

Biological Analysis Report

NE-DIST-2023-05-10-02

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

Event Description: **Ormond Boat and L.Eaton**
Request ID: **RQ-2023-05-08-21**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
Attn: Jeremy Parrish

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: Sarah Menz, Environmental Administrator

Date Certified: 23-JUN-2023 08:11

A handwritten signature in dark ink, appearing to be 'Sarah Menz', with a long, sweeping horizontal stroke extending to the right.

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: LAKE EATON CENTER

Collection Date/Time: 05/09/2023 10:30

Field ID: G1NE0954

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2408323	SM 10150 B	Chlorophyll-a, Corrected	38		ug/L	P430464	
		Phaeophytin-a	1.9	U	ug/L	P430464	
		Chlorophyll-a, Uncorrected	39		ug/L	P430464	

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: GROOVER BRANCH AT AIRPORT ROAD BRIDGE

Collection Date/Time: 05/09/2023 12:40

Field ID: G5NE0610

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2408322	SM 10150 B	Chlorophyll-a, Corrected	0.82	U	ug/L	P430464	
		Phaeophytin-a	0.90	U	ug/L	P430464	
		Chlorophyll-a, Uncorrected	0.60	U	ug/L	P430464	
2408325	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	686.7	Q	MPN/100 mL	P429821	
2408326	SOP-PCR-1.0	HF183-qPCR**	1.7E+03	U	TSC/100 mL	P429413	
	SOP-PCR-1.2	GULL2-qPCR**	1.8E+03	U	TSC/100 mL	P429413	
	SOP-PCR-1.3	GFD-qPCR**	360	U	TSC/100 mL	P429413	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P429413	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P429413	

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: UNNAMED BRANCH 05 MI ABOVE TOMOKA RIVER

Collection Date/Time: 05/09/2023 13:15

Field ID: G5NE0609

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2408321	SM 10150 B	Chlorophyll-a, Corrected	8.2		ug/L	P430464	
		Phaeophytin-a	2.2	I	ug/L	P430464	
		Chlorophyll-a, Uncorrected	9.8		ug/L	P430464	
2408324	Enterolert/QT	Enterococci-Quanti-Tray	10.0	Q	MPN/100 mL	P429821	

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.

Quality Assurance Report Method Blank Results

Reference Method: Enterolert/QT
Batch ID: P429821

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

Quality Assurance Report Method Blank Results

Reference Method: SM 10150 B
Batch ID: P430464

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: P429821

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

Reference Method: SOP-PCR-1.0
Batch ID: P429413

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

Reference Method: SOP-PCR-1.2
Batch ID: P429413

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

Reference Method: SOP-PCR-1.3
Batch ID: P429413

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

Reference Method: SOP-PCR-1.4
Batch ID: P429413

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

Reference Method: SOP-PCR-1.5
Batch ID: P429413

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: P430464

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	95.1		P	84 - 116

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P429413

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	90.1	104	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P429413

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	109	106	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P429413

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	95.3	105	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P429413

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	101	95.5	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P429413

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	103	86.9	P/P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P429413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2405725	HF183-qPCR	81.8	77.6	P/P	50 - 175
2406192	HF183-qPCR	66.4		P	50 - 175
2407441	HF183-qPCR	74.6		P	50 - 175
2407442	HF183-qPCR	84.1		P	50 - 175
2407443	HF183-qPCR	80.3		P	50 - 175
2408326	HF183-qPCR	73.6		P	50 - 175
2408541	HF183-qPCR	77.2		P	50 - 175
2408542	HF183-qPCR	92.0		P	50 - 175
2408863	HF183-qPCR	76.9		P	50 - 175
2409065	HF183-qPCR	80.4		P	50 - 175
2409323	HF183-qPCR	85.2		P	50 - 175
2409345	HF183-qPCR	74.7		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P429413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2405725	GULL2-qPCR	104	89.1	P/P	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2

