

Biological Analysis Report

SO-DIST-2022-12-21-03

Florida DEP 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

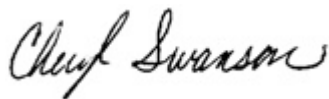
Event Description: **2022 SMP : Arbuckle**
Request ID: **RQ-2022-12-19-22**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
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Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 24-JAN-2023 10:18



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: Arbuckle Branch

Collection Date/Time: 12/20/2022 10:50

Field ID: G4SD0172

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2377059	SM 10200 H (mod.)	Chlorophyll-a, Corrected	4.8		ug/L	P424042	
		Phaeophytin-a	3.9		ug/L	P424042	
		Chlorophyll-a, Uncorrected	7.3		ug/L	P424042	
2377060	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P423594	
	SOP-PCR-1.4	BacR-qPCR**	5.7E+04		TSC/100 mL	P423594	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P423594	
2377063	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	480		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.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P424042

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: P423594

Component	Result	Code	Units
HF183-qPCR	3.3E+03	U	TSC/100 mL

Reference Method: SOP-PCR-1.4

Batch ID: P423594

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

Reference Method: SOP-PCR-1.5

Batch ID: P423594

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: P424042

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	98.0		P	84 - 116

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P423594

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	99.5	92.9	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P423594

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	99.1	91.9	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P423594

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	109	92.3	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P423594

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2375746	HF183-qPCR	91.4	90.5	P/P	50 - 175
2376006	HF183-qPCR	91.5		P	50 - 175
2376515	HF183-qPCR	87.5		P	50 - 175
2376516	HF183-qPCR	82.0		P	50 - 175
2376517	HF183-qPCR	86.3		P	50 - 175
2376764	HF183-qPCR	90.3		P	50 - 175
2376924	HF183-qPCR	90.8		P	50 - 175
2376958	HF183-qPCR	77.8		P	50 - 175
2377035	HF183-qPCR	97.4		P	50 - 175
2377049	HF183-qPCR	95.2		P	50 - 175
2377060	HF183-qPCR	82.7		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P423594

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2375746	BacR-qPCR	88.9	94.7	P/P	50 - 175
2376006	BacR-qPCR	71.0		P	50 - 175
2376515	BacR-qPCR	94.7		P	50 - 175
2376516	BacR-qPCR	73.8		P	50 - 175
2376517	BacR-qPCR	78.7		P	50 - 175
2376764	BacR-qPCR	93.1		P	50 - 175
2376924	BacR-qPCR	94.1		P	50 - 175
2376958	BacR-qPCR	74.4		P	50 - 175
2377035	BacR-qPCR	86.1		P	50 - 175
2377049	BacR-qPCR	90.4		P	50 - 175
2377060	BacR-qPCR	79.0		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P423594

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2375746	DG3-qPCR	103	95.1	P/P	50 - 175
2376006	DG3-qPCR	84.5		P	50 - 175
2376515	DG3-qPCR	98.9		P	50 - 175
2376516	DG3-qPCR	82.2		P	50 - 175
2376517	DG3-qPCR	92.2		P	50 - 175
2376924	DG3-qPCR	83.7		P	50 - 175
2376958	DG3-qPCR	87.7		P	50 - 175
2377035	DG3-qPCR	71.3		P	50 - 175
2377049	DG3-qPCR	86.7		P	50 - 175
2377060	DG3-qPCR	78.4		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P424042

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2377010	Chlorophyll-a, Corrected	0.816	Sample	P	0 - 25
2377010	Chlorophyll-a, Uncorrected	0.902	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P423594

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2375746	HF183-qPCR	0.969	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P423594

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2375746	BacR-qPCR	6.35	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P423594

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2375746	DG3-qPCR	7.79	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Quality Assurance Report Surrogates

Lab Sample ID: 2377060
Field Sample ID: G4SD0172

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	79.8	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	103	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	67.9	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	98.0						0.816	
	Chlorophyll-a, Uncorrected							0.902	
SOP-PCR-1.0	HF183-qPCR	92.9	99.5	91.4	90.5	91.5			0.969
				87.5					
SOP-PCR-1.4	BacR-qPCR	91.9	99.1	88.9	94.7	71.0			6.35
				94.7					
SOP-PCR-1.5	DG3-qPCR	92.3	109	103	95.1	84.5			7.79
				98.9					

Reference Method Descriptions

Method	Description	Associated Samples
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2377059
SM 9223 Quanti-Tray	E. coli by Colilert/QT by BEA South in North Port	2377063
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2377060
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2377060
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2377060

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	12/21/2022	12/21/2022 14:03	Megan Higbee	12/28/2022 12:50	Megan Higbee	2377059
SM 9223 Quanti-Tray	12/20/2022	12/20/2022 16:53		12/21/2022 17:08	Benchmark EnviroAnalytical in North Port	2377063
SOP-PCR-1.0	12/21/2022	12/21/2022 14:00	Claudia Castro	12/27/2022 11:06	DeAsia Armster	2377060
SOP-PCR-1.4	12/21/2022	12/21/2022 14:00	Claudia Castro	12/27/2022 12:53	Roberta Tatti	2377060
SOP-PCR-1.5	12/21/2022	12/21/2022 14:00	Claudia Castro	12/28/2022 09:04	DeAsia Armster	2377060