

Biological Analysis Report

SW-DIST-2018-07-13-02

Florida Department of Environmental Protection
Central Laboratory
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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: **Wares, Wares, Mill, Gap, & Nonsense**
Request ID: **RQ-2018-07-09-04**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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Date Certified: 06-SEP-2018 12:27



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: GAP CREEK @ 45th ST

Collection Date/Time: 07/12/2018 11:30

Field ID: G2SW0030

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2007457	SM 10200 H (mod.)	Chlorophyll-a, Corrected	4.3		ug/L	P348878	
		Phaeophytin-a	1.3	I	ug/L	P348878	
		Chlorophyll-a, Uncorrected	5.2		ug/L	P348878	
2007464	EPA 1603	Escherichia coli-Membrane Filter**	152		cfu/100 mL		

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for any components due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: WARES CREEK @ 36th AVE

Collection Date/Time: 07/12/2018 12:00

Field ID: G2SW0031

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2007458	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.2	I	ug/L	P348878	
		Phaeophytin-a	0.41	I	ug/L	P348878	
		Chlorophyll-a, Uncorrected	1.5		ug/L	P348878	
2007465	EPA 1603	Escherichia coli-Membrane Filter**	36	B	cfu/100 mL		

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for any components due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: WARES CREEK @ 9th AVE

Collection Date/Time: 07/12/2018 12:30

Field ID: G2SW0029

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2007459	SM 10200 H (mod.)	Chlorophyll-a, Corrected	16		ug/L	P348854	
		Phaeophytin-a	0.92	I	ug/L	P348854	
		Chlorophyll-a, Uncorrected	17		ug/L	P348854	
2007466	SM 9230 C	Enterococci-Membrane Filter	700	B	cfu/100 mL		

Sample Location: MILL CREEK @ UPPER MANATEE RVR RD

Collection Date/Time: 07/12/2018 10:10

Field ID: G2SW0040

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2007460	SM 10200 H (mod.)	Chlorophyll-a, Corrected	11	A	ug/L	P348854	
		Phaeophytin-a	2.3	A	ug/L	P348854	
		Chlorophyll-a, Uncorrected	13	A	ug/L	P348854	
2007467	EPA 1603	Escherichia coli-Membrane Filter**	2800		cfu/100 mL		

Sample Location: MILL CREEK @ UPPER MANATEE RVR RD

Collection Date/Time: 07/12/2018 10:10

Field ID: G2SW0040

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2007461	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P349706	
	SOP-PCR-1.4	BacR-qPCR**	7.8E+03		TSC/100 mL	P349706	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Sample Location: NONSENSE CRK @ LINGERLODGE

Collection Date/Time: 07/12/2018 11:00

Field ID: G2SW0041

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2007462	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P349706	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P349706	MS
	SOP-PCR-1.3	GFD-purified-qPCR**	170	U	TSC/100 mL	P350112	LCS, RPD
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P349706	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
2007469	EPA 1603	Escherichia coli-Membrane Filter**	1300	B	cfu/100 mL		

Sample Location: NONSENSE CRK @ TARA PRESERVE

Collection Date/Time: 07/12/2018 10:50

Field ID: G2SW0015

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2007463	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P349706	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P349706	MS
	SOP-PCR-1.3	GFD-purified-qPCR**	170	U	TSC/100 mL	P350112	LCS, RPD
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P349706	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P348854

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: P348878

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.89	U	ug/L
Chlorophyll-a, Uncorrected	0.65	U	ug/L
Phaeophytin-a	0.65	U	ug/L

Reference Method: SOP-PCR-1.0

Batch ID: P349706

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

Reference Method: SOP-PCR-1.2

Batch ID: P349706

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.3
Batch ID: P350112

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

Reference Method: SOP-PCR-1.4
Batch ID: P349706

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: P348854

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	94.8		P	84 - 116

Reference Method: SM 10200 H (mod.)
Batch ID: P348878

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	94.2		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P349706

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	99.0	128	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P349706

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	110	95.1	P/P	50 - 300
GULL2-qPCR	110	95.1	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P350112

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	128	42.2	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P349706

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	121	100	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P349706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007461	HF183-qPCR	73.4		P	50 - 175
2007462	HF183-qPCR	102		P	50 - 175
2007463	HF183-qPCR	93.3		P	50 - 175
2009130	HF183-qPCR	70.4		P	50 - 175
2011562	HF183-qPCR	88.1		P	50 - 175
2014451	HF183-qPCR	96.1	93.2	P/P	50 - 175
2014452	HF183-qPCR	91.4		P	50 - 175
2014453	HF183-qPCR	96.0		P	50 - 175
2014546	HF183-qPCR	91.8		P	50 - 175
2014547	HF183-qPCR	94.2		P	50 - 175
2014548	HF183-qPCR	68.5		P	50 - 175
2014549	HF183-qPCR	97.7		P	50 - 175
2015040	HF183-qPCR	82.7		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P349706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007462	GULL2-qPCR	68.2	68.2	P/P	50 - 300
2007463	GULL2-qPCR	80.2	80.2	P/P	50 - 300
2014451	GULL2-qPCR	91.7	91.7	P/P	50 - 300
2014451	GULL2-qPCR	84.7	84.7	P/P	50 - 300
2014452	GULL2-qPCR	63.3	63.3	P/P	50 - 300
2014453	GULL2-qPCR	65.8	65.8	P/P	50 - 300
2014546	GULL2-qPCR	33.8	33.8	F/F	50 - 300
2014547	GULL2-qPCR	67.1	67.1	P/P	50 - 300
2014548	GULL2-qPCR	1.13	1.13	F/F	50 - 300
2014549	GULL2-qPCR	65.5	65.5	P/P	50 - 300
2015040	GULL2-qPCR	29.1	29.1	F/F	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P350112

