

Biological Analysis Report

WAS-SECT-2018-06-13-02

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

Event Description: **Freeman, Unnamed, Whittle Run, Qunicy, Juniper, Big, Little**

Request ID: **RQ-2018-06-11-30**

Customer: **WAS-SECT**

Project ID: **SMP**

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Date Certified: 20-JUL-2018 13:56



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: Unnamed Run Upstream of Henrietta Dr

Collection Date/Time: 06/13/2018 10:45

Field ID: G1WA0078

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2000507	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.70	I	ug/L	P347241	
		Phaeophytin-a	0.40	U	ug/L	P347241	
		Chlorophyll-a, Uncorrected	0.95	I	ug/L	P347241	
2000519	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	980.4		MPN/100 mL	P347102	

Sample Location: Big Branch 50 m Upstream of CR 67

Collection Date/Time: 06/13/2018 09:45

Field ID: G1WA0001

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2000525	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	88.6	Q	MPN/100 mL	P347102	
2000536	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: Freeman Creek Upstream of SR 267 (Bloxham Cutoff)

Collection Date/Time: 06/13/2018 09:00

Field ID: G1WA0010

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2000508	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P347241	
		Phaeophytin-a	0.40	U	ug/L	P347241	
		Chlorophyll-a, Uncorrected	0.40	U	ug/L	P347241	
2000520	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	18.9	Q	MPN/100 mL	P347102	

Sample Location: Little River 100m Upstream of US 90

Collection Date/Time: 06/13/2018 12:30

Field ID: G1WA0073

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2000509	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.4	I	ug/L	P347323	
		Phaeophytin-a	0.70	I	ug/L	P347323	
		Chlorophyll-a, Uncorrected	2.9		ug/L	P347323	
2000521	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	107.1		MPN/100 mL	P347102	

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: Quincy Creek 100m Upstream of Ralph Strong Rd

Collection Date/Time: 06/13/2018 11:58

Field ID: G1WA0018

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2000510	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.9	I	ug/L	P347323	
		Phaeophytin-a	0.86	I	ug/L	P347323	
		Chlorophyll-a, Uncorrected	2.5		ug/L	P347323	
2000522	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	325.5		MPN/100 mL	P347102	

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: Quincy Creek 100m Upstream of Ralph Strong Rd

Collection Date/Time: 06/13/2018 11:58

Field ID: G1WA0018					Matrix: W-SURF-FRH		
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2000534	SOP-PCR-1.0	HF183-qPCR**	330	I	GEU/100 mL	P347054	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: Quincy Creek Upstream of SR 65 Collection Date/Time: 06/13/2018 11:30

Field ID: G1WA0049					Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes	
2000511	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.5	I	ug/L	P347323		
		Phaeophytin-a	0.64	I	ug/L	P347323		
		Chlorophyll-a, Uncorrected	2.0		ug/L	P347323		
2000523	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	443.0		MPN/100 mL	P347102		

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: Quincy Creek Upstream of SR 65 Collection Date/Time: 06/13/2018 11:30

Field ID: G1WA0049					Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes	
2000535	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P347054		
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	U	TSC/100 mL	P347054		
	SOP-PCR-1.3	GFD-purified-qPCR**	250	I	TSC/100 mL	P347895		
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P347054	LCS	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold					

Ref. Method and Comment:
 SOP-PCR-1.2: Precision data unavailable for Analysis Batch A85146.
 SOP-PCR-1.4: Precision data unavailable for Analysis Batch A85127.

Sample Location: Juniper Creek Upstream of Juniper Creek Rd Collection Date/Time: 06/13/2018 10:28

Field ID: G1WA0059					Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes	
2000512	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.6	I	ug/L	P347323		
		Phaeophytin-a	0.47	I	ug/L	P347323		
		Chlorophyll-a, Uncorrected	1.9		ug/L	P347323		
2000524	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	178.9		MPN/100 mL	P347102		

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.

Quality Assurance Report

Method Blank Results

Reference Method: SM 10200 H (mod.)
 Batch ID: P347241

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

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
 Batch ID: P347323

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: P347102

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

Reference Method: SOP-PCR-1.0
 Batch ID: P347054

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

Reference Method: SOP-PCR-1.2
 Batch ID: P347054

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

Reference Method: SOP-PCR-1.3
 Batch ID: P347895

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

Reference Method: SOP-PCR-1.4
 Batch ID: P347054

Component	Result	Code	Units
BacR-qPCR	3.0E+03	U	TSC/100 mL
BacR-qPCR	3.0E+03	U	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
 Batch ID: P347241

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	93.6		P	84 - 116

Reference Method: SM 10200 H (mod.)
 Batch ID: P347323

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	92.7		P	84 - 116

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P347054

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	116	140	P/P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P347054

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	63.2	119	P/P	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P347895

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	89.0	60.0	P/P	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P347054

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	384	76.2	F/P	50 - 175
BacR-qPCR	135	82.8	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P347054

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969181	HF183-qPCR	89.9		P	50 - 175
1996157	HF183-qPCR	84.6		P	50 - 175
1996529	HF183-qPCR	86.8		P	50 - 175
2000468	HF183-qPCR	111		P	50 - 175
2000469	HF183-qPCR	107		P	50 - 175
2000534	HF183-qPCR	102		P	50 - 175
2000535	HF183-qPCR	96.8		P	50 - 175
2001853	HF183-qPCR	99.5		P	50 - 175
2001854	HF183-qPCR	112	106	P/P	50 - 175
2001855	HF183-qPCR	104		P	50 - 175
2001856	HF183-qPCR	95.0		P	50 - 175
2002922	HF183-qPCR	91.5		P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P347054

