

Biological Analysis Report

SO-DIST-2023-11-14-02

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

Overflow Analyses Performed By:
Sanders Laboratories
10090 Bavaria Road
Ft. Myers, FL 33913
DOH Accreditation E85457

Event Description: **2023 SMP: Glades Sloughs**
Request ID: **RQ-2023-11-13-45**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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FLDEP South District Office
2295 Victoria Ave. Suite 314
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Date Certified: 27-DEC-2023 11:23



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: GOPHER GULLY AT US27

Collection Date/Time: 11/13/2023 08:55

Field ID: G4SD0216

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2451149	SM 10150 B	Chlorophyll-a, Corrected	14	AJ	ug/L	P438611	RPD
		Phaeophytin-a	4.6	I	ug/L	P438611	
		Chlorophyll-a, Uncorrected	17	A	ug/L	P438611	
2451154	Colilert-18	Escherichia Coli-Quanti-Tray	90.9		MPN/100 mL		

Ref. Method and Comment:

SM 10150 B: Laboratory duplicate result is 2.2 U for Phaeophytin-a. Precision data is unavailable due to the small amount of analyte in the QC sample. Chlorophyll-a Corrected result is J-qualified due to a lab duplicate RPD failure.

Sample Location: GATOR SLOUGH AT US27

Collection Date/Time: 11/13/2023 09:15

Field ID: G4SD0214

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2451150	SM 10150 B	Chlorophyll-a, Corrected	6.9		ug/L	P438611	RPD
		Phaeophytin-a	4.3		ug/L	P438611	
		Chlorophyll-a, Uncorrected	9.7		ug/L	P438611	
2451155	Colilert-18	Escherichia Coli-Quanti-Tray	12.0		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: FENCELINE DRAIN AT BLUE HEAD RANCH

Collection Date/Time: 11/13/2023 10:20

Field ID: G4SD0193

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2451157	Colilert-18	Escherichia Coli-Quanti-Tray	210		MPN/100 mL		

Sample Location: BOOTHEELCREEKEASTBRANCH

Collection Date/Time: 11/13/2023 11:40

Field ID: G4SD0105

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2451151	SM 10150 B	Chlorophyll-a, Corrected	2.1	U	ug/L	P438611	RPD
		Phaeophytin-a	2.2	U	ug/L	P438611	
		Chlorophyll-a, Uncorrected	1.9	I	ug/L	P438611	
2451156	Colilert-18	Escherichia Coli-Quanti-Tray	248		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: JOHNHENRYSLOUGH ATCR731

Collection Date/Time: 11/13/2023 12:05

Field ID: G4SD0215

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2451152	SM 10150 B	Chlorophyll-a, Corrected	0.82	U	ug/L	P438613	
		Phaeophytin-a	0.90	U	ug/L	P438613	
		Chlorophyll-a, Uncorrected	0.64	I	ug/L	P438613	
2451153	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P437732	
	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	U	TSC/100 mL	P437732	
	SOP-PCR-1.3	GFD-qPCR**	1.3E+03	I	TSC/100 mL	P437732	

Field ID: G4SD0215

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2451153	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P437732	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P437732	
2451159	Colilert-18	Escherichia Coli-Quanti-Tray	980		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.
SOP-PCR-1.3: Duplicate was analyzed and result is 1.2E+ 03 l.

Sample Location: RAINEY SLOUGH AT FARABEE RD Collection Date/Time: 11/13/2023 12:25

Field ID: G4SD0111

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2451158	Colilert-18	Escherichia Coli-Quanti-Tray	59.4		MPN/100 mL		

Quality Assurance Report
Method Blank Results

Reference Method: SM 10150 B
Batch ID: P438611

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: SM 10150 B
Batch ID: P438613

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: P437732

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

Reference Method: SOP-PCR-1.2
Batch ID: P437732

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

Reference Method: SOP-PCR-1.3
Batch ID: P437732

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: P437732

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

Reference Method: SOP-PCR-1.5
Batch ID: P437732

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: P438611

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	91.1		P	84 - 116

Reference Method: SM 10150 B
Batch ID: P438613

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	95.6		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P437732

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	94.1	71.1	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P437732

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	118	89.2	P/P	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P437732

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	99.4	71.4	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P437732

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	98.8	68.5	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P437732

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P437732

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	105	70.5	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P437732

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451153	HF183-qPCR	88.4	92.4	P/P	50 - 175
2451192	HF183-qPCR	89.1		P	50 - 175
2451205	HF183-qPCR	100		P	50 - 175
2451206	HF183-qPCR	108		P	50 - 175
2451418	HF183-qPCR	81.5		P	50 - 175
2451419	HF183-qPCR	89.0		P	50 - 175
2451681	HF183-qPCR	85.4		P	50 - 175
2451959	HF183-qPCR	88.7		P	50 - 175
2451985	HF183-qPCR	84.9		P	50 - 175
2452066	HF183-qPCR	75.7		P	50 - 175
2452125	HF183-qPCR	105		P	50 - 175
2452126	HF183-qPCR	88.6		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P437732

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451153	GULL2-qPCR	92.1	93.1	P/P	50 - 175
2451206	GULL2-qPCR	84.0		P	50 - 175
2451418	GULL2-qPCR	48.2		F	50 - 175
2451985	GULL2-qPCR	92.1		P	50 - 175
2452126	GULL2-qPCR	19.2		F	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P437732

