

Biological Analysis Report

NW-DIST-2019-05-14-02

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Overflow Analyses Performed By:
University of West Florida
11000 University Parkway
Pensacola, FL 32514
DOH Accreditation E71969

Event Description: **PENS/CANT RUN**
Request ID: **RQ-2019-05-13-25**
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

For additional information please contact
Cheryl Swanson - Administrator
Jacqueline Savage - Microbiology
Diane Power - Bench Biology
Andrew Tintle - Aquatic Toxicology
Puja Jasrotia, Ph.D. - Molecular Biology
Amelia Rankin - Taxonomy (Invertebrate & Algal)
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 17-JUN-2019 17:38



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: Jones Creek upstream of N Navy Blvd

Collection Date/Time: 05/13/2019 11:00

Field ID: G4NW0429

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2085838	SM 10200 H (mod.)	Chlorophyll-a, Corrected	4.0	I	ug/L	P364740	
		Phaeophytin-a	1.8	U	ug/L	P364740	
		Chlorophyll-a, Uncorrected	4.3		ug/L	P364740	
2085845	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	393		MPN/100 mL		
2085851	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold			P363671	

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: Jackson Creek upstream of Old Corry Field Road

Collection Date/Time: 05/13/2019 11:20

Field ID: G4NW0430

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2085849	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	1014		MPN/100 mL		
2085852	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P363934	LCS
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	U	TSC/100 mL	P363934	LCS
	SOP-PCR-1.3	GFD-purified-qPCR**	4.07E+03	J	TSC/100 mL	P365054	MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P363934	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold			P363671	

Ref. Method and Comment:

SOP-PCR-1.2: Precision data unavailable for Analysis Batch A92002

SOP-PCR-1.3: Quality control failure(s) observed. See QA report for details.

SOP-PCR-1.4: Precision data unavailable for Analysis Batch A91985

Sample Location: Marcus Creek upstream of Marcus Pointe Blvd

Collection Date/Time: 05/13/2019 12:00

Field ID: G4NW0179

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2085839	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.7	I	ug/L	P364740	
		Phaeophytin-a	1.8	U	ug/L	P364740	
		Chlorophyll-a, Uncorrected	2.3	I	ug/L	P364740	
2085846	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	121		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: Carpenter Creek upstream of 9th Avenue

Collection Date/Time: 05/13/2019 12:30

Field ID: G4NW0415

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2085837	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.3	I	ug/L	P364740	
		Phaeophytin-a	1.8	U	ug/L	P364740	
		Chlorophyll-a, Uncorrected	2.4	I	ug/L	P364740	
2085844	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	813		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: Rest Area Run below Beaver Pond Creek

Collection Date/Time: 05/13/2019 13:30

Field ID: G5NW0068

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2085840	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.4	I	ug/L	P364740	
		Phaeophytin-a	2.2	U	ug/L	P364740	
		Chlorophyll-a, Uncorrected	3.4	I	ug/L	P364740	
2085847	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	2014		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: Ten Mile Creek upstream of Pine Forest Road **Collection Date/Time: 05/13/2019 14:15**

Field ID: G5NW0051

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2085850	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	1421		MPN/100 mL		
2085853	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P363934	LCS
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	U	TSC/100 mL	P363934	LCS
	SOP-PCR-1.3	GFD-purified-qPCR**	520	I	TSC/100 mL	P365054	MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P363934	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold			P363671	

Ref. Method and Comment:

SOP-PCR-1.2: Precision data unavailable for Analysis Batch A92002

SOP-PCR-1.4: Precision data unavailable for Analysis Batch A91985

Sample Location: Direct Runoff-Graveyard Branch @ Tradewinds Dr. **Collection Date/Time: 05/13/2019 14:50**

Field ID: G4NW0176

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2085841	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.4	U	ug/L	P364740	
		Phaeophytin-a	1.5	U	ug/L	P364740	
		Chlorophyll-a, Uncorrected	1.0	U	ug/L	P364740	
2085848	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	657		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: P364740

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: P363934

Component	Result	Code	Units
HF183-qPCR	280	U	GEU/100 mL
HF183-qPCR	280	U	GEU/100 mL

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.2
 Batch ID: P363934

Component	Result	Code	Units
GULL2-qPCR	1.7E+04	U	TSC/100 mL

Reference Method: SOP-PCR-1.3
 Batch ID: P365054

Component	Result	Code	Units
GFD-purified-qPCR	340	U	TSC/100 mL

Reference Method: SOP-PCR-1.4
 Batch ID: P363934

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
 Batch ID: P364740

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	106		P	84 - 116

Reference Method: SOP-PCR-1.0
 Batch ID: P363934

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	186	115	F/P	50 - 175
HF183-qPCR	164	153	P/P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P363934

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	184	435	P/F	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P365054

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	96.7	85.2	P/P	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P363934

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	81.7	76.1	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P363934

