

Biological Analysis Report

SW-DIST-2018-02-21-01

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

Overflow Analyses Performed By:
Advanced Environmental Laboratories - Tampa
9610 Princess Palm Avenue
Tampa, Florida 33619
DOH Accreditation E84589

Event Description: **WOLF SIMS Mckay Rice**
Request ID: **RQ-2018-02-19-13**
Customer: **SW-DIST**
Project ID: **SMP**

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Date Certified: 03-APR-2018 13:05



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: Wolf Branch Canal @ Manns Harbor Dr Boat Lift **Collection Date/Time: 02/20/2018 10:47**

Field ID: G1SW0092

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969177	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.2		ug/L	P340864	
		Phaeophytin-a	1.7		ug/L	P340864	
		Chlorophyll-a, Uncorrected	7.4		ug/L	P340864	

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: Wolf Branch Canal @ Manns Harbor Dr Boat Lift **Collection Date/Time: 02/20/2018 10:47**

Field ID: G1SW0092

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969184	SM 9230 C	Enterococci-Membrane Filter	10	U	cfu/100 mL		

Sample Location: Wolf Branch Canal @ Manns Harbor Dr Boat Lift **Collection Date/Time: 02/20/2018 10:47**

Field ID: G1SW0092

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969180	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P341663	
	SOP-PCR-1.2	GULL2-qPCR**	5.6E+03	U	TSC/100 mL	P341663	
	SOP-PCR-1.3	GFD-purified-qPCR**	32	T	TSC/100 mL	P342214	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P341663	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below 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-1.4: No amplification of BACR marker.

Sample Location: Rice @ Balm Rvreview **Collection Date/Time: 02/20/2018 11:30**

Field ID: G2SW0032

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969183	EPA 1603	Escherichia coli-Membrane Filter**	700		cfu/100 mL		

Sample Location: Rice @ Balm Rvreview **Collection Date/Time: 02/20/2018 11:30**

Field ID: G2SW0032

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969181	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Sample Location: Biggest flowing Ditch @ 45th **Collection Date/Time: 02/20/2018 09:23**

Field ID: G1SW0093

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969178	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.5		ug/L	P340864	
		Phaeophytin-a	2.0		ug/L	P340864	

Field ID: G1SW0093

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969178	SM 10200 H (mod.)	Chlorophyll-a, Uncorrected	7.9		ug/L	P340864	

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: Biggest flowing Ditch @ 45th

Collection Date/Time: 02/20/2018 09:23

Field ID: G1SW0093

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969185	SM 9230 C	Enterococci-Membrane Filter	4200		cfu/100 mL		

Sample Location: Sims Branch @ Port Redwing

Collection Date/Time: 02/20/2018 10:05

Field ID: G1SW0056

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969179	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.4		ug/L	P340865	
		Phaeophytin-a	1.7		ug/L	P340865	
		Chlorophyll-a, Uncorrected	3.5		ug/L	P340865	

Sample Location: Sims Branch @ Port Redwing

Collection Date/Time: 02/20/2018 10:05

Field ID: G1SW0056

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969186	SM 9230 C	Enterococci-Membrane Filter	20	B	cfu/100 mL		

Sample Location: Sims Branch @ Port Redwing

Collection Date/Time: 02/20/2018 10:05

Field ID: G1SW0056

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969182	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: DUP_Wolf Branch

Collection Date/Time: 02/20/2018 11:00

Field ID: G1SW0092

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969187	SM 9230 C	Enterococci-Membrane Filter	10	U	cfu/100 mL		

Sample Location: Biggest flowing Ditch @ 45th

Collection Date/Time: 02/20/2018 09:23

Field ID: G1SW0093

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969348	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P341663	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P341663	
	SOP-PCR-1.3	GFD-purified-qPCR**	36	T	TSC/100 mL	P342214	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P341663	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Field ID: G1SW0093

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
Ref. Method and Comment: SOP-PCR-1.0: No amplification of HF183 marker. SOP-PCR-1.2: No amplification of GULL2 marker. SOP-PCR-1.4: No amplification of BACR marker.							

