

Biological Analysis Report

SE-DIST-2022-10-12-01

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

Event Description: **Okeechobee**
Request ID: **RQ-2022-10-10-32**
Customer: **SE-DIST**
Project ID: **SMP**

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

Date Certified: 22-NOV-2022 11:08

A handwritten signature in black ink, appearing to be 'Puja Jasrotia', written over a horizontal line.

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: Kissimmee upstream of 78

Collection Date/Time: 10/11/2022 11:10

Field ID: G4SE0131

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2361991	SM 10200 H (mod.)	Chlorophyll-a, Corrected	27		ug/L	P421208	
		Phaeophytin-a	6.7		ug/L	P421208	
		Chlorophyll-a, Uncorrected	32		ug/L	P421208	
2361996	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	7.5	Q	MPN/100 mL	P421069	

Ref. Method and Comment:

SM 10200 H (mod.): 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: Lemkin Creek @ 78

Collection Date/Time: 10/11/2022 10:30

Field ID: G1SE0026

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2361995	SM 10200 H (mod.)	Chlorophyll-a, Corrected	17		ug/L	P421208	
		Phaeophytin-a	3.8		ug/L	P421208	
		Chlorophyll-a, Uncorrected	20		ug/L	P421208	
2362001	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	2.0	Q	MPN/100 mL	P421069	

Ref. Method and Comment:

SM 10200 H (mod.): 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: Taylor Creek @ 441

Collection Date/Time: 10/11/2022 09:15

Field ID: G1SE0001

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2361992	SM 10200 H (mod.)	Chlorophyll-a, Corrected	12	A	ug/L	P421208	
		Phaeophytin-a	2.2	I	ug/L	P421208	
		Chlorophyll-a, Uncorrected	14	A	ug/L	P421208	

Ref. Method and Comment:

SM 10200 H (mod.): Laboratory duplicate result is 2.1 I for Phaeophytin-a. Precision data is unavailable due to the small amount of analyte in the QC sample.

Sample Location: Mosquito Creek @ 710

Collection Date/Time: 10/11/2022 10:10

Field ID: G1SE0014

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2361997	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	261.3	Q	MPN/100 mL	P421069	

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: Henry Creek @ SE 128th Ave

Collection Date/Time: 10/11/2022 10:25

Field ID: G1SE0030

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2361998	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	37.9	Q	MPN/100 mL	P421069	

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: Taylor Creek @ 70

Collection Date/Time: 10/11/2022 10:00

Field ID: G1SE0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2361994	SM 10200 H (mod.)	Chlorophyll-a, Corrected	18		ug/L	P421208	
		Phaeophytin-a	2.2	I	ug/L	P421208	
		Chlorophyll-a, Uncorrected	20		ug/L	P421208	
2362000	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	2419.6	JQ	MPN/100 mL	P421069	

Ref. Method and Comment:

SM 10200 H (mod.): 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. All Quanti-Tray wells were positive. Result may be higher than reported.

Sample Location: Taylor Creek @ 39th St.

Collection Date/Time: 10/11/2022 09:30

Field ID: G1SE0024

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2361993	SM 10200 H (mod.)	Chlorophyll-a, Corrected	8.4		ug/L	P421208	
		Phaeophytin-a	1.5	U	ug/L	P421208	
		Chlorophyll-a, Uncorrected	8.9		ug/L	P421208	
2361999	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	155.3	Q	MPN/100 mL	P421069	
2362002	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P420720	
	SOP-PCR-1.2	GULL2-qPCR**	3.6E+03	U	TSC/100 mL	P420720	
	SOP-PCR-1.3	GFD-qPCR**	890	I	TSC/100 mL	P420720	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P420720	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	U	TSC/100 mL	P420720	

Ref. Method and Comment:

SM 10200 H (mod.): 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.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P421208

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 9223 B Quanti-Tray

Batch ID: P421069

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

Reference Method: SOP-PCR-1.0

Batch ID: P420720

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.2
Batch ID: P420720

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

Reference Method: SOP-PCR-1.3
Batch ID: P420720

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

Reference Method: SOP-PCR-1.4
Batch ID: P420720

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

Reference Method: SOP-PCR-1.5
Batch ID: P420720

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P421208

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	100		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P420720

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	88.5	92.2	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P420720

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	97.8	84.7	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P420720

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	89.9	94.6	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P420720

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

Reference Method: SOP-PCR-1.4
Batch ID: P420720

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	93.1	75.2	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P420720

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	57.8	74.5	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P420720

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361364	HF183-qPCR	74.8	81.1	P/P	50 - 175
2361365	HF183-qPCR	51.5		P	50 - 175
2361698	HF183-qPCR	94.5		P	50 - 175
2361699	HF183-qPCR	88.1		P	50 - 175
2361700	HF183-qPCR	90.3		P	50 - 175
2362002	HF183-qPCR	90.1		P	50 - 175
2362125	HF183-qPCR	83.0		P	50 - 175
2362503	HF183-qPCR	64.1		P	50 - 175
2363299	HF183-qPCR	89.9		P	50 - 175
2364066	HF183-qPCR	99.1		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P420720

