

Biological Analysis Report

NW-DIST-2017-06-13-02

Florida Department of Environmental Protection
Central Laboratory
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DOH Accreditation E31780

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

Event Description: **ENR C WBID 722 742 789 712 Blank/DUP**
Request ID: **RQ-2017-06-05-64**
Customer: **NW-DIST**
Project ID: **SMP**

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Date Certified: 01-AUG-2017 14:14



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: LaGrange Bayou (middle)

Collection Date/Time: 06/12/2017 11:30

Field ID: G3NW0036

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905547	SM 10200 H (mod.)	Chlorophyll-a, Corrected	13		ug/L	P326888	RPD
		Phaeophytin-a	0.89	I	ug/L	P326888	RPD
		Chlorophyll/Phaeophytin Ratio	1.7			P326888	
		Chlorophyll-a, Uncorrected	14		ug/L	P326888	RPD

Sample Location: Basin Bayou at Inlet

Collection Date/Time: 06/12/2017 12:15

Field ID: G3NW0101

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905548	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.8		ug/L	P326888	RPD
		Phaeophytin-a	0.40	U	ug/L	P326888	RPD
		Chlorophyll/Phaeophytin Ratio	1.6			P326888	
		Chlorophyll-a, Uncorrected	3.0		ug/L	P326888	RPD

Sample Location: Basin Bayou at Inlet

Collection Date/Time: 06/12/2017 12:15

Field ID: G3NW0101

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905553	Enterolert/QT	Enterococci-Quanti-Tray	31		MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	11	B	cfu/100 mL		

Sample Location: Basin Bayou at Inlet

Collection Date/Time: 06/12/2017 12:15

Field ID: G3NW0101

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905558	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: Basin Bayou at Inlet

Collection Date/Time: 06/12/2017 12:20

Field ID: G3NW0101DUPLICATE

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905549	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.8		ug/L	P326888	RPD
		Phaeophytin-a	0.40	U	ug/L	P326888	RPD
		Chlorophyll/Phaeophytin Ratio	1.6			P326888	
		Chlorophyll-a, Uncorrected	3.1		ug/L	P326888	RPD

Sample Location: Basin Bayou at Inlet

Collection Date/Time: 06/12/2017 12:20

Field ID: G3NW0101DUPLICATE

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905554	Enterolert/QT	Enterococci-Quanti-Tray	20		MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	5	B	cfu/100 mL		

Sample Location: Basin Bayou at Inlet

Collection Date/Time: 06/12/2017 12:20

Field ID: G3NW0101DUPLICATE

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905559	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: Basin Bayou at Inlet

Collection Date/Time: 06/12/2017 12:25

Field ID: FIELDBLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905550	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P326888	RPD
		Phaeophytin-a	0.40	U	ug/L	P326888	RPD
		Chlorophyll/Phaeophytin Ratio	3.0			P326888	
		Chlorophyll-a, Uncorrected	0.40	U	ug/L	P326888	RPD

Sample Location: Basin Bayou at Inlet

Collection Date/Time: 06/12/2017 12:25

Field ID: FIELDBLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905555	Enterolert/QT	Enterococci-Quanti-Tray	1	U	MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	1	U	cfu/100 mL		

Sample Location: Basin Bayou at Inlet

Collection Date/Time: 06/12/2017 12:25

Field ID: FIELDBLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905560	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: Mullet Creek @ Hwy 20

Collection Date/Time: 06/12/2017 13:00

Field ID: G3NW0137

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905551	SM 10200 H (mod.)	Chlorophyll-a, Corrected	7.2		ug/L	P326888	RPD
		Phaeophytin-a	4.6		ug/L	P326888	RPD
		Chlorophyll/Phaeophytin Ratio	1.4			P326888	
		Chlorophyll-a, Uncorrected	10		ug/L	P326888	RPD

