

Biological Analysis Report

WAS-SECT-2019-10-30-02

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

Event Description: **G1 Streams**
Request ID: **RQ-2019-10-28-11**
Customer: **WAS-SECT**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Curtis Musson

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: Puja Jasrotia, Environmental Manager

Date Certified: 26-NOV-2019 12:06

A handwritten signature in black ink, appearing to be 'Puja Jasrotia', with a horizontal line underneath it.

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, Microbiology and Molecular.

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: Caney Creek Downstream of 158A

Collection Date/Time: 10/30/2019 08:09

Field ID: G1WA0060

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2132562	SM 10200 H (mod.)	Chlorophyll-a, Corrected	37	A	ug/L	P374087	
		Phaeophytin-a	12	A	ug/L	P374087	
		Chlorophyll-a, Uncorrected	45	A	ug/L	P374087	
2132568	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	2419.6	JQ	MPN/100 mL	P373655	
2132573	SOP-PCR-1.4	BacR-qPCR**	1.44E+05		TSC/100 mL	P373335	

Ref. Method and Comment:

SM 9223 Quanti-Tray: All Quanti-Tray wells were positive. Result may be higher than reported.

Sample Location: Swamp Creek upstream of Railroad

Collection Date/Time: 10/30/2019 09:51

Field ID: G1WA0052

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2132561	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.5	I	ug/L	P374087	
		Phaeophytin-a	1.8	U	ug/L	P374087	
		Chlorophyll-a, Uncorrected	2.9	I	ug/L	P374087	
2132567	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	920.8		MPN/100 mL	P373655	

Sample Location: Quincy Creek 100 meters upstream of Ralph Strong Rd

Collection Date/Time: 10/30/2019 10:44

Field ID: FB_10302019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2132564	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.89	U	ug/L	P374087	
		Phaeophytin-a	0.98	U	ug/L	P374087	
		Chlorophyll-a, Uncorrected	0.65	U	ug/L	P374087	
2132570	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	1.0	U	MPN/100 mL	P373655	

Sample Location: Tanyard Branch 100 meters upstream of Ralph Strong Rd

Collection Date/Time: 10/30/2019 11:29

Field ID: G1WA0005

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2132563	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.6	U	ug/L	P374087	
		Phaeophytin-a	1.8	U	ug/L	P374087	
		Chlorophyll-a, Uncorrected	1.2	U	ug/L	P374087	
2132569	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	739.8	A	MPN/100 mL	P373655	

Sample Location: Quincy Creek 100 meters upstream of Ralph Strong Rd

Collection Date/Time: 10/30/2019 11:46

Field ID: G1WA0018

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2132559	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.9	U	ug/L	P374087	
		Phaeophytin-a	2.1	U	ug/L	P374087	
		Chlorophyll-a, Uncorrected	1.6	I	ug/L	P374087	
2132565	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	770.1		MPN/100 mL	P373655	

Field ID: G1WA0018

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2132571	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P373335	

Ref. Method and Comment:
 SOP-PCR-1.0: Precision data unavailable for Analysis Batch A95897.

Sample Location: Quincy Creek 100 meters upstream of Ralph Strong Rd Collection Date/Time: 10/30/2019 11:53

Field ID: G1WA0018_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2132560	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.9	U	ug/L	P374087	
		Phaeophytin-a	2.1	U	ug/L	P374087	
		Chlorophyll-a, Uncorrected	1.4	U	ug/L	P374087	
2132566	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	920.8		MPN/100 mL	P373655	
2132572	SOP-PCR-1.0	HF183-qPCR**	410	I	GEU/100 mL	P373335	

Ref. Method and Comment:
 SOP-PCR-1.0: Precision data unavailable for Analysis Batch A95897.

