

Biological Analysis Report

SO-DIST-2023-10-26-01

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-2023-10-23-21**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 314
Fort Myers, FL 33901-3381
Attn: Nicole Reistad

For additional information please contact
Cheryl Swanson - Administrator
Sarah Menz, Ph.D. - Bench Biology & Aquatic
Toxicity
Puja Jasrotia, Ph.D. - Molecular Biology & Taxonomy
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Puja Jasrotia, Environmental Administrator

Date Certified: 08-DEC-2023 09:41



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: GATOR SLOUGH AT US27

Collection Date/Time: 10/25/2023 11:40

Field ID: G4SD0214

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2447268	SM 10150 B	Chlorophyll-a, Corrected	7.2		ug/L	P437246	
		Phaeophytin-a	4.1		ug/L	P437246	
		Chlorophyll-a, Uncorrected	9.9		ug/L	P437246	
2447273	Colilert-18	Escherichia Coli-Quanti-Tray	9.70		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: JOHNNENRYSLOUGH ATCR731

Collection Date/Time: 10/25/2023 13:05

Field ID: G4SD0215

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2447271	SM 10150 B	Chlorophyll-a, Corrected	33		ug/L	P437275	
		Phaeophytin-a	13		ug/L	P437275	
		Chlorophyll-a, Uncorrected	41		ug/L	P437275	
2447272	SOP-PCR-1.0	HF183-purified-qPCR**	1.1E+03	UJ	TSC/100 mL	P438124	LCS, SUR
	SOP-PCR-1.2	GULL2-purified-qPCR**	1.2E+03	UJ	TSC/100 mL	P438124	LCS, SUR
	SOP-PCR-1.3	GFD-purified-qPCR**	530	I J	TSC/100 mL	P438124	LCS, SUR
	SOP-PCR-1.4	BacR-purified-qPCR**	1.0E+03	UJ	TSC/100 mL	P438124	LCS, SUR
	SOP-PCR-1.5	DG3-purified-qPCR**	860	UJ	TSC/100 mL	P438124	LCS, SUR
2447276	Colilert-18	Escherichia Coli-Quanti-Tray	2420		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-1.0: Precision data unavailable for HF183-purified-qPCR component. Refer to the Lab Analysis Report for an explanation of QC Codes.
SOP-PCR-1.2: Precision data unavailable for Gull2-purified-qPCR component. Refer to the Lab Analysis Report for an explanation of QC Codes.
SOP-PCR-1.3: Precision data unavailable for GFD-purified-qPCR component. Refer to the Lab Analysis Report for an explanation of QC Codes.
SOP-PCR-1.4: Precision data unavailable for BacR-purified-qPCR component. Refer to the Lab Analysis Report for an explanation of QC Codes.
SOP-PCR-1.5: Precision data unavailable for DG3-purified-qPCR component. Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: BOOTHEELCREEKEASTBRANCH

Collection Date/Time: 10/25/2023 12:05

Field ID: G4SD0105

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2447269	SM 10150 B	Chlorophyll-a, Corrected	0.96	U	ug/L	P437275	
		Phaeophytin-a	1.0	U	ug/L	P437275	
		Chlorophyll-a, Uncorrected	0.84	I	ug/L	P437275	
2447274	Colilert-18	Escherichia Coli-Quanti-Tray	133		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: GOPHER GULLY AT US27

Collection Date/Time: 10/25/2023 13:35

Field ID: G4SD0216

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2447270	SM 10150 B	Chlorophyll-a, Corrected	7.8		ug/L	P437275	
		Phaeophytin-a	1.0	U	ug/L	P437275	
		Chlorophyll-a, Uncorrected	7.8		ug/L	P437275	

Field ID: G4SD0216

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2447275	Colilert-18	Escherichia Coli-Quanti-Tray	32.3		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: RAINEY SLOUGH AT FARABEE RD Collection Date/Time: 10/25/2023 12:45

Field ID: G4SD0111

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2447516	Colilert-18	Escherichia Coli-Quanti-Tray	249		MPN/100 mL		

Sample Location: FENCELINE DRAIN AT BLUE HEAD RANCH Collection Date/Time: 10/25/2023 10:15

Field ID: G4SD0193

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2447517	Colilert-18	Escherichia Coli-Quanti-Tray	185		MPN/100 mL		

Quality Assurance Report
Method Blank Results

Reference Method: SM 10150 B
Batch ID: P437246

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 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: SOP-PCR-1.0
Batch ID: P438124