Sample Location: Mullet Creek @ Hwy 20

Collection Date/Time: 06/12/2017 13:00

Field ID: G3NW0137

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905556	Enterolert/QT	Enterococci-Quanti-Tray	435		MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	100	B	cfu/100 mL		

Sample Location: Mullet Creek @ Hwy 20

Collection Date/Time: 06/12/2017 13:00

Field ID: G3NW0137

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905561	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P328003	
	SOP-PCR-1.2	GULL2-purified--qPCR**	930	UJ	TSC/100 mL	P328842	LCS, SUR
	SOP-PCR-1.3	GFD-purified-qPCR**	24	T	TSC/100 mL	P328842	LCS

Field ID: G3NW0137

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905561	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P328003	MS
	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. Quality control failure(s) observed. See QA report for details. Precision data unavailable.

SOP-PCR-1.3: Precision data unavailable.

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

Sample Location: Rocky Bayou (mouth)

Collection Date/Time: 06/12/2017 13:40

Field ID: G3NW0031

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905552	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.5		ug/L	P326888	RPD
		Phaeophytin-a	0.40	U	ug/L	P326888	RPD
		Chlorophyll/Phaeophytin Ratio	1.7			P326888	
		Chlorophyll-a, Uncorrected	3.6		ug/L	P326888	RPD

Sample Location: Rocky Bayou (mouth)

Collection Date/Time: 06/12/2017 13:40

Field ID: G3NW0031

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905557	Enterolert/QT	Enterococci-Quanti-Tray	10	U	MPN/100 mL		
	SM 9222 D	Fecal Coliforms-Membrane Filter	2	U	cfu/100 mL		

Sample Location: Rocky Bayou (mouth)

Collection Date/Time: 06/12/2017 13:40

Field ID: G3NW0031

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905562	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P326888

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: P328003

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

Reference Method: SOP-PCR-1.2

Batch ID: P328842

Component	Result	Code	Units
GULL2-purified--qPCR	2.8E+03	U	TSC/100 mL

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.3
 Batch ID: P328842

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

Reference Method: SOP-PCR-1.4
 Batch ID: P328003

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: P326888

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	97.7		P	84 - 116

Reference Method: SOP-PCR-1.0
 Batch ID: P328003

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	108	113	P/P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P328842

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-purified--qPCR	74.0	36.6	P/F	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P328842

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	88.5	41.6	P/F	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P328003

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	63.8	73.8	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P328003

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1903778	HF183-qPCR	114		P	50 - 175
1903779	HF183-qPCR	117		P	50 - 175
1903824	HF183-qPCR	84.8		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P328003

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1903826	HF183-qPCR	83.5		P	50 - 175
1904117	HF183-qPCR	101	118	P/P	50 - 175
1904193	HF183-qPCR	91.8		P	50 - 175
1904194	HF183-qPCR	120		P	50 - 175
1904195	HF183-qPCR	146		P	50 - 175
1905561	HF183-qPCR	125		P	50 - 175
1908822	HF183-qPCR	143		P	50 - 175
1909880	HF183-qPCR	113		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P328842

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905561	GULL2-purified--qPCR	87.0		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P328842

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905561	GFD-purified-qPCR	72.6		P	50 - 175
1906223	GFD-purified-qPCR	65.2		P	50 - 175
1915218	GFD-purified-qPCR	75.3		P	50 - 175
1915219	GFD-purified-qPCR	86.4		P	50 - 175
1915221	GFD-purified-qPCR	70.8		P	50 - 175
1915222	GFD-purified-qPCR	78.5		P	50 - 175
1915223	GFD-purified-qPCR	66.2		P	50 - 175
1915224	GFD-purified-qPCR	75.8		P	50 - 175
1915225	GFD-purified-qPCR	68.3		P	50 - 175
1915226	GFD-purified-qPCR	85.1		P	50 - 175
1915227	GFD-purified-qPCR	63.5		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P328003

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905561	BacR-qPCR	58.2		P	50 - 175
1908822	BacR-qPCR	51.7		P	50 - 175
1909880	BacR-qPCR	45.1		F	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)

