

Biological Analysis Report

SE-DIST-2023-10-26-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **SMP - Highlands**
Request ID: **RQ-2023-10-02-67**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Sarah Menz, Environmental Administrator

Date Certified: 11-DEC-2023 10:08

A handwritten signature in black ink, appearing to be 'Sarah Menz', written in a cursive 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, Microbiology and Molecular.

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: Indian Prairie Canal Upstream of SR 70

Collection Date/Time: 10/25/2023 09:35

Field ID: G4SE0152

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2447317	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	73.3	Q	MPN/100 mL	P437124	

Ref. Method and Comment:

SM 9223 B Quanti-Tray: Precision data is unavailable for E. coli due to the small amount of analyte in the QC sample for the batch.

Sample Location: Jackson Creek at SR66

Collection Date/Time: 10/25/2023 10:15

Field ID: G4SE0187

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2447313	SM 10150 B	Chlorophyll-a, Corrected	5.7		ug/L	P437275	
		Phaeophytin-a	3.3		ug/L	P437275	
		Chlorophyll-a, Uncorrected	7.9		ug/L	P437275	
2447316	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	16.0	Q	MPN/100 mL	P437124	

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.

SM 9223 B Quanti-Tray: Precision data is unavailable for E. coli due to the small amount of analyte in the QC sample for the batch.

Sample Location: Arbuckle Creek at US HWY 98

Collection Date/Time: 10/25/2023 10:45

Field ID: G4SE0150

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2447312	SM 10150 B	Chlorophyll-a, Corrected	3.8	I	ug/L	P437275	
		Phaeophytin-a	2.9	I	ug/L	P437275	
		Chlorophyll-a, Uncorrected	5.7		ug/L	P437275	
2447315	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	88.2	Q	MPN/100 mL	P437124	

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.

SM 9223 B Quanti-Tray: Precision data is unavailable for E. coli due to the small amount of analyte in the QC sample for the batch.

Sample Location: Arbuckle Branch at Arbuckle Creek Rd

Collection Date/Time: 10/25/2023 11:30

Field ID: G4SE0149

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2447311	SM 10150 B	Chlorophyll-a, Corrected	12		ug/L	P437275	
		Phaeophytin-a	2.6	U	ug/L	P437275	
		Chlorophyll-a, Uncorrected	14		ug/L	P437275	
2447314	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	547.5	Q	MPN/100 mL	P437124	
2447322	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P436911	
	SOP-PCR-1.4	BacR-qPCR**	1.84E+05		TSC/100 mL	P436911	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P436911	

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.

SM 9223 B Quanti-Tray: Precision data is unavailable for E. coli due to the small amount of analyte in the QC sample for the batch.

Sample Location: Kissimmee Tributary at US 98 East of Buckhorn

Collection Date/Time: 10/25/2023 12:15

Field ID: G4SE0155

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2447319	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	201.4	Q	MPN/100 mL	P437124	
2447323	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P436911	
	SOP-PCR-1.2	GULL2-qPCR**	3.6E+03	U	TSC/100 mL	P436911	
	SOP-PCR-1.3	GFD-qPCR**	1.3E+03	I	TSC/100 mL	P436911	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P436911	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P436911	

Ref. Method and Comment:
SM 9223 B Quanti-Tray: Precision data is unavailable for E. coli due to the small amount of analyte in the QC sample for the batch.

Sample Location: Kissimmee Tributary at US 98 West of Cornwell Collection Date/Time: 10/25/2023 12:30

Field ID: G4SE0154

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2447318	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	41.0	Q	MPN/100 mL	P437124	

Ref. Method and Comment:
SM 9223 B Quanti-Tray: Precision data is unavailable for E. coli due to the small amount of analyte in the QC sample for the batch.

Quality Assurance Report
Method Blank Results

Reference Method: SM 10150 B
Batch ID: P437275

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.96	U	ug/L
Chlorophyll-a, Uncorrected	0.70	U	ug/L
Phaeophytin-a	1.0	U	ug/L

Reference Method: SM 9223 B Quanti-Tray
Batch ID: P437124

Component	Result	Code	Units
Escherichia Coli-Quanti-Tray	1.0	U	MPN/100 mL

Reference Method: SOP-PCR-1.0
Batch ID: P436911

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

Reference Method: SOP-PCR-1.2
Batch ID: P436911

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

Reference Method: SOP-PCR-1.3
Batch ID: P436911

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.4
Batch ID: P436911

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

Reference Method: SOP-PCR-1.5
Batch ID: P436911

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: P437275

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	102		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P436911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	85.7	77.5	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P436911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	97.1	65.5	P/P	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P436911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	102	75.2	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P436911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	93.4	91.9	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P436911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	92.8	70.2	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P436911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446832	HF183-qPCR	87.7	83.5	P/P	50 - 175
2446833	HF183-qPCR	86.0		P	50 - 175
2446949	HF183-qPCR	82.2		P	50 - 175
2447008	HF183-qPCR	91.2		P	50 - 175
2447186	HF183-qPCR	94.3		P	50 - 175
2447322	HF183-qPCR	89.0		P	50 - 175
2447323	HF183-qPCR	84.7		P	50 - 175
2447983	HF183-qPCR	87.3		P	50 - 175
2448285	HF183-qPCR	86.2		P	50 - 175
2448286	HF183-qPCR	64.2		P	50 - 175
2448287	HF183-qPCR	98.1		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P436911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2447008	GULL2-qPCR	86.2		P	50 - 175
2447186	GULL2-qPCR	94.9		P	50 - 175
2447323	GULL2-qPCR	82.5		P	50 - 175
2447983	GULL2-qPCR	70.0		P	50 - 175
2448287	GULL2-qPCR	68.7		P	50 - 175

