

Biological Analysis Report

NW-DIST-2017-05-09-01

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 WBID 291 489 489A 542 676 586 531**
Request ID: **RQ-2017-05-08-46**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
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160 W Government St
Suite 208A
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Certified by: Daisys Matthews,

Date Certified: 16-JUN-2017 08:01

A handwritten signature in black ink, appearing to read "D. Matthews", with a stylized flourish at the end.

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 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: Carpenters Creek Upstream of Ninth Ave

Collection Date/Time: 05/08/2017 10:00

Field ID: G4NW0415

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1897233	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.86	I	ug/L	P325410	
		Phaeophytin-a	0.40	U	ug/L	P325410	
		Chlorophyll/Phaeophytin Ratio	1.5			P325410	
		Chlorophyll-a, Uncorrected	1.0	I	ug/L	P325410	

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: Carpenters Creek Upstream of Ninth Ave

Collection Date/Time: 05/08/2017 10:00

Field ID: G4NW0415

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1897238	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	464		MPN/100 mL		

Sample Location: Carpenters Creek Upstream of Ninth Ave

Collection Date/Time: 05/08/2017 10:00

Field ID: G4NW0415

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1897242	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P325693	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P325693	
	SOP-PCR-1.3	GFD-purified-qPCR**	170	UJ	TSC/100 mL	P325960	LCS, MS, RPD
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P325693	LCS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:

SOP-PCR-1.0: No amplification of HF183 marker.

SOP-PCR-1.2: No amplification of GULL2 marker.

SOP-PCR-1.3: No amplification of GFD marker. Quality control failure(s) observed. See QA report for details.

SOP-PCR-1.4: No amplification of BACR marker.

Sample Location: Thompson Bayou @ Greenbriar Rd.

Collection Date/Time: 05/08/2017 10:45

Field ID: G4NW0240

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1897237	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.1	I	ug/L	P325410	
		Phaeophytin-a	0.40	U	ug/L	P325410	
		Chlorophyll/Phaeophytin Ratio	1.7			P325410	
		Chlorophyll-a, Uncorrected	1.1	I	ug/L	P325410	

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: Clear Creek Dr @ Tecumseh Trail

Collection Date/Time: 05/08/2017 11:10

Field ID: G4NW0358

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1897234	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.58	I	ug/L	P325410	
		Phaeophytin-a	0.40	U	ug/L	P325410	
		Chlorophyll/Phaeophytin Ratio	1.8			P325410	

Field ID: G4NW0358

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1897234	SM 10200 H (mod.)	Chlorophyll-a, Uncorrected	0.55	I	ug/L	P325410	

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: Jack's Branch @ Jack's Branch Road (Hwy 97) Collection Date/Time: 05/08/2017 11:45

Field ID: G5NW0037

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1897235	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.73	I	ug/L	P325410	
		Phaeophytin-a	0.40	U	ug/L	P325410	
		Chlorophyll/Phaeophytin Ratio	1.6			P325410	
		Chlorophyll-a, Uncorrected	0.82	I	ug/L	P325410	

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 Pine Forest Road

Collection Date/Time: 05/08/2017 12:15

Field ID: G5NW0051

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1897236	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.68	I	ug/L	P325410	
		Phaeophytin-a	0.40	U	ug/L	P325410	
		Chlorophyll/Phaeophytin Ratio	1.9			P325410	
		Chlorophyll-a, Uncorrected	0.61	I	ug/L	P325410	

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 Pine Forest Road

Collection Date/Time: 05/08/2017 12:15

Field ID: G5NW0051

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1897239	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	146		MPN/100 mL		

Sample Location: Ten Mile Creek Pine Forest Road

Collection Date/Time: 05/08/2017 12:15

Field ID: G5NW0051

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1897243	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: Elevenmile Creek Upstream of Hwy 90

Collection Date/Time: 05/08/2017 12:40

Field ID: G5NW0126

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1897240	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	605		MPN/100 mL		

Sample Location: Elevenmile Creek Upstream of Hwy 90

Collection Date/Time: 05/08/2017 12:40

Field ID: G5NW0126					Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes	
1897244	SOP-PCR-1.0	HF183-qPCR**	34	T	GEU/100 mL	P325693		
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold					

Sample Location: Rest Area Run Below Beaver Pond Creek Collection Date/Time: 05/08/2017 13:05

Field ID: G5NW0068					Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes	
1897241	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	75		MPN/100 mL			

Sample Location: Rest Area Run Below Beaver Pond Creek Collection Date/Time: 05/08/2017 13:05

Field ID: G5NW0068					Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes	
1897245	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold					

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
 Batch ID: P325410

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.55	U	ug/L
Chlorophyll-a, Uncorrected	0.40	U	ug/L
Phaeophytin-a	0.40	U	ug/L

Reference Method: SOP-PCR-1.0
 Batch ID: P325693

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

Reference Method: SOP-PCR-1.2
 Batch ID: P325693

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

Reference Method: SOP-PCR-1.3
 Batch ID: P325960

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
 Batch ID: P325410

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	99.5		P	84 - 116

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P325693

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	88.1	134	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P325693