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451153	GFD-qPCR	84.3	89.6	P/P	50 - 175
2451206	GFD-qPCR	89.6		P	50 - 175
2451418	GFD-qPCR	94.5		P	50 - 175
2451985	GFD-qPCR	84.4		P	50 - 175
2452126	GFD-qPCR	88.2		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P437732

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451153	BacR-qPCR	84.0	89.9	P/P	50 - 175
2451192	BacR-qPCR	95.8		P	50 - 175
2451205	BacR-qPCR	91.8		P	50 - 175
2451206	BacR-qPCR	83.9		P	50 - 175
2451418	BacR-qPCR	64.1		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P437732

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451419	BacR-qPCR	84.6		P	50 - 175
2451681	BacR-qPCR	85.3		P	50 - 175
2451959	BacR-qPCR	78.4		P	50 - 175
2451985	BacR-qPCR	81.0		P	50 - 175
2452066	BacR-qPCR	84.4		P	50 - 175
2452125	BacR-qPCR	81.3		P	50 - 175
2452126	BacR-qPCR	62.8		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P437732

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451153	DG3-qPCR	94.4	100	P/P	50 - 175
2451192	DG3-qPCR	100		P	50 - 175
2451205	DG3-qPCR	106		P	50 - 175
2451206	DG3-qPCR	105		P	50 - 175
2451418	DG3-qPCR	82.5		P	50 - 175
2451419	DG3-qPCR	94.9		P	50 - 175
2451681	DG3-qPCR	99.4		P	50 - 175
2451959	DG3-qPCR	105		P	50 - 175
2451985	DG3-qPCR	104		P	50 - 175
2452066	DG3-qPCR	96.9		P	50 - 175
2452125	DG3-qPCR	91.8		P	50 - 175
2452126	DG3-qPCR	60.6		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10150 B
Batch ID: P438611

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451149	Chlorophyll-a, Corrected	28.2	Sample	F	0 - 25
2451149	Chlorophyll-a, Uncorrected	14.4	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P437732

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451153	HF183-qPCR	4.40	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P437732

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451153	GULL2-qPCR	1.05	Spike	P	0 - 25

Quality Assurance Report
Precision

Reference Method: SOP-PCR-1.3
Batch ID: P437732

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451153	GFD-qPCR	6.09	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P437732

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451153	BacR-qPCR	6.81	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P437732

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451153	DG3-qPCR	5.88	Spike	P	0 - 25

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2451153
Field Sample ID: G4SD0215

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	91.0	P	50 - 300
SOP-PCR-1.0	SKETA-qPCR	92.3	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	98.5	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	101	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	105	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	108	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	105	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	111	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	94.6	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	93.3	P	50 - 300

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10150 B	Chlorophyll-a, Corrected	91.1						28.2	
	Chlorophyll-a, Corrected	95.6							
	Chlorophyll-a, Uncorrected							14.4	
SOP-PCR-1.0	HF183-qPCR	71.1	94.1	88.4	92.4	89.1			4.40
SOP-PCR-1.2	GULL2-qPCR	89.2	118	92.1	93.1	84.0			1.05
				48.2					

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SOP-PCR-1.3	GFD-qPCR	71.4	99.4	84.3	89.6	89.6		6.09
SOP-PCR-1.4	BacR-qPCR	68.5	98.8	84.0	89.9	95.8		6.81
SOP-PCR-1.5	DG3-qPCR	70.5	105	94.4	100	100		5.88

Reference Method Descriptions

Method	Description	Associated Samples
Colilert-18	E. coli by Colilert-18/QT by Sanders in Fort Myers	2451154, 2451155, 2451156, 2451157, 2451158, 2451159
SM 10150 B	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2451149, 2451150, 2451151, 2451152
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2451153
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2451153
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2451153
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2451153
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2451153

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Colilert-18	11/13/2023	11/13/2023 15:03		11/14/2023 10:08	Sanders-Fort Myers	2451154, 2451155, 2451156, 2451157, 2451158, 2451159
SM 10150 B	11/14/2023	11/14/2023 13:07	Julia Herten	11/28/2023 10:33	Callie Williams	2451149, 2451150, 2451151
	11/14/2023	11/14/2023 13:07	Julia Herten	11/28/2023 16:04	Tynan A Branch	2451152
SOP-PCR-1.0	11/14/2023	11/14/2023 12:31	Madeline Gruver	12/05/2023 08:47	Roberta Tatti	2451153
SOP-PCR-1.2	11/14/2023	11/14/2023 12:31	Madeline Gruver	12/13/2023 14:14	Jennifer Mihalic	2451153
SOP-PCR-1.3	11/14/2023	11/14/2023 12:31	Madeline Gruver	12/12/2023 13:32	Jennifer Mihalic	2451153
SOP-PCR-1.4	11/14/2023	11/14/2023 12:31	Madeline Gruver	12/06/2023 08:50	Roberta Tatti	2451153
SOP-PCR-1.5	11/14/2023	11/14/2023 12:31	Madeline Gruver	12/06/2023 09:50	Roberta Tatti	2451153