

Biological Analysis Report

SW-DIST-2023-06-13-01

Florida DEP Laboratory
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DOH Accreditation E31780

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

Event Description: **2023 Run 15**
Request ID: **RQ-2023-06-12-21**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Puja Jasrotia, Environmental Administrator

Date Certified: 26-JUL-2023 09:51



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: Howard Prairie Branch at Grange Hall

Collection Date/Time: 06/12/2023 10:50

Field ID: G2SW0153

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2416799	SM 10150 B	Chlorophyll-a, Corrected	2.1	U	ug/L	P431393	
		Phaeophytin-a	2.2	U	ug/L	P431393	
		Chlorophyll-a, Uncorrected	1.6	I	ug/L	P431393	
2416803	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	1246		MPN/100 mL		

Ref. Method and Comment:
SM 10150 B: 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: Alderman Creek at Mosaic

Collection Date/Time: 06/12/2023 11:30

Field ID: G2SW0101

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2416800	SM 10150 B	Chlorophyll-a, Corrected	1.9	I	ug/L	P431393	
		Phaeophytin-a	1.4	I	ug/L	P431393	
		Chlorophyll-a, Uncorrected	2.8		ug/L	P431393	
2416804	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	512		MPN/100 mL		

Ref. Method and Comment:
SM 10150 B: 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: Lil Manatee at Taylor Grade

Collection Date/Time: 06/12/2023 12:15

Field ID: G2SW0023

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2416801	SOP-PCR-1.0	HF183-qPCR**	830	U	TSC/100 mL	P431019	
	SOP-PCR-1.2	GULL2-qPCR**	900	U	TSC/100 mL	P431019	
	SOP-PCR-1.3	GFD-qPCR**	440	I	TSC/100 mL	P431019	
	SOP-PCR-1.4	BacR-qPCR**	760	U	TSC/100 mL	P431019	
	SOP-PCR-1.5	DG3-qPCR**	640	U	TSC/100 mL	P431019	
2416805	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	455		MPN/100 mL		

Sample Location: Lil Manatee River S Fork at Saffold Rd

Collection Date/Time: 06/12/2023 12:45

Field ID: G2SW0103

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2416802	SOP-PCR-1.0	HF183-qPCR**	1.1E+03	U	TSC/100 mL	P431019	
	SOP-PCR-1.2	GULL2-qPCR**	1.2E+03	U	TSC/100 mL	P431019	
	SOP-PCR-1.3	GFD-qPCR**	240	U	TSC/100 mL	P431019	
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P431019	
	SOP-PCR-1.5	DG3-qPCR**	860	U	TSC/100 mL	P431019	
2416806	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	187		MPN/100 mL		

Sample Location: Manatee River near River Isles Clubhouse

Collection Date/Time: 06/12/2023 13:25

Field ID: G2SW0119

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2416807	Enterolert/QT	Enterococci-Quanti-Tray	256		MPN/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SM 10150 B
Batch ID: P431393

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: P431019

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

Reference Method: SOP-PCR-1.2
Batch ID: P431019

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

Reference Method: SOP-PCR-1.3
Batch ID: P431019

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

Reference Method: SOP-PCR-1.4
Batch ID: P431019

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

Reference Method: SOP-PCR-1.5
Batch ID: P431019

Component	Result	Code	Units
DG3-qPCR	2.6E+03	U	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10150 B
Batch ID: P431393

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	87.6		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P431019

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	101	112	P/P	50 - 175

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P431019

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	108	103	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P431019

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	93.2	91.1	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P431019

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	102	93.5	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P431019

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	98.4	91.9	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P431019

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2415798	HF183-qPCR	86.2	89.1	P	50 - 175
2416024	HF183-qPCR	76.3		P	50 - 175
2416094	HF183-qPCR	91.2		P	50 - 175
2416095	HF183-qPCR	84.9		P	50 - 175
2416270	HF183-qPCR	87.7		P/P	50 - 175
2416645	HF183-qPCR	77.8	89.1	P	50 - 175
2416647	HF183-qPCR	96.8		P	50 - 175
2416801	HF183-qPCR	88.6		P	50 - 175
2416802	HF183-qPCR	83.6		P	50 - 175
2417273	HF183-qPCR	87.9		P	50 - 175
2417335	HF183-qPCR	90.5	89.1	P	50 - 175
2417336	HF183-qPCR	96.7		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P431019

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2415798	GULL2-qPCR	85.9	102	P	50 - 300
2416024	GULL2-qPCR	86.0		P	50 - 300
2416094	GULL2-qPCR	33.7		F	50 - 300
2416095	GULL2-qPCR	87.4		P	50 - 300
2416270	GULL2-qPCR	113		P/P	50 - 300
2416647	GULL2-qPCR	82.8	102	P	50 - 300
2416801	GULL2-qPCR	99.3		P	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2

Batch ID: P431019

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2416802	GULL2-qPCR	68.5		P	50 - 300
2417273	GULL2-qPCR	64.4		P	50 - 300
2417335	GULL2-qPCR	102		P	50 - 300
2417336	GULL2-qPCR	98.3		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P431019