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	92.7	158	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P325960

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	118	30.9	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P325693

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	101	182	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P325693

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1895704	HF183-qPCR	114		P	50 - 175
1896803	HF183-qPCR	105		P	50 - 175
1897242	HF183-qPCR	107		P	50 - 175
1897244	HF183-qPCR	124		P	50 - 175
1898633	HF183-qPCR	130		P	50 - 175
1900676	HF183-qPCR	93.4		P	50 - 175
1900677	HF183-qPCR	93.1	84.8	P/P	50 - 175
1901185	HF183-qPCR	104		P	50 - 175
1901186	HF183-qPCR	95.6		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P325693

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1897242	GULL2-qPCR	100		P	50 - 300
1900677	GULL2-qPCR	103	84.4	P/P	50 - 300
1901185	GULL2-qPCR	74.6		P	50 - 300
1901186	GULL2-qPCR	52.7		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P325960

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1893555	GFD-purified-qPCR	0.0		F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3
Batch ID: P325960

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1893557	GFD-purified-qPCR	140		P	50 - 175
1893558	GFD-purified-qPCR	141		P	50 - 175
1894258	GFD-purified-qPCR	17.6		F	50 - 175
1895705	GFD-purified-qPCR	100		P	50 - 175
1897242	GFD-purified-qPCR	0.0		F	50 - 175
1900677	GFD-purified-qPCR	3.84	5.47	F/F	50 - 175
1901185	GFD-purified-qPCR	61.6		P	50 - 175
1901186	GFD-purified-qPCR	27.7		F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P325693

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1897242	BacR-qPCR	72.6		P	50 - 175
1900677	BacR-qPCR	61.1	68.0	P/P	50 - 175
1901185	BacR-qPCR	59.6		P	50 - 175
1901186	BacR-qPCR	51.8		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P325410

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1897329	Chlorophyll-a, Uncorrected	11.6	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P325693

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900677	HF183-qPCR	9.24	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P325693

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900677	GULL2-qPCR	19.7	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P325960

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900677	GFD-purified-qPCR	35.1	Spike	F	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.4
 Batch ID: P325693

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900677	BacR-qPCR	10.8	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: 1897242
 Field Sample ID: G4NW0415

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	106	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	109	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	114	P	50 - 300

Lab Sample ID: 1897244
 Field Sample ID: G5NW0126

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	102	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	99.5							
	Chlorophyll-a, Uncorrected							11.6	
SOP-PCR-1.0	HF183-qPCR	134	88.1	114	93.4	93.1			9.24
				84.8					
SOP-PCR-1.2	GULL2-qPCR	158	92.7	103	84.4	74.6			19.7
				52.7					
SOP-PCR-1.3	GFD-purified-qPCR	30.9	118	0.0	140	141			35.1
				17.6					
SOP-PCR-1.4	BacR-qPCR	182	101	61.1	68.0	59.6			10.8
				51.8					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, phaeophytin and ratio by spectrophotometry	1897233, 1897234, 1897235, 1897236, 1897237
SM 9223 Quanti-Tray / E71969	Escherichia coli by Colilert 18 Quanti-Tray method by UWF Overflow Laboratory for NWD	1897238, 1897239, 1897240, 1897241
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1897242, 1897244
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium genetic marker with quantitative polymerase chain reaction	1897242
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter genetic marker with quantitative polymerase chain reaction	1897242

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes genetic marker with quantitative polymerase chain reaction	1897242
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1897242, 1897243, 1897244, 1897245

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	05/09/2017	05/09/2017 13:00	Morgan Lane	05/16/2017	Brian Cumbie	1897233, 1897234, 1897235, 1897236, 1897237
SM 9223 Quanti-Tray	05/08/2017			05/08/2017 14:25	UWF Lab	1897238
	05/08/2017			05/08/2017 14:27	UWF Lab	1897239
	05/08/2017			05/08/2017 14:28	UWF Lab	1897240
	05/08/2017			05/08/2017 14:29	UWF Lab	1897241
SOP-PCR-1.0	05/09/2017	05/09/2017 12:02	Puja Jasrotia	05/25/2017	Puja Jasrotia	1897242, 1897244
SOP-PCR-1.2	05/09/2017	05/09/2017 12:02	Puja Jasrotia	05/26/2017	Sarah Menz	1897242
SOP-PCR-1.3	05/09/2017	05/09/2017 12:02	Sarah Menz	06/05/2017	Sarah Menz	1897242
SOP-PCR-1.4	05/09/2017	05/09/2017 12:02	Puja Jasrotia	05/26/2017	Sarah Menz	1897242
SOP-PCR-4.0	05/09/2017	05/09/2017 12:02	Avril Wood	05/24/2017	Puja Jasrotia	1897242, 1897243, 1897244, 1897245