Campbell	12/01/2020 15:54	Lauren Campbell	2209586
SOP-PCR-1.2	12/01/2020	12/01/2020 11:30	Lauren Campbell	12/03/2020 10:06	Mailin Lopez	2209586
SOP-PCR-1.3	12/01/2020	12/01/2020 11:30	Lauren Campbell	12/03/2020 12:14	Mailin Lopez	2209586
SOP-PCR-1.4	12/01/2020	12/01/2020 11:30	Lauren Campbell	12/02/2020 14:14	Lauren Campbell	2209586
SOP-PCR-1.5	12/01/2020	12/01/2020 11:30	Lauren Campbell	12/02/2020 15:14	Lauren Campbell	2209586