Component	Result	Code	Units
HF183-purified-qPCR	550	U	TSC/100 mL

Reference Method: SOP-PCR-1.2
Batch ID: P438124

Component	Result	Code	Units
GULL2-purified-qPCR	600	U	TSC/100 mL

Reference Method: SOP-PCR-1.3
Batch ID: P438124

Component	Result	Code	Units
GFD-purified-qPCR	120	U	TSC/100 mL

Quality Assurance Report
Method Blank Results

Reference Method: SOP-PCR-1.4
Batch ID: P438124

Component	Result	Code	Units
BacR-purified-qPCR	510	U	TSC/100 mL

Reference Method: SOP-PCR-1.5
Batch ID: P438124

Component	Result	Code	Units
DG3-purified-qPCR	430	U	TSC/100 mL

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 10150 B
Batch ID: P437246

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	103		P	84 - 116

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: P438124

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-purified-qPCR	90.8	5.43	P/F	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P438124

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-purified-qPCR	104	5.42	P/F	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P438124

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	96.9	6.17	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P438124

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-purified-qPCR	106	6.13	P/F	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P438124

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
-----------	---------	---------	-----------	----------------

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P438124

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-purified-qPCR	95.9	6.77	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P438124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2447272	HF183-purified-qPCR	87.1		P	50 - 175
2447649	HF183-purified-qPCR	89.5		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P438124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2447272	GULL2-purified-qPCR	97.4		P	50 - 175
2447649	GULL2-purified-qPCR	109		P	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P438124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2447272	GFD-purified-qPCR	98.8		P	50 - 175
2447649	GFD-purified-qPCR	101		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P438124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2447272	BacR-purified-qPCR	101		P	50 - 175
2447649	BacR-purified-qPCR	97.7		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P438124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2447272	DG3-purified-qPCR	96.6		P	50 - 175
2447649	DG3-purified-qPCR	98.3		P	50 - 175

Quality Assurance Report Surrogates

Lab Sample ID: 2447272
Field Sample ID: G4SD0215

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	38.3	F	50 - 300
SOP-PCR-1.2	SKETA-qPCR	38.4	F	50 - 300
SOP-PCR-1.3	SKETA-qPCR	38.5	F	50 - 300
SOP-PCR-1.4	SKETA-qPCR	42.4	F	50 - 300

Quality Assurance Report Surrogates

Lab Sample ID: 2447272
Field Sample ID: G4SD0215

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.5	SKETA-qPCR	33.6	F	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery		LCS	Precision SMP	MS
SM 10150 B	Chlorophyll-a, Corrected	103						
	Chlorophyll-a, Corrected	102						
SOP-PCR-1.0	HF183-purified-qPCR	5.43	90.8	87.1	89.5			
SOP-PCR-1.2	GULL2-purified-qPCR	5.42	104	97.4	109			
SOP-PCR-1.3	GFD-purified-qPCR	6.17	96.9	98.8	101			
SOP-PCR-1.4	BacR-purified-qPCR	6.13	106	101	97.7			
SOP-PCR-1.5	DG3-purified-qPCR	6.77	95.9	96.6	98.3			

Reference Method Descriptions

Method	Description	Associated Samples
Colilert-18	E. coli by Colilert-18/QT by Sanders in Fort Myers	2447273, 2447274, 2447275, 2447276, 2447516, 2447517
SM 10150 B	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2447268, 2447269, 2447270, 2447271
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2447272
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2447272
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2447272
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2447272
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2447272

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Colilert-18	10/25/2023	10/25/2023 15:34		10/26/2023 09:54	Sanders-Fort Myers	2447273, 2447274, 2447275, 2447276, 2447516, 2447517
SM 10150 B	10/26/2023	10/26/2023 15:33	Tynan A Branch	10/31/2023 14:42	Keanu Thijm	2447268
	10/26/2023	10/26/2023 15:33	Tynan A Branch	11/01/2023 09:20	Callie Williams	2447269, 2447270, 2447271
SOP-PCR-1.0	10/26/2023	10/26/2023 13:32	Roberta Tatti	11/28/2023 08:45	Roberta Tatti	2447272
SOP-PCR-1.2	10/26/2023	10/26/2023 13:32	Roberta Tatti	12/01/2023 14:27	Jennifer Mihalic	2447272
SOP-PCR-1.3	10/26/2023	10/26/2023 13:32	Roberta Tatti	11/29/2023 16:32	Jennifer Mihalic	2447272
SOP-PCR-1.4	10/26/2023	10/26/2023 13:32	Roberta Tatti	11/29/2023 12:23	Roberta Tatti	2447272
SOP-PCR-1.5	10/26/2023	10/26/2023 13:32	Roberta Tatti	11/28/2023 08:45	Roberta Tatti	2447272