Sample Location: Quincy Creek upstream of SR 267 Collection Date/Time: 10/30/2019 12:58

Field ID: G1WA0050

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2132610	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.9	I	ug/L	P374087	
		Phaeophytin-a	1.8	U	ug/L	P374087	
		Chlorophyll-a, Uncorrected	1.5	I	ug/L	P374087	
2132611	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	686.7		MPN/100 mL	P373655	

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
 Batch ID: P374087

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.82	U	ug/L
Chlorophyll-a, Uncorrected	0.60	U	ug/L
Phaeophytin-a	0.90	U	ug/L

Reference Method: SM 9223 Quanti-Tray
 Batch ID: P373655

Component	Result	Code	Units
Escherichia Coli-Quanti-Tray	1.0	U	MPN/100 mL

Reference Method: SOP-PCR-1.0
 Batch ID: P373335

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.4
Batch ID: P373335

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: P374087

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	101		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P373335

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	120	152	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P373335

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	125	165	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P373335

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2132228	HF183-qPCR	116		P	50 - 175
2132373	HF183-qPCR	105		P	50 - 175
2132374	HF183-qPCR	103		P	50 - 175
2132571	HF183-qPCR	102		P	50 - 175
2132572	HF183-qPCR	99.1		P	50 - 175
2132669	HF183-qPCR	95.4		P	50 - 175
2132700	HF183-qPCR	90.3		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P373335

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2132373	BacR-qPCR	98.1		P	50 - 175
2132374	BacR-qPCR	126		P	50 - 175
2132573	BacR-qPCR	63.3		P	50 - 175
2132669	BacR-qPCR	61.1		P	50 - 175
2132700	BacR-qPCR	88.1		P	50 - 175

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P374087

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2132562	Chlorophyll-a, Corrected	9.48	Sample	P	0 - 25
2132562	Chlorophyll-a, Uncorrected	7.50	Sample	P	0 - 25
2132562	Phaeophytin-a	2.18	Sample	P	0 - 25

Reference Method: SM 9223 Quanti-Tray
Batch ID: P373655

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2132420	Escherichia Coli-Quanti-Tray	33.8	Sample	P	0 - 80
2132569	Escherichia Coli-Quanti-Tray	34.2	Sample	P	0 - 80

Reference Method: SOP-PCR-1.4
Batch ID: P373335

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131992	BacR-qPCR	7.83	Spike	P	0 - 25

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Surrogates

Lab Sample ID: 2132571
Field Sample ID: G1WA0018

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	85.7	P	50 - 300

Lab Sample ID: 2132572
Field Sample ID: G1WA0018_DUP

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	88.0	P	50 - 300

Lab Sample ID: 2132573
Field Sample ID: G1WA0060

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.4	SKETA-qPCR	70.0	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	101			9.48	
	Chlorophyll-a, Uncorrected				7.50	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision	
								SMP	MS
SM 10200 H (mod.)	Phaeophytin-a							2.18	
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray							33.8	34.2
SOP-PCR-1.0	HF183-qPCR	152	120	116	105	103			
				102					
SOP-PCR-1.4	BacR-qPCR	165	125	98.1	126	63.3			7.83
				61.1					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2132559, 2132560, 2132561, 2132562, 2132563, 2132564, 2132610
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2132565, 2132566, 2132567, 2132568, 2132569, 2132570, 2132611
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2132571, 2132572
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2132573

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	10/30/2019	10/31/2019 14:39	Yuliya Danyuk	11/05/2019 12:50	Yuliya Danyuk	2132559, 2132560, 2132561, 2132562, 2132563, 2132564, 2132610
SM 9223 Quanti-Tray	10/30/2019	10/30/2019 17:06	Jessica Fetgatter	10/31/2019 12:33	Jessica Sherman	2132565, 2132566, 2132567, 2132568, 2132569, 2132570, 2132611
SOP-PCR-1.0	10/30/2019	10/31/2019 11:00	Sarah Menz	11/21/2019 15:22	Lauren Campbell	2132571, 2132572
SOP-PCR-1.4	10/30/2019	10/31/2019 11:00	Sarah Menz	11/20/2019 10:14	Lauren Campbell	2132573