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000535	GULL2-qPCR	67.2		P	50 - 300
2001856	GULL2-qPCR	70.7		P	50 - 300

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3

Batch ID: P347895

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996396	GFD-purified-qPCR	73.4		P	50 - 175
1997476	GFD-purified-qPCR	107		P	50 - 175
1998446	GFD-purified-qPCR	119		P	50 - 175
1999617	GFD-purified-qPCR	128		P	50 - 175
2000025	GFD-purified-qPCR	57.1		P	50 - 175
2000026	GFD-purified-qPCR	76.6		P	50 - 175
2000535	GFD-purified-qPCR	56.8		P	50 - 175
2000997	GFD-purified-qPCR	93.5		P	50 - 175
2001000	GFD-purified-qPCR	66.7		P	50 - 175
2001245	GFD-purified-qPCR	68.2		P	50 - 175
2006009	GFD-purified-qPCR	166		P	50 - 175
2006010	GFD-purified-qPCR	147		P	50 - 175
2006011	GFD-purified-qPCR	158		P	50 - 175
2006012	GFD-purified-qPCR	94.5	111	P/P	50 - 175
2006013	GFD-purified-qPCR	84.9		P	50 - 175
2006014	GFD-purified-qPCR	110		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P347054

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996157	BacR-qPCR	125		P	50 - 175
1996529	BacR-qPCR	60.6		P	50 - 175
2000535	BacR-qPCR	59.9		P	50 - 175
2001856	BacR-qPCR	50.1		P	50 - 175
2002194	BacR-qPCR	73.1		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)

Batch ID: P347241

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000442	Chlorophyll-a, Corrected	3.30	Sample	P	0 - 25
2000442	Chlorophyll-a, Uncorrected	4.18	Sample	P	0 - 25
2000442	Phaeophytin-a	5.60	Sample	P	0 - 25

Reference Method: SM 10200 H (mod.)

Batch ID: P347323

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000720	Chlorophyll-a, Corrected	1.83	Sample	P	0 - 25
2000720	Chlorophyll-a, Uncorrected	2.53	Sample	P	0 - 25

Quality Assurance Report Precision

Reference Method: SM 9223 Quanti-Tray
 Batch ID: P347102

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000537	Escherichia Coli-Quanti-Tray	22.6	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
 Batch ID: P347054

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001854	HF183-qPCR	4.96	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P347895

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2006012	GFD-purified-qPCR	15.7	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: 2000534
 Field Sample ID: G1WA0018

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	103	P	50 - 300

Lab Sample ID: 2000535
 Field Sample ID: G1WA0049

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	105	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	108	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	102	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision
				LCS			SMP
SM 10200 H (mod.)	Chlorophyll-a, Corrected	93.6					3.30
	Chlorophyll-a, Corrected	92.7					1.83
	Chlorophyll-a, Uncorrected						4.18
	Chlorophyll-a, Uncorrected						2.53
	Phaeophytin-a						5.60
SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray						22.6
SOP-PCR-1.0	HF183-qPCR	140	116	86.8	111	107	4.96
				102			
SOP-PCR-1.2	GULL2-qPCR	119	63.2	67.2	70.7		

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.3	GFD-purified-qPCR	60.0	89.0	107	119	166			15.7
SOP-PCR-1.4	BacR-qPCR	384	82.8	135	60.6	73.1	125		
		76.2			59.9				

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2000507, 2000508, 2000509, 2000510, 2000511, 2000512
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2000519, 2000520, 2000521, 2000522, 2000523, 2000524, 2000525
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2000534, 2000535
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2000535
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2000535
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2000535
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2000534, 2000535, 2000536

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	06/13/2018	06/14/2018 07:55	Mariam Hanna	06/20/2018 08:55	Carina A. Tull	2000507, 2000508
	06/13/2018	06/14/2018 07:55	Mariam Hanna	06/21/2018 08:15	Carina A. Tull	2000509, 2000510, 2000511, 2000512
SM 9223 Quanti-Tray	06/13/2018	06/13/2018 17:45	Jennifer Mihalic	06/14/2018 11:50	Jennifer Mihalic	2000519, 2000520, 2000521, 2000522, 2000523, 2000524, 2000525
SOP-PCR-1.0	06/13/2018	06/13/2018 16:30	Sarah Menz	06/25/2018 15:54	Mailin Lopez	2000534, 2000535
SOP-PCR-1.2	06/13/2018	06/13/2018 16:30	Sarah Menz	07/11/2018 10:32	Sarah Menz	2000535
SOP-PCR-1.3	06/13/2018	06/13/2018 16:30	Mailin Lopez	07/12/2018 09:59	Sarah Menz	2000535
SOP-PCR-1.4	06/13/2018	06/13/2018 16:30	Sarah Menz	07/10/2018 15:39	Sarah Menz	2000535
SOP-PCR-4.0	06/13/2018	06/13/2018 16:30	Angela Smith	07/02/2018 16:21	Puja Jasrotia	2000534, 2000535, 2000536