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2005027	GFD-purified-qPCR	88.4	51.4	P/P	50 - 175
2007462	GFD-purified-qPCR	82.1		P	50 - 175
2007463	GFD-purified-qPCR	81.6		P	50 - 175
2008534	GFD-purified-qPCR	81.2		P	50 - 175
2012391	GFD-purified-qPCR	101		P	50 - 175
2012392	GFD-purified-qPCR	148		P	50 - 175
2012393	GFD-purified-qPCR	116		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P349706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007461	BacR-qPCR	64.5		P	50 - 175
2007462	BacR-qPCR	92.4		P	50 - 175
2007463	BacR-qPCR	87.3		P	50 - 175
2009130	BacR-qPCR	64.1		P	50 - 175
2014451	BacR-qPCR	100	112	P/P	50 - 175
2014452	BacR-qPCR	85.7		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P349706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2014453	BacR-qPCR	117		P	50 - 175
2014546	BacR-qPCR	132		P	50 - 175
2014547	BacR-qPCR	87.8		P	50 - 175
2014548	BacR-qPCR	62.4		P	50 - 175
2014549	BacR-qPCR	90.2		P	50 - 175
2015040	BacR-qPCR	74.0		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P348854

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007460	Chlorophyll-a, Corrected	1.63	Sample	P	0 - 25
2007460	Chlorophyll-a, Uncorrected	0.182	Sample	P	0 - 25
2007460	Phaeophytin-a	11.5	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P349706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2014451	HF183-qPCR	3.11	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P349706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2014451	GULL2-qPCR	7.90	Spike	P	0 - 25
2014451	GULL2-qPCR	7.90	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P350112

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2005027	GFD-purified-qPCR	52.9	Spike	F	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P349706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2014451	BacR-qPCR	10.9	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: 2007461
Field Sample ID: G2SW0040

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	105	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	82.4	P	50 - 300

Lab Sample ID: 2007462
Field Sample ID: G2SW0041

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	116	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	135	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	135	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	109	P	50 - 300

Lab Sample ID: 2007463
Field Sample ID: G2SW0015

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	123	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	143	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	143	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	112	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	94.8							1.63	
	Chlorophyll-a, Corrected	94.2								
	Chlorophyll-a, Uncorrected								0.182	
	Phaeophytin-a								11.5	
SOP-PCR-1.0	HF183-qPCR	128	99.0		70.4	88.1	96.1			3.11
SOP-PCR-1.2	GULL2-qPCR	110	95.1	110	29.1	91.7	84.7			7.90
		95.1			63.3					7.90
SOP-PCR-1.3	GFD-purified-qPCR	42.2	128		88.4	51.4	101			52.9
SOP-PCR-1.4	BacR-qPCR	100	121		148					
					64.1	100	112			10.9
					85.7					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 1603 / E84589	Escherichia coli by membrane filter	2007464, 2007465, 2007467, 2007469
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2007457, 2007458, 2007459, 2007460
SM 9230 C / E84589	Enterococci by membrane filter method by Advanced Environmental Overflow Laboratories for SWD	2007466
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2007461, 2007462, 2007463
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2007462, 2007463

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2007462, 2007463
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2007461, 2007462, 2007463
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2007461, 2007462, 2007463

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	07/12/2018	07/12/2018 17:45		07/13/2018 16:15	AEL - Tampa	2007464, 2007465, 2007467, 2007469
SM 10200 H (mod.)	07/13/2018	07/13/2018 14:45	Mariam Hanna	07/18/2018 09:05	Carina A. Tull	2007457, 2007458
	07/13/2018	07/13/2018 14:45	Mariam Hanna	07/19/2018 08:45	Carina A. Tull	2007459, 2007460
SM 9230 C	07/12/2018	07/12/2018 18:00		07/13/2018 16:00	AEL - Tampa	2007466
SOP-PCR-1.0	07/13/2018	07/13/2018 13:20	Sarah Menz	08/13/2018 08:51	Mailin Lopez	2007461, 2007462, 2007463
SOP-PCR-1.2	07/13/2018	07/13/2018 13:20	Sarah Menz	08/15/2018 14:18	Mailin Lopez	2007462, 2007463
SOP-PCR-1.3	07/13/2018	07/13/2018 13:20	Mailin Lopez	08/16/2018 11:54	Sarah Menz	2007462, 2007463
SOP-PCR-1.4	07/13/2018	07/13/2018 13:20	Sarah Menz	08/15/2018 10:24	Mailin Lopez	2007461, 2007462, 2007463
SOP-PCR-4.0	07/13/2018	07/13/2018 13:20	Angela Smith	08/07/2018 13:01	Puja Jasrotia	2007462, 2007463
	07/13/2018	07/13/2018 13:20	Puja Jasrotia	08/07/2018 13:01	Puja Jasrotia	2007461