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361364	GULL2-qPCR	89.8	85.7	P/P	50 - 300
2361698	GULL2-qPCR	89.6		P	50 - 300
2361699	GULL2-qPCR	94.3		P	50 - 300
2361700	GULL2-qPCR	83.2		P	50 - 300
2362002	GULL2-qPCR	70.4		P	50 - 300
2362125	GULL2-qPCR	90.5		P	50 - 300
2362503	GULL2-qPCR	64.0		P	50 - 300
2364066	GULL2-qPCR	70.5		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P420720

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361364	GFD-qPCR	90.3	89.2	P/P	50 - 175
2361698	GFD-qPCR	104		P	50 - 175
2361699	GFD-qPCR	97.7		P	50 - 175
2361700	GFD-qPCR	95.7		P	50 - 175
2362002	GFD-qPCR	100		P	50 - 175
2362125	GFD-qPCR	90.9		P	50 - 175
2362503	GFD-qPCR	89.0		P	50 - 175
2364066	GFD-qPCR	87.3		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P420720

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361364	BacR-qPCR	72.3	77.1	P/P	50 - 175
2361365	BacR-qPCR	71.8		P	50 - 175
2361698	BacR-qPCR	91.1		P	50 - 175
2361699	BacR-qPCR	96.2		P	50 - 175
2361700	BacR-qPCR	78.4		P	50 - 175
2362002	BacR-qPCR	66.1		P	50 - 175
2362125	BacR-qPCR	79.3		P	50 - 175
2362503	BacR-qPCR	50.9		P	50 - 175
2363299	BacR-qPCR	89.1		P	50 - 175
2364066	BacR-qPCR	74.6		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P420720

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361364	DG3-qPCR	86.7	89.6	P/P	50 - 175
2361365	DG3-qPCR	76.5		P	50 - 175
2361698	DG3-qPCR	85.2		P	50 - 175
2361699	DG3-qPCR	89.2		P	50 - 175
2361700	DG3-qPCR	88.9		P	50 - 175
2362002	DG3-qPCR	84.3		P	50 - 175
2362125	DG3-qPCR	82.3		P	50 - 175
2362503	DG3-qPCR	70.8		P	50 - 175
2363299	DG3-qPCR	86.7		P	50 - 175
2364066	DG3-qPCR	83.5		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P421208

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361992	Chlorophyll-a, Corrected	1.01	Sample	P	0 - 25
2361992	Chlorophyll-a, Uncorrected	1.48	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P420720

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361364	HF183-qPCR	8.04	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P420720

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361364	GULL2-qPCR	4.71	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.3
Batch ID: P420720

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361364	GFD-qPCR	1.25	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P420720

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361364	BacR-qPCR	6.36	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P420720

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361364	DG3-qPCR	3.27	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2362002
Field Sample ID: G1SE0024

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	74.5	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	96.6	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	104	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	84.0	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	75.7	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	100					1.01	
	Chlorophyll-a, Uncorrected						1.48	
SOP-PCR-1.0	HF183-qPCR	92.2	88.5	74.8	81.1	51.5		8.04
SOP-PCR-1.2	GULL2-qPCR	84.7	97.8	94.5	83.2	70.4		4.71
				90.5				
SOP-PCR-1.3	GFD-qPCR	94.6	89.9	90.3	89.2	104		1.25
SOP-PCR-1.4	BacR-qPCR	75.2	93.1	97.7	77.1	71.8		6.36
				72.3				
SOP-PCR-1.5	DG3-qPCR	74.5	57.8	91.1	89.6	76.5		3.27
				86.7				
				85.2				

Reference Method Descriptions

Method	Description	Associated Samples
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2361991, 2361992, 2361993, 2361994, 2361995
SM 9223 B Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2361996, 2361997, 2361998, 2361999, 2362000, 2362001
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2362002
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2362002
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2362002
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2362002
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2362002

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	10/12/2022	10/12/2022 13:12	Megan Higbee	10/19/2022 12:20	Carina A. Tull	2361991, 2361992, 2361993, 2361994, 2361995
SM 9223 B Quanti-Tray	10/12/2022	10/12/2022 16:18	Callie Williams	10/13/2022 11:45	Callie Williams	2361996, 2361997, 2361998, 2361999, 2362000, 2362001
SOP-PCR-1.0	10/12/2022	10/12/2022 13:50	Claudia Castro	10/24/2022 10:07	Roberta Tatti	2362002
SOP-PCR-1.2	10/12/2022	10/12/2022 13:50	Claudia Castro	10/25/2022 16:29	Roberta Tatti	2362002
SOP-PCR-1.3	10/12/2022	10/12/2022 13:50	Claudia Castro	10/26/2022 09:13	Roberta Tatti	2362002
SOP-PCR-1.4	10/12/2022	10/12/2022 13:50	Claudia Castro	10/24/2022 14:12	DeAsia Armster	2362002
SOP-PCR-1.5	10/12/2022	10/12/2022 13:50	Claudia Castro	10/25/2022 09:00	Roberta Tatti	2362002