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2083344	HF183-qPCR	128		P	50 - 175
2083597	HF183-qPCR	105		P	50 - 175
2085191	HF183-qPCR	106		P	50 - 175
2085852	HF183-qPCR	129		P	50 - 175
2085853	HF183-qPCR	111		P	50 - 175
2085951	HF183-qPCR	106		P	50 - 175
2085952	HF183-qPCR	155		P	50 - 175
2085953	HF183-qPCR	106		P	50 - 175
2085954	HF183-qPCR	133	119	P/P	50 - 175
2086433	HF183-qPCR	122		P	50 - 175
2086434	HF183-qPCR	120		P	50 - 175
2086435	HF183-qPCR	110		P	50 - 175
2090303	HF183-qPCR	66.4		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P363934

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2083344	GULL2-qPCR	119		P	50 - 300
2083597	GULL2-qPCR	111		P	50 - 300
2085191	GULL2-qPCR	105		P	50 - 300
2085852	GULL2-qPCR	103		P	50 - 300
2085853	GULL2-qPCR	100		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P365054

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2083344	GFD-purified-qPCR	187		F	50 - 175
2083597	GFD-purified-qPCR	198		F	50 - 175
2085191	GFD-purified-qPCR	162		P	50 - 175
2085852	GFD-purified-qPCR	198		F	50 - 175
2085853	GFD-purified-qPCR	160		P	50 - 175
2091364	GFD-purified-qPCR	235		F	50 - 175
2091365	GFD-purified-qPCR	220	208	F/F	50 - 175
2091366	GFD-purified-qPCR	219		F	50 - 175
2091463	GFD-purified-qPCR	171		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P363934

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2083344	BacR-qPCR	68.1		P	50 - 175
2083597	BacR-qPCR	50.8		P	50 - 175
2085191	BacR-qPCR	55.7		P	50 - 175
2085852	BacR-qPCR	72.9		P	50 - 175
2085853	BacR-qPCR	56.6		P	50 - 175
2090303	BacR-qPCR	58.2		P	50 - 175

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
 Batch ID: P364740

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2085915	Chlorophyll-a, Corrected	2.06	Sample	P	0 - 25
2085915	Chlorophyll-a, Uncorrected	1.39	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
 Batch ID: P363934

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2085954	HF183-qPCR	11.2	Spike	P	0 - 25
2091365	HF183-qPCR	9.32	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P365054

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091365	GFD-purified-qPCR	6.49	Spike	P	0 - 25

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
 Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Surrogates

Lab Sample ID: 2085852
 Field Sample ID: G4NW0430

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	107	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	127	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	117	P	50 - 300

Lab Sample ID: 2085853
 Field Sample ID: G5NW0051

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	93.0	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	122	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	97.0	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery			MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	106							2.06	
	Chlorophyll-a, Uncorrected								1.39	
SOP-PCR-1.0	HF183-qPCR	186	153	164	106	155	106			11.2 9.32
		115			133					

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.2	GULL2-qPCR	435	184	119	105	103			
SOP-PCR-1.3	GFD-purified-qPCR	85.2	96.7	235	220	208			6.49
SOP-PCR-1.4	BacR-qPCR	76.1	81.7	68.1	55.7	72.9			
				100		58.2			

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2085837, 2085838, 2085839, 2085840, 2085841
SM 9223 B Quanti-Tray / E71969	Escherichia coli by Colilert 18 Quanti-Tray method by UWF Laboratory in Pensacola	2085844, 2085845, 2085846, 2085847, 2085848, 2085849, 2085850
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2085852, 2085853
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2085852, 2085853
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2085852, 2085853
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2085852, 2085853
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2085851, 2085852, 2085853

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	05/14/2019	05/14/2019 13:30	Kara Sprague	05/29/2019 15:57	Carina A. Tull	2085837, 2085838, 2085839, 2085840, 2085841
SM 9223 B Quanti-Tray	05/13/2019	05/13/2019 17:00		05/14/2019 13:10	UWF Lab	2085844, 2085845, 2085846, 2085847, 2085848, 2085849, 2085850
SOP-PCR-1.0	05/14/2019	05/14/2019 15:30	Angela Smith	06/06/2019 12:17	Mailin Lopez	2085852, 2085853
SOP-PCR-1.2	05/14/2019	05/14/2019 15:30	Angela Smith	06/11/2019 08:29	Mailin Lopez	2085852, 2085853
SOP-PCR-1.3	05/14/2019	05/14/2019 15:30	Angela Smith	06/12/2019 11:50	Mailin Lopez	2085852, 2085853
SOP-PCR-1.4	05/14/2019	05/14/2019 15:30	Angela Smith	06/10/2019 13:07	Mailin Lopez	2085852, 2085853
SOP-PCR-4.0	05/14/2019	05/14/2019 15:30	Angela Smith	05/28/2019 14:19	Sarah Menz	2085851, 2085852, 2085853