

Biological Analysis Report

NE-DIST-2017-07-20-01

Florida Department of Environmental Protection
Central Laboratory
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DOH Accreditation E31780

Overflow Analyses Performed By:
Advanced Environmental Laboratories - Gainesville
6815 SW Archer Road
Gainesville, Florida 32608
DOH Accreditation E82001

Event Description: **Suwannee springs**
Request ID: **RQ-2017-07-17-09**
Customer: **NE-DIST**
Project ID: **SMP**

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Date Certified: 01-SEP-2017 08:05



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: Blue Spring

Collection Date/Time: 07/19/2017 12:15

Field ID: G1NE0868 07192017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915098	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P329179	
		Phaeophytin-a	0.40	U	ug/L	P329179	
		Chlorophyll/Phaeophytin Ratio	3.2			P329179	
		Chlorophyll-a, Uncorrected	0.40	U	ug/L	P329179	

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: Guaranto Springs

Collection Date/Time: 07/19/2017 10:45

Field ID: G1NE0820 07192017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915099	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P329179	
		Phaeophytin-a	0.40	U	ug/L	P329179	
		Chlorophyll/Phaeophytin Ratio	2.7			P329179	
		Chlorophyll-a, Uncorrected	0.40	U	ug/L	P329179	

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: Trail Spring

Collection Date/Time: 07/19/2017 10:10

Field ID: G1NE0815 07192017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915100	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P329179	
		Phaeophytin-a	0.40	U	ug/L	P329179	
		Chlorophyll/Phaeophytin Ratio	0.89			P329179	
		Chlorophyll-a, Uncorrected	0.40	U	ug/L	P329179	

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: Cow Creek @ SR 138

Collection Date/Time: 07/19/2017 09:25

Field ID: G1NE0565 07192017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915101	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P329179	
		Phaeophytin-a	0.40	U	ug/L	P329179	
		Chlorophyll/Phaeophytin Ratio	1.5			P329179	
		Chlorophyll-a, Uncorrected	0.40	U	ug/L	P329179	

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: Cow Creek @ SR 138

Collection Date/Time: 07/19/2017 09:25

Field ID: G1NE0565 07192017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915107	EPA 1603	Escherichia coli-Membrane Filter	90	B	cfu/100 mL		

Field ID: G1NE0565 07192017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915110	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P328630	RPD
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Ref. Method and Comment:
 SOP-PCR-1.0: No amplification of HF183 marker.

Sample Location: Cow Creek @ 340

Collection Date/Time: 07/19/2017 09:45

Field ID: G1NE0622 07192017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915108	EPA 1603	Escherichia coli-Membrane Filter	200		cfu/100 mL		
1915111	SOP-PCR-1.0	HF183-purified-qPCR**	8.6	TJ	GEU/100 mL	P329164	LCS, SUR
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Ref. Method and Comment:
 SOP-PCR-1.0: Quality control failure(s) observed. See QA report for details.

Sample Location: Wacassassa R @ SR 24

Collection Date/Time: 07/19/2017 11:45

Field ID: G1NE0829 07192017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915102	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P329179	
		Phaeophytin-a	0.40	U	ug/L	P329179	
		Chlorophyll/Phaeophytin Ratio	1.5			P329179	
		Chlorophyll-a, Uncorrected	0.57	I	ug/L	P329179	

Ref. Method and Comment:
 SM 10200 H (mod.): Lab dup result is 1.5 for Chl:Ph Ratio, 0.55 U for Chl-a Corrected, 0.56 I for Chl-a Uncorrected, and 0.40 U for Phaeophytin-a.
 Precision data is unavailable due to the small amount of analyte in the QC sample.

Sample Location: Wacassassa R @ SR 24

Collection Date/Time: 07/19/2017 11:45

Field ID: G1NE0829 07192017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915106	EPA 1603	Escherichia coli-Membrane Filter	40	B	cfu/100 mL		
1915109	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: Santa Fe R @ Hollingsworth Bluff

Collection Date/Time: 07/19/2017 09:05

Field ID: G1NE0624 07192017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915103	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.55	U	ug/L	P329179	
		Phaeophytin-a	0.40	U	ug/L	P329179	
		Chlorophyll/Phaeophytin Ratio	1.3			P329179	
		Chlorophyll-a, Uncorrected	0.58	I	ug/L	P329179	

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

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P329179

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: SOP-PCR-1.0
Batch ID: P328630

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

Reference Method: SOP-PCR-1.0
Batch ID: P329164

Component	Result	Code	Units
HF183-purified-qPCR	47	U	GEU/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P329179

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	107		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P328630

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	153	98.2	P/P	50 - 175
HF183-qPCR	146	88.7	P/P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P329164

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-purified-qPCR	92.4	14.0	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P328630

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1913828	HF183-qPCR	68.2	78.8	P/P	50 - 175
1913829	HF183-qPCR	86.2		P	50 - 175
1913830	HF183-qPCR	84.6		P	50 - 175
1913977	HF183-qPCR	64.4		P	50 - 175
1914092	HF183-qPCR	66.8		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P328630

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1914093	HF183-qPCR	54.7		P	50 - 175
1914094	HF183-qPCR	51.3		P	50 - 175
1914834	HF183-qPCR	68.9		P	50 - 175
1915007	HF183-qPCR	69.6		P	50 - 175
1915110	HF183-qPCR	62.9		P	50 - 175

Reference Method: SOP-PCR-1.0
 Batch ID: P329164

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1914440	HF183-purified-qPCR	92.6	101	P/P	50 - 175
1914682	HF183-purified-qPCR	96.6		P	50 - 175
1914706	HF183-purified-qPCR	90.9		P	50 - 175
1915111	HF183-purified-qPCR	91.0		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
 Batch ID: P328630

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1913828	HF183-qPCR	14.3	Spike	P	0 - 25
1915209	HF183-qPCR	10000	Spike	F	0 - 25

Reference Method: SOP-PCR-1.0
 Batch ID: P329164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1914440	HF183-purified-qPCR	8.20	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: 1915110
 Field Sample ID: G1NE0565 07192017

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	87.1	P	50 - 300

Lab Sample ID: 1915111
 Field Sample ID: G1NE0622 07192017

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	7.90	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	107								
SOP-PCR-1.0	HF183-purified-qPCR	14.0	92.4		91.0	92.6	101			8.20
					96.6					
	HF183-qPCR	153	88.7	146	68.2	78.8	86.2			14.3
		98.2			84.6					10000

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 1603 / E82001	Escherichia coli by membrane filter method using modified mTEC by Advanced Environmental Gainesville Overflow Laboratories for NED	1915106, 1915107, 1915108
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1915098, 1915099, 1915100, 1915101, 1915102, 1915103
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1915110
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1915111
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1915109, 1915110, 1915111

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	07/19/2017			07/19/2017 14:33	AEL - Gainesville	1915106, 1915107, 1915108
SM 10200 H (mod.)	07/20/2017	07/20/2017 13:19	Cathy Sherrer	07/25/2017	Jennifer Mihalic	1915098, 1915099, 1915100, 1915101, 1915102, 1915103
SOP-PCR-1.0	07/20/2017	07/20/2017 13:00	Avril Wood	08/02/2017	Puja Jasrotia	1915110
	07/20/2017	07/20/2017 13:00	Avril Wood	08/02/2017	Sarah Menz	1915111
SOP-PCR-4.0	07/20/2017	07/20/2017 13:00	Sarah Menz	08/14/2017	Puja Jasrotia	1915110
	07/20/2017	07/20/2017 13:00	Sarah Menz	08/15/2017	Puja Jasrotia	1915109, 1915111