Quality Assurance Report
Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P340864

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: SM 10200 H (mod.)
Batch ID: P340865

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: P341663

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

Reference Method: SOP-PCR-1.2
Batch ID: P341663

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

Reference Method: SOP-PCR-1.3
Batch ID: P342214

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

Reference Method: SOP-PCR-1.4
Batch ID: P341663

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: P340864

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	102		P	84 - 116

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P340865

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	103		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P341663

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	124	91.9	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P341663

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	95.9	74.2	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P342214

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	103	11.8	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P341663

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	83.2	66.1	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P341663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969180	HF183-qPCR	103		P	50 - 175
1969348	HF183-qPCR	96.5		P	50 - 175
1969655	HF183-qPCR	98.3		P	50 - 175
1970727	HF183-qPCR	93.5		P	50 - 175
1970728	HF183-qPCR	106		P	50 - 175
1970729	HF183-qPCR	134		P	50 - 175
1970730	HF183-qPCR	110		P	50 - 175
1970855	HF183-qPCR	81.9		P	50 - 175
1970889	HF183-qPCR	94.7		P	50 - 175
1970891	HF183-qPCR	87.0		P	50 - 175
1970975	HF183-qPCR	99.2		P	50 - 175
1971015	HF183-qPCR	95.2		P	50 - 175
1976478	HF183-qPCR	89.9	92.4	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P341663

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

Reference Method: SOP-PCR-1.2
Batch ID: P341663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969180	GULL2-qPCR	80.8		P	50 - 300
1969348	GULL2-qPCR	93.4		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P342214

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969180	GFD-purified-qPCR	140		P	50 - 175
1969348	GFD-purified-qPCR	144	132	P/P	50 - 175
1971426	GFD-purified-qPCR	158		P	50 - 175
1971430	GFD-purified-qPCR	177		F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P341663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969180	BacR-qPCR	63.3		P	50 - 175
1969348	BacR-qPCR	66.0		P	50 - 175
1970891	BacR-qPCR	59.5		P	50 - 175
1971015	BacR-qPCR	60.2		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P340865

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969323	Chlorophyll-a, Corrected	0.478	Sample	P	0 - 25
1969323	Chlorophyll-a, Uncorrected	0.739	Sample	P	0 - 25
1969323	Phaeophytin-a	5.73	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P341663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976478	HF183-qPCR	2.76	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P341663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1975110	GULL2-qPCR	22.7	Spike	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.3
Batch ID: P342214

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969348	GFD-purified-qPCR	8.28	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P341663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976478	BacR-qPCR	3.48	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: 1969180
Field Sample ID: G1SW0092

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	104	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	106	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	98.5	P	50 - 300

Lab Sample ID: 1969348
Field Sample ID: G1SW0093

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	108	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	104	P	50 - 300
SOP-PCR-1.4	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	102							
	Chlorophyll-a, Corrected	103						0.478	
	Chlorophyll-a, Uncorrected							0.739	
	Phaeophytin-a							5.73	
SOP-PCR-1.0	HF183-qPCR	91.9	124	103	96.5	98.3			2.76
				93.5					
SOP-PCR-1.2	GULL2-qPCR	74.2	95.9	80.8	93.4				22.7
SOP-PCR-1.3	GFD-purified-qPCR	11.8	103	158	177	140			8.28
				144					
SOP-PCR-1.4	BacR-qPCR	66.1	83.2	63.3	66.0	60.2			3.48
				59.5					

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 1603 / E84589	Escherichia coli by membrane filter method using modified mTEC by Advanced Environmental Tampa Lab for SWD	1969183
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1969177, 1969178, 1969179
SM 9230 C / E84589	Enterococci by membrane filter method by Advanced Environmental Overflow Laboratories for SWD	1969184, 1969185, 1969186, 1969187
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1969180, 1969348
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1969180, 1969348
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1969180, 1969348
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1969180, 1969348
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1969180, 1969181, 1969182, 1969348

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	02/20/2018	02/20/2018 13:30		02/21/2018 13:30	AEL - Tampa	1969183
SM 10200 H (mod.)	02/21/2018	02/21/2018 11:40	Cathy Sherrer	03/01/2018	Kim M. Spencer	1969177, 1969178, 1969179
SM 9230 C	02/20/2018	02/20/2018 13:30		02/21/2018	AEL - Tampa	1969184, 1969185, 1969186, 1969187
SOP-PCR-1.0	02/21/2018	02/21/2018 12:40	Puja Jasrotia	03/26/2018	Sarah Menz	1969180, 1969348
SOP-PCR-1.2	02/21/2018	02/21/2018 12:40	Puja Jasrotia	03/29/2018	Sarah Menz	1969180, 1969348
SOP-PCR-1.3	02/21/2018	02/21/2018 12:40	Sarah Menz	04/02/2018	Sarah Menz	1969180, 1969348
SOP-PCR-1.4	02/21/2018	02/21/2018 12:40	Puja Jasrotia	03/26/2018	Sarah Menz	1969180, 1969348
SOP-PCR-4.0	02/21/2018	02/21/2018 12:40	Angela Smith	03/19/2018	Puja Jasrotia	1969180, 1969181, 1969182, 1969348