Batch ID: P326888

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905505	Chlorophyll/Phaeophytin Ratio	6.45	Sample	P	0 - 25
1905505	Chlorophyll-a, Corrected	31.7	Sample	F	0 - 25
1905505	Chlorophyll-a, Uncorrected	37.0	Sample	F	0 - 25
1905505	Phaeophytin-a	70.3	Sample	F	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P328003

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1904117	HF183-qPCR	15.6	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P328003

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1906648	BacR-qPCR	3.47	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: 1905561
Field Sample ID: G3NW0137

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	103	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	10.6	F	30 - 300
SOP-PCR-1.2	SKETA-qPCR	10.6	F	30 - 300
SOP-PCR-1.4	SKETA-qPCR	94.2	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision
				LCS	SMP	MS	
SM 10200 H (mod.)	Chlorophyll/Phaeophytin Ratio				6.45		
	Chlorophyll-a, Corrected	97.7			31.7		
	Chlorophyll-a, Uncorrected				37.0		
	Phaeophytin-a				70.3		
SOP-PCR-1.0	HF183-qPCR	113	108	114 117 84.8			15.6
				83.5			
SOP-PCR-1.2	GULL2-purified--qPCR	36.6	74.0	87.0			
SOP-PCR-1.3	GFD-purified-qPCR	41.6	88.5	75.3 86.4 70.8			
				78.5			
SOP-PCR-1.4	BacR-qPCR	73.8	63.8	58.2 51.7 45.1			3.47

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
Enterolert/QT / E71969	Enterococci by Enterolert Quanti-Tray method by UWF Overflow Laboratory for NWD	1905553, 1905554, 1905555, 1905556, 1905557
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, phaeophytin and ratio by spectrophotometry	1905547, 1905548, 1905549, 1905550, 1905551, 1905552
SM 9222 D / E71969	Fecal coliforms by membrane filter method by UWF Overflow Laboratory for NWD	1905553, 1905554, 1905555, 1905556, 1905557

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1905561
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1905561
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1905561
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1905561
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1905558, 1905559, 1905560, 1905561, 1905562

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	06/12/2017			06/12/2017 16:07	UWF Lab	1905557
	06/12/2017			06/12/2017 16:08	UWF Lab	1905556
	06/12/2017			06/12/2017 16:10	UWF Lab	1905553
	06/12/2017			06/12/2017 16:11	UWF Lab	1905554
	06/12/2017			06/12/2017 16:12	UWF Lab	1905555
SM 10200 H (mod.)	06/13/2017	06/13/2017 13:35	Cathy Sherrer	06/14/2017	Kim M. Spencer	1905547, 1905548, 1905549, 1905550, 1905551, 1905552
SM 9222 D	06/12/2017			06/12/2017 16:34	UWF Lab	1905555
	06/12/2017			06/12/2017 16:36	UWF Lab	1905557
	06/12/2017			06/12/2017 16:43	UWF Lab	1905556
	06/12/2017			06/12/2017 16:46	UWF Lab	1905553
	06/12/2017			06/12/2017 16:50	UWF Lab	1905554
SOP-PCR-1.0	06/13/2017	06/13/2017 13:14	Puja Jasrotia	07/11/2017	Puja Jasrotia	1905561
SOP-PCR-1.2	06/13/2017	06/13/2017 13:14	Sarah Menz	07/24/2017	Sarah Menz	1905561
SOP-PCR-1.3	06/13/2017	06/13/2017 13:14	Sarah Menz	07/25/2017	Sarah Menz	1905561
SOP-PCR-1.4	06/13/2017	06/13/2017 13:14	Puja Jasrotia	07/21/2017	Sarah Menz	1905561
SOP-PCR-4.0	06/13/2017	06/13/2017 13:14	Puja Jasrotia	07/06/2017	Puja Jasrotia	1905558, 1905559, 1905560, 1905561, 1905562