

Biological Analysis Report

WQ-ASSESS-2017-05-03-01

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

Event Description: **Big Branch, Coon, Stafford**

Request ID: **RQ-2017-04-24-13**

Customer: **WQ-ASSESS**

Project ID: **SMP**

Send Reports to:

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Division Of Water Facilities, FL DEP
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Date Certified: 01-JUN-2017 10:39



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 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: STONE MILL CREEK UPSTREAM OF DIANNA ST **Collection Date/Time: 05/03/2017 09:40**

Field ID: G2WA0012_05032017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896098	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P325178	
		Phaeophytin-a	0.40	U	ug/L	P325178	
		Chlorophyll/Phaeophytin Ratio	1.7			P325178	
		Chlorophyll-a, Uncorrected	0.40	U	ug/L	P325178	

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: STONE MILL CREEK UPSTREAM OF DIANNA ST **Collection Date/Time: 05/03/2017 09:40**

Field ID: G2WA0012_05032017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896103	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	71.2		MPN/100 mL	P324916	

Sample Location: STONE MILL CREEK UPSTREAM OF ROAD 5 **Collection Date/Time: 05/03/2017 10:00**

Field ID: G2WA0013_05032017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896099	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P325178	
		Phaeophytin-a	0.40	U	ug/L	P325178	
		Chlorophyll/Phaeophytin Ratio	2.2			P325178	
		Chlorophyll-a, Uncorrected	0.40	U	ug/L	P325178	

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: COON CREEK 100 METER UPSTREAM OF CR 69 **Collection Date/Time: 05/03/2017 11:20**

Field ID: G2WA0005_05032017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896100	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.1	I	ug/L	P325178	
		Phaeophytin-a	0.89	I	ug/L	P325178	
		Chlorophyll/Phaeophytin Ratio	1.4			P325178	
		Chlorophyll-a, Uncorrected	1.7		ug/L	P325178	

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: COON CREEK 100 METER UPSTREAM OF CR 69 **Collection Date/Time: 05/03/2017 11:20**

Field ID: G2WA0005_05032017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896104	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	193.5		MPN/100 mL	P324916	

Sample Location: STAFFORD CREEK 100 METERS UPSTREAM OF SR 69 **Collection Date/Time: 05/03/2017 12:25**

Field ID: G2WA0004_05032017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896101	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.61	I	ug/L	P325178	
		Phaeophytin-a	0.40	U	ug/L	P325178	
		Chlorophyll/Phaeophytin Ratio	1.5			P325178	
		Chlorophyll-a, Uncorrected	0.78	I	ug/L	P325178	

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: STAFFORD CREEK 100 METERS UPSTREAM OF SR 69 Collection Date/Time: 05/03/2017 12:25

Field ID: G2WA0004_05032017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896105	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	648.8		MPN/100 mL	P324916	

Sample Location: STAFFORD CREEK 100 METERS UPSTREAM OF SR 69 Collection Date/Time: 05/03/2017 12:25

Field ID: G2WA0004_05032017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896107	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P324882	
	SOP-PCR-1.4	BacR-qPCR**	450	T	TSC/100 mL	P324882	LCS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:

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

Sample Location: BIG BRANCH 50 METERS UPSTREAM OF CR 67 Collection Date/Time: 05/03/2017 13:55

Field ID: G1WA0001_05032017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896102	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P325178	
		Phaeophytin-a	0.40	U	ug/L	P325178	
		Chlorophyll/Phaeophytin Ratio	0.98			P325178	
		Chlorophyll-a, Uncorrected	0.40	U	ug/L	P325178	

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: BIG BRANCH 50 METERS UPSTREAM OF CR 67 Collection Date/Time: 05/03/2017 13:55

Field ID: G1WA0001_05032017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896106	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	12.0		MPN/100 mL	P324916	

Sample Location: BIG BRANCH 50 METERS UPSTREAM OF CR 67 Collection Date/Time: 05/03/2017 13:55

Field ID: G1WA0001_05032017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1896108	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Quality Assurance Report
Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P325178

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 9223 Quanti-Tray
Batch ID: P324916

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

Reference Method: SOP-PCR-1.0
Batch ID: P324882

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

Reference Method: SOP-PCR-1.4
Batch ID: P324882

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: P325178

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	98.9		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P324882

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	76.0	65.4	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P324882

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	66.1	46.4	P/F	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P324882

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1890664	HF183-qPCR	91.5		P	50 - 175
1892527	HF183-qPCR	82.0		P	50 - 175
1892528	HF183-qPCR	76.8		P	50 - 175
1896107	HF183-qPCR	76.4		P	50 - 175
1897147	HF183-qPCR	87.8	77.4	P/P	50 - 175
1897658	HF183-qPCR	61.3		P	50 - 175
1897680	HF183-qPCR	90.8		P	50 - 175
1897681	HF183-qPCR	92.6		P	50 - 175
1897690	HF183-qPCR	88.1		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P324882

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1890664	BacR-qPCR	78.9		P	50 - 175
1892528	BacR-qPCR	59.8		P	50 - 175
1896107	BacR-qPCR	58.5	67.4	P/P	50 - 175
1897680	BacR-qPCR	55.0		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)

Batch ID: P325178

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896189	Chlorophyll/Phaeophytin Ratio	0.0	Sample	P	0 - 25
1896189	Chlorophyll-a, Corrected	11.5	Sample	P	0 - 25
1896189	Chlorophyll-a, Uncorrected	14.2	Sample	P	0 - 25

Reference Method: SM 9223 Quanti-Tray

Batch ID: P324916

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1895610	Escherichia Coli-Quanti-Tray	68.9	Sample	P	0 - 80
1895783	Escherichia Coli-Quanti-Tray	0.0	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0

Batch ID: P324882

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1897147	HF183-qPCR	12.6	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4

Batch ID: P324882

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: SOP-PCR-1.4
Batch ID: P324882

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1896107	BacR-qPCR	14.1	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: 1896107
Field Sample ID: G2WA0004_05032017

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	120	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	128	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll/Phaeophytin Ratio							0.0	
	Chlorophyll-a, Corrected	98.9						11.5	
	Chlorophyll-a, Uncorrected							14.2	
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray							68.9	0.0
SOP-PCR-1.0	HF183-qPCR	65.4	76.0	87.8	77.4	90.8			12.6
SOP-PCR-1.4	BacR-qPCR	46.4	66.1	78.9	59.8	58.5			14.1
				67.4					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, phaeophytin and ratio by spectrophotometry	1896098, 1896099, 1896100, 1896101, 1896102
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	1896103, 1896104, 1896105, 1896106
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1896107
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes genetic marker with quantitative polymerase chain reaction	1896107
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1896107, 1896108

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	05/03/2017	05/04/2017 08:15	Morgan Lane	05/11/2017	Brian Cumbie	1896098, 1896099, 1896100, 1896101, 1896102
SM 9223 Quanti-Tray	05/03/2017	05/03/2017 16:40	Carina A. Tull	05/04/2017 11:05	Kim M. Spencer	1896103, 1896104, 1896105, 1896106
SOP-PCR-1.0	05/03/2017	05/04/2017 13:15	Avril Wood	05/18/2017	Puja Jasrotia	1896107
SOP-PCR-1.4	05/03/2017	05/04/2017 13:15	Avril Wood	05/22/2017	Sarah Menz	1896107
SOP-PCR-4.0	05/03/2017	05/04/2017 13:15	Avril Wood	05/12/2017	Puja Jasrotia	1896107, 1896108