Reference Method: SOP-PCR-1.3

Batch ID: P436911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2447008	GFD-qPCR	94.3		P	50 - 175
2447186	GFD-qPCR	102		P	50 - 175
2447323	GFD-qPCR	95.1		P	50 - 175
2447983	GFD-qPCR	96.4		P	50 - 175
2448287	GFD-qPCR	84.7		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P436911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446832	BacR-qPCR	80.4	85.0	P/P	50 - 175
2446949	BacR-qPCR	54.4		P	50 - 175
2447008	BacR-qPCR	95.4		P	50 - 175
2447186	BacR-qPCR	77.6		P	50 - 175
2447322	BacR-qPCR	82.2		P	50 - 175
2447323	BacR-qPCR	92.2		P	50 - 175
2447983	BacR-qPCR	92.0		P	50 - 175
2448285	BacR-qPCR	97.2		P	50 - 175
2448286	BacR-qPCR	93.1		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P436911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446832	DG3-qPCR	89.2	87.6	P/P	50 - 175
2446833	DG3-qPCR	88.5		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P436911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446949	DG3-qPCR	80.5		P	50 - 175
2447008	DG3-qPCR	95.3		P	50 - 175
2447186	DG3-qPCR	97.5		P	50 - 175
2447322	DG3-qPCR	80.3		P	50 - 175
2447323	DG3-qPCR	92.9		P	50 - 175
2447983	DG3-qPCR	84.9		P	50 - 175
2448285	DG3-qPCR	93.7		P	50 - 175
2448286	DG3-qPCR	82.5		P	50 - 175
2448287	DG3-qPCR	89.3		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P436911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446832	HF183-qPCR	4.95	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P436911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446832	GULL2-qPCR	3.89	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P436911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446832	GFD-qPCR	3.53	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P436911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446832	BacR-qPCR	5.63	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P436911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446832	DG3-qPCR	1.82	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2447322
Field Sample ID: G4SE0149

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	78.6	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	85.2	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	77.7	P	50 - 300

Lab Sample ID: 2447323
Field Sample ID: G4SE0155

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	101	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	98.4	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	89.7	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	89.3	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	100	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10150 B	Chlorophyll-a, Corrected	102							
SOP-PCR-1.0	HF183-qPCR	77.5	85.7	87.7	83.5	86.0			4.95
				82.2					
SOP-PCR-1.2	GULL2-qPCR	65.5	97.1	86.2	94.9	82.5			3.89
				70.0					
SOP-PCR-1.3	GFD-qPCR	75.2	102	94.3	102	95.1			3.53
				96.4					
SOP-PCR-1.4	BacR-qPCR	93.4	91.9	92.2	92.0	97.2			5.63
				93.1					
SOP-PCR-1.5	DG3-qPCR	70.2	92.8	89.2	87.6	88.5			1.82
				80.5					

Reference Method Descriptions

Method	Description	Associated Samples
SM 10150 B	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2447311, 2447312, 2447313
SM 9223 B Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2447314, 2447315, 2447316, 2447317, 2447318, 2447319
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2447322, 2447323
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2447323
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2447323
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2447322, 2447323
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2447322, 2447323

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10150 B	10/26/2023	10/26/2023 15:33	Tynan A Branch	11/01/2023 09:20	Callie Williams	2447311, 2447312, 2447313
SM 9223 B Quanti-Tray	10/26/2023	10/26/2023 16:04	Julia Herten	10/27/2023 11:46	Callie Williams	2447314, 2447315, 2447316, 2447317, 2447318, 2447319
SOP-PCR-1.0	10/26/2023	10/26/2023 13:32	Madeline Gruver	11/16/2023 08:29	Roberta Tatti	2447322, 2447323
SOP-PCR-1.2	10/26/2023	10/26/2023 13:32	Madeline Gruver	11/20/2023 12:31	Roberta Tatti	2447323
SOP-PCR-1.3	10/26/2023	10/26/2023 13:32	Madeline Gruver	11/20/2023 14:54	Jennifer Mihalic	2447323
SOP-PCR-1.4	10/26/2023	10/26/2023 13:32	Madeline Gruver	11/17/2023 16:08	Jennifer Mihalic	2447322, 2447323
SOP-PCR-1.5	10/26/2023	10/26/2023 13:32	Madeline Gruver	11/20/2023 08:21	Roberta Tatti	2447322, 2447323