

Biological Analysis Report

NW-DIST-2021-03-05-01

Florida Department of Environmental Protection
Central Laboratory
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DOH Accreditation E31780

Overflow Analyses Performed By:
University of West Florida
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Pensacola, FL 32514
DOH Accreditation E71969

Eurofins TestAmerica Pensacola
3355 McLemore Drive
Pensacola, FL 32514
DOH Accreditation E81010

Event Description: **Twin Lakes Run**
Request ID: **RQ-2021-03-01-59**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 208
Pensacola, FL 32502-5794
Attn: Cheryl Bunch

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Certified by: Puja Jasrotia, Environmental Administrator

Date Certified: 13-APR-2021 11:36



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: Twin Lake South Lobe

Collection Date/Time: 03/04/2021 12:35

Field ID: G3NW0448

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2229562	SM 10200 H (mod.)	Chlorophyll-a, Corrected	4.8		ug/L	P394909	
		Phaeophytin-a	2.5	I	ug/L	P394909	
		Chlorophyll-a, Uncorrected	6.5		ug/L	P394909	
2229573	SM 9222 D	Fecal Coliforms-Membrane Filter	12.0	B	cfu/100 mL		
2229578	Enterolert/QT	Enterococci-Quanti-Tray	10		MPN/100 mL		
	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	10		MPN/100 mL		

Sample Location: Allen Lake Input

Collection Date/Time: 03/04/2021 11:30

Field ID: G3NW0177

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2229583	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	3282		MPN/100 mL		
2229593	SOP-PCR-1.0	HF183-purified-qPCR**	460	I J	TSC/100 mL	P395474	LCS, SUR
	SOP-PCR-1.4	BacR-purified-qPCR**	130	UJ	TSC/100 mL	P395474	LCS, SUR
	SOP-PCR-1.5	DG3-purified-qPCR**	440	I J	TSC/100 mL	P395474	LCS, SUR

Ref. Method and Comment:

SOP-PCR-1.0: Precision data unavailable for HF183-purified-PCR 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: Twin Lake

Collection Date/Time: 03/04/2021 12:15

Field ID: G3NW0215

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2229563	SM 10200 H (mod.)	Chlorophyll-a, Corrected	12		ug/L	P394909	
		Phaeophytin-a	3.0		ug/L	P394909	
		Chlorophyll-a, Uncorrected	14		ug/L	P394909	
2229574	SM 9222 D	Fecal Coliforms-Membrane Filter	470		cfu/100 mL		
2229579	Enterolert/QT	Enterococci-Quanti-Tray	269		MPN/100 mL		
	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	292		MPN/100 mL		

Sample Location: Twin Lakes eastern Lake

Collection Date/Time: 03/04/2021 13:00

Field ID: G3NW0449

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2229564	SM 10200 H (mod.)	Chlorophyll-a, Corrected	16		ug/L	P394909	
		Phaeophytin-a	6.6		ug/L	P394909	
		Chlorophyll-a, Uncorrected	21		ug/L	P394909	
2229575	SM 9222 D	Fecal Coliforms-Membrane Filter	172		cfu/100 mL		
2229580	Enterolert/QT	Enterococci-Quanti-Tray	10	U	MPN/100 mL		
	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	31		MPN/100 mL		

Sample Location: Coleman Lake

Collection Date/Time: 03/04/2021 13:30

Field ID: G3NW0216

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Field ID: G3NW0216

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2229565	SM 10200 H (mod.)	Chlorophyll-a, Corrected	16		ug/L	P394910	
		Phaeophytin-a	0.90	U	ug/L	P394910	
		Chlorophyll-a, Uncorrected	17		ug/L	P394910	
2229576	SM 9222 D	Fecal Coliforms-Membrane Filter	76.0		cfu/100 mL		
2229581	Enterolert/QT	Enterococci-Quanti-Tray	52		MPN/100 mL		
	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	63		MPN/100 mL		

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.

Sample Location: Kell-aire Lake

Collection Date/Time: 03/04/2021 13:50

Field ID: G3NW0217

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2229566	SM 10200 H (mod.)	Chlorophyll-a, Corrected	58		ug/L	P394910	
		Phaeophytin-a	3.6		ug/L	P394910	
		Chlorophyll-a, Uncorrected	62		ug/L	P394910	
2229577	SM 9222 D	Fecal Coliforms-Membrane Filter	108		cfu/100 mL		
2229582	Enterolert/QT	Enterococci-Quanti-Tray	41		MPN/100 mL		
	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	10	U	MPN/100 mL		

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.

