

Biological Analysis Report

WAS-SECT-2017-12-20-01

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

Event Description: **Swamp Creek SCI**

Request ID: **RQ-2017-12-18-34**

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
J. Marshall Faircloth - Aquatic Toxicology
Jacqueline Savage - Bench Biology
Jacqueline Savage - Microbiology
Puja Jasrotia, Ph.D. - Molecular Biology
Jennifer Walters - Taxonomy (Invertebrate & Algal)
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 09-MAR-2018 11:03



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, InvertZool, 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: Swamp Creek Upstream of Railroad

Collection Date/Time: 12/20/2017 09:50

Field ID: G1WA0052

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1955362	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.79	I	ug/L	P337915	
		Phaeophytin-a	0.40	U	ug/L	P337915	
		Chlorophyll-a, Uncorrected	0.86	I	ug/L	P337915	

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: Swamp Creek Upstream of Railroad

Collection Date/Time: 12/20/2017 09:50

Field ID: G1WA0052

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1955365	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	461.1		MPN/100 mL	P337708	

Sample Location: Swamp Creek Upstream of Railroad

Collection Date/Time: 12/20/2017 09:50

Field ID: G1WA0052

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1955377	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P337261	
	SOP-PCR-1.4	BacR-purified-qPCR**	6.8E+03	JV	TSC/100 mL	P338413	LCS, SUR
	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-1.4: Quality control failure(s) observed. See QA report for details. Result is V-qualified due to a control blank failure.

Sample Location: Swamp Creek Upstream of Railroad

Collection Date/Time: 12/20/2017 09:50

Field ID: G1WA0052

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1955366	SOP-IZ06	Stream Condition Index (SCI)**	51	A	Points		
		Macroinvert-FW-Qual-DipnetX20-#Taxa-Rep2**	24		# Taxa		

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P337915

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: P337708

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P337261

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

Reference Method: SOP-PCR-1.4
Batch ID: P338413

Component	Result	Code	Units
BacR-purified-qPCR	2.0E+03	I	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P337915

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	99.5		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P337261

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	117	117	P/P	50 - 175
HF183-qPCR	117	102	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P338413

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-purified-qPCR	87.1	13.4	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P337261

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1940862	HF183-qPCR	93.6		P	50 - 175
1947864	HF183-qPCR	92.7		P	50 - 175
1947865	HF183-qPCR	80.2		P	50 - 175
1948297	HF183-qPCR	84.0		P	50 - 175
1953422	HF183-qPCR	85.7		P	50 - 175
1953423	HF183-qPCR	92.3		P	50 - 175
1953424	HF183-qPCR	85.9		P	50 - 175
1955372	HF183-qPCR	95.9		P	50 - 175
1955373	HF183-qPCR	85.7		P	50 - 175
1955374	HF183-qPCR	104		P	50 - 175
1955375	HF183-qPCR	93.0	92.2	P/P	50 - 175
1955377	HF183-qPCR	84.8		P	50 - 175
1955528	HF183-qPCR	88.4		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P337261

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1955930	HF183-qPCR	91.8		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P338413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1955377	BacR-purified-qPCR	80.6		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P337915

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955370	Chlorophyll-a, Uncorrected	11.1	Sample	P	0 - 25

Reference Method: SM 9223 Quanti-Tray
Batch ID: P337708

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955195	Escherichia Coli-Quanti-Tray	59.4	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
Batch ID: P337261

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955375	HF183-qPCR	0.813	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P338413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955375	BacR-purified-qPCR	6.78	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: 1955377
Field Sample ID: G1WA0052

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	99.9	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	4.75	F	30 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery			MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	99.5								
	Chlorophyll-a, Uncorrected								11.1	
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray								59.4	
SOP-PCR-1.0	HF183-qPCR	117	102	117	93.6	84.0	88.4			0.813
		117			91.8					
SOP-PCR-1.4	BacR-purified-qPCR	13.4	87.1		80.6					6.78

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1955362
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	1955365
SOP-IZ06 / E31780	No. Taxa of FW macroinverts, qual samp, 20 dipnets.	1955366
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1955377
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1955377
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1955377

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	12/20/2017	12/20/2017 12:56	Cathy Sherrer	01/08/2018	Jennifer Mihalic	1955362
SM 9223 Quanti-Tray	12/20/2017	12/20/2017 14:10	Carina A. Tull	12/21/2017 08:15	Carina A. Tull	1955365
SOP-IZ06	12/20/2017	02/02/2018	Lisa Homann	03/01/2018	Lisa Homann	1955366
	12/20/2017	02/02/2018	Lisa Homann	03/08/2018	Lisa Homann	1955366
SOP-PCR-1.0	12/20/2017	12/20/2017 13:30	Sarah Menz	12/27/2017	Sarah Menz	1955377
SOP-PCR-1.4	12/20/2017	12/20/2017 13:30	Sarah Menz	01/29/2018	Sarah Menz	1955377
SOP-PCR-4.0	12/20/2017	12/20/2017 13:30	Sarah Menz	01/16/2018	Puja Jasrotia	1955377