Batch ID: P429413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2406192	GULL2-qPCR	90.4		P	50 - 300
2407441	GULL2-qPCR	93.3		P	50 - 300
2407442	GULL2-qPCR	115		P	50 - 300
2407443	GULL2-qPCR	88.4		P	50 - 300
2408326	GULL2-qPCR	87.4		P	50 - 300
2408541	GULL2-qPCR	123		P	50 - 300
2408863	GULL2-qPCR	80.5		P	50 - 300
2409345	GULL2-qPCR	85.7		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P429413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2405725	GFD-qPCR	93.4	98.0	P/P	50 - 175
2406192	GFD-qPCR	102		P	50 - 175
2407441	GFD-qPCR	105		P	50 - 175
2407442	GFD-qPCR	103		P	50 - 175
2407443	GFD-qPCR	100		P	50 - 175
2408326	GFD-qPCR	103		P	50 - 175
2408541	GFD-qPCR	106		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P429413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2405725	BacR-qPCR	78.1	82.0	P/P	50 - 175
2406192	BacR-qPCR	68.1		P	50 - 175
2407441	BacR-qPCR	74.3		P	50 - 175
2407442	BacR-qPCR	69.4		P	50 - 175
2407443	BacR-qPCR	75.6		P	50 - 175
2408326	BacR-qPCR	72.1		P	50 - 175
2408541	BacR-qPCR	95.2		P	50 - 175
2408542	BacR-qPCR	76.0		P	50 - 175
2408863	BacR-qPCR	73.3		P	50 - 175
2409065	BacR-qPCR	76.8		P	50 - 175
2409323	BacR-qPCR	67.9		P	50 - 175
2409345	BacR-qPCR	58.0		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P429413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2405725	DG3-qPCR	96.1	99.1	P/P	50 - 175
2406192	DG3-qPCR	90.9		P	50 - 175
2407441	DG3-qPCR	103		P	50 - 175
2407442	DG3-qPCR	100		P	50 - 175
2407443	DG3-qPCR	93.3		P	50 - 175
2408326	DG3-qPCR	84.0		P	50 - 175
2408541	DG3-qPCR	98.8		P	50 - 175
2408542	DG3-qPCR	101		P	50 - 175
2408863	DG3-qPCR	90.6		P	50 - 175
2409065	DG3-qPCR	104		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P429413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2409323	DG3-qPCR	101		P	50 - 175
2409345	DG3-qPCR	105		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P429413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2405725	HF183-qPCR	5.25	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P429413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2405725	GULL2-qPCR	15.5	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P429413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2405725	GFD-qPCR	4.86	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P429413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2405725	BacR-qPCR	4.86	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P429413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2405725	DG3-qPCR	3.09	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2408326
Field Sample ID: G5NE0610

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
------------------	-----------	--------	-----------	----------------

Quality Assurance Report Surrogates

Lab Sample ID: 2408326
 Field Sample ID: G5NE0610

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	108	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	111	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	125	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	108	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	104	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10150 B	Chlorophyll-a, Corrected	95.1							
SOP-PCR-1.0	HF183-qPCR	104	90.1	81.8	77.6	66.4			5.25
				74.6					
SOP-PCR-1.2	GULL2-qPCR	106	109	104	89.1	90.4			15.5
				93.3					
SOP-PCR-1.3	GFD-qPCR	105	95.3	93.4	98.0	102			4.86
				105					
SOP-PCR-1.4	BacR-qPCR	95.5	101	78.1	82.0	68.1			4.86
				74.3					
SOP-PCR-1.5	DG3-qPCR	86.9	103	96.1	99.1	90.9			3.09
				103					

Reference Method Descriptions

Method	Description	Associated Samples
Enterolert/QT	Enterococci by Enterolert Quanti-Tray method - non-chlorinated water systems	2408324
SM 10150 B	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2408321, 2408322, 2408323
SM 9223 B Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2408325
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2408326
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2408326
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2408326
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2408326
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2408326

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	05/10/2023	05/10/2023 13:52	Megan Higbee	05/11/2023 14:00	Megan Higbee	2408324
SM 10150 B	05/10/2023	05/10/2023 13:58	Tynan A Branch	05/22/2023 14:00	Tynan A Branch	2408321, 2408322, 2408323
SM 9223 B Quanti-Tray	05/10/2023	05/10/2023 16:40	Aidan Cronin	05/11/2023 10:58	Aidan Cronin	2408325
SOP-PCR-1.0	05/10/2023	05/10/2023 14:00	Claudia Castro	05/25/2023 14:24	Roberta Tatti	2408326
SOP-PCR-1.2	05/10/2023	05/10/2023 14:00	Claudia Castro	06/06/2023 16:39	Madeline Gruver	2408326
SOP-PCR-1.3	05/10/2023	05/10/2023 14:00	Claudia Castro	06/02/2023 11:44	Madeline Gruver	2408326
SOP-PCR-1.4	05/10/2023	05/10/2023 14:00	Claudia Castro	05/26/2023 09:23	Roberta Tatti	2408326
SOP-PCR-1.5	05/10/2023	05/10/2023 14:00	Claudia Castro	06/01/2023 14:40	Jennifer Mihalic	2408326