Quality Assurance Report

Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P394909

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 10200 H (mod.)
Batch ID: P394910

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: P395474

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

Reference Method: SOP-PCR-1.4
Batch ID: P395474

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.4
Batch ID: P395474

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

Reference Method: SOP-PCR-1.5
Batch ID: P395474

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P394909

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	98.4		P	84 - 116

Reference Method: SM 10200 H (mod.)
Batch ID: P394910

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	93.6		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P395474

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-purified-qPCR	88.9	9.38	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P395474

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-purified-qPCR	91.8	5.66	P/F	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P395474

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-purified-qPCR	88.5	5.69	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P395474

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2229593	HF183-purified-qPCR	103		P	50 - 175
2232075	HF183-purified-qPCR	100		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
 Batch ID: P395474

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2229593	BacR-purified-qPCR	89.9		P	50 - 175

Reference Method: SOP-PCR-1.5
 Batch ID: P395474

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2229593	DG3-purified-qPCR	99.7		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
 Batch ID: P394909

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2229424	Chlorophyll-a, Corrected	1.36	Sample	P	0 - 25
2229424	Chlorophyll-a, Uncorrected	1.22	Sample	P	0 - 25
2229424	Phaeophytin-a	1.68	Sample	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2229593
 Field Sample ID: G3NW0177

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	12.8	F	50 - 300
SOP-PCR-1.4	SKETA-qPCR	7.39	F	30 - 300
SOP-PCR-1.5	SKETA-qPCR	6.68	F	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery		LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	98.4					1.36	
	Chlorophyll-a, Corrected	93.6						
	Chlorophyll-a, Uncorrected						1.22	
	Phaeophytin-a						1.68	
SOP-PCR-1.0	HF183-purified-qPCR	9.38	88.9	103	100			
SOP-PCR-1.4	BacR-purified-qPCR	5.66	91.8	89.9				
SOP-PCR-1.5	DG3-purified-qPCR	5.69	88.5	99.7				

Reference Method Descriptions

Method	Description	Associated Samples
Enterolert/QT	Enterococci by Enterolert/QT by UWF in Pensacola	2229578, 2229579, 2229580, 2229581, 2229582
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2229562, 2229563, 2229564, 2229565, 2229566
SM 9222 D	Fecal coliforms by MF by Test America in Pensacola	2229573, 2229574, 2229575, 2229576, 2229577
SM 9223 B Quanti-Tray	E. coli by Colilert-18/QT by UWF in Pensacola	2229578, 2229579, 2229580, 2229581, 2229582, 2229583
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2229593
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2229593
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2229593

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	03/04/2021	03/04/2021 16:15		03/05/2021 16:40	UWF Lab	2229578, 2229579, 2229580, 2229581, 2229582
SM 10200 H (mod.)	03/05/2021	03/05/2021 12:16	Jennifer Mihalic	03/11/2021 15:05	Carina A. Tull	2229562, 2229563, 2229564
	03/05/2021	03/05/2021 12:16	Jennifer Mihalic	03/11/2021 15:41	Carina A. Tull	2229565, 2229566
SM 9222 D	03/04/2021	03/04/2021 17:27		03/05/2021 18:32	TestAmerica Pensacola	2229573, 2229574
	03/04/2021	03/04/2021 17:50		03/05/2021 18:32	TestAmerica Pensacola	2229575, 2229576, 2229577
SM 9223 B Quanti-Tray	03/04/2021	03/04/2021 16:35		03/05/2021 12:21	UWF Lab	2229578, 2229579, 2229580, 2229581, 2229582, 2229583
SOP-PCR-1.0	03/05/2021	03/05/2021 14:10	Mailin Lopez	04/06/2021 08:31	Mailin Lopez	2229593
SOP-PCR-1.4	03/05/2021	03/05/2021 14:10	Mailin Lopez	04/07/2021 09:13	Mailin Lopez	2229593
SOP-PCR-1.5	03/05/2021	03/05/2021 14:10	Mailin Lopez	04/07/2021 09:52	Mailin Lopez	2229593