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2415798	GFD-qPCR	95.5		P	50 - 175
2416024	GFD-qPCR	94.3		P	50 - 175
2416094	GFD-qPCR	93.3		P	50 - 175
2416095	GFD-qPCR	92.4		P	50 - 175
2416270	GFD-qPCR	98.9	94.2	P/P	50 - 175
2416647	GFD-qPCR	101		P	50 - 175
2416801	GFD-qPCR	99.3		P	50 - 175
2416802	GFD-qPCR	71.3		P	50 - 175
2417273	GFD-qPCR	82.5		P	50 - 175
2417335	GFD-qPCR	80.3		P	50 - 175
2417336	GFD-qPCR	77.9		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P431019

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2415798	BacR-qPCR	84.0		P	50 - 175
2416024	BacR-qPCR	74.6		P	50 - 175
2416094	BacR-qPCR	66.0		P	50 - 175
2416095	BacR-qPCR	64.4		P	50 - 175
2416270	BacR-qPCR	101	86.1	P/P	50 - 175
2416645	BacR-qPCR	64.3		P	50 - 175
2416647	BacR-qPCR	72.7		P	50 - 175
2416801	BacR-qPCR	78.2		P	50 - 175
2416802	BacR-qPCR	61.5		P	50 - 175
2417273	BacR-qPCR	54.6		P	50 - 175
2417335	BacR-qPCR	72.3		P	50 - 175
2417336	BacR-qPCR	93.1		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P431019

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2415798	DG3-qPCR	91.4		P	50 - 175
2416024	DG3-qPCR	84.9		P	50 - 175
2416094	DG3-qPCR	78.7		P	50 - 175
2416095	DG3-qPCR	79.7		P	50 - 175
2416270	DG3-qPCR	77.2	99.0	P/P	50 - 175
2416645	DG3-qPCR	79.5		P	50 - 175
2416647	DG3-qPCR	93.5		P	50 - 175
2416801	DG3-qPCR	84.1		P	50 - 175
2416802	DG3-qPCR	77.1		P	50 - 175
2417273	DG3-qPCR	74.5		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P431019

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2417335	DG3-qPCR	87.1		P	50 - 175
2417336	DG3-qPCR	89.4		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P431019

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2416270	HF183-qPCR	1.48	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P431019

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2416270	GULL2-qPCR	9.86	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P431019

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2416270	GFD-qPCR	4.88	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P431019

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2416270	BacR-qPCR	16.1	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P431019

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2416270	DG3-qPCR	24.8	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2416801
Field Sample ID: G2SW0023

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
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Quality Assurance Report Surrogates

Lab Sample ID: 2416801
Field Sample ID: G2SW0023

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	120	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	113	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	118	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	117	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	125	P	50 - 300

Lab Sample ID: 2416802
Field Sample ID: G2SW0103

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	97.7	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	102	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	111	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	103	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	93.2	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10150 B	Chlorophyll-a, Corrected	87.6							
SOP-PCR-1.0	HF183-qPCR	112	101	86.2	76.3	91.2			1.48
				84.9					
SOP-PCR-1.2	GULL2-qPCR	103	108	33.7	85.9	86.0			9.86
				87.4					
SOP-PCR-1.3	GFD-qPCR	91.1	93.2	95.5	94.3	93.3			4.88
				92.4					
SOP-PCR-1.4	BacR-qPCR	93.5	102	84.0	74.6	66.0			16.1
				64.4					
SOP-PCR-1.5	DG3-qPCR	91.9	98.4	91.4	84.9	78.7			24.8
				79.7					

Reference Method Descriptions

Method	Description	Associated Samples
Enterolert/QT	Enterococci by Enterolert/QT by BEA in Palmetto	2416807
SM 10150 B	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2416799, 2416800
SM 9223 B Quanti-Tray	E. coli by Colilert/QT by BEA in Palmetto	2416803, 2416804, 2416805, 2416806
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2416801, 2416802
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2416801, 2416802
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2416801, 2416802
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2416801, 2416802
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2416801, 2416802

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	06/12/2023	06/12/2023 15:16		06/13/2023 16:03	Benchmark EnviroAnalytical - Palmetto	2416807
SM 10150 B	06/13/2023	06/13/2023 14:14	Keanu Thijm	06/15/2023 11:20	Callie Williams	2416799, 2416800
SM 9223 B Quanti-Tray	06/12/2023	06/12/2023 15:32		06/13/2023 16:10	Benchmark EnviroAnalytical - Palmetto	2416803, 2416804, 2416805, 2416806
SOP-PCR-1.0	06/13/2023	06/13/2023 15:15	Claudia Castro	06/20/2023 08:54	Roberta Tatti	2416801, 2416802
SOP-PCR-1.2	06/13/2023	06/13/2023 15:15	Claudia Castro	07/06/2023 16:27	Madeline Gruver	2416801, 2416802
SOP-PCR-1.3	06/13/2023	06/13/2023 15:15	Claudia Castro	06/23/2023 16:07	Madeline Gruver	2416801, 2416802
SOP-PCR-1.4	06/13/2023	06/13/2023 15:15	Claudia Castro	06/21/2023 09:20	Roberta Tatti	2416801, 2416802
SOP-PCR-1.5	06/13/2023	06/13/2023 15:15	Claudia Castro	06/22/2023 09:22	Roberta Tatti	2416801, 2416802