

Biological Analysis Report

NE-DIST-2019-09-11-03

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

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

Event Description: **Alachua County August SMP**
Request ID: **RQ-2019-08-05-90**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
Attn: Jeremy Parrish

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: 25-OCT-2019 10:09



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 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: PARANERS BRANCH - E of CR 1491 S of NW 276th LN

Collection Date/Time: 09/10/2019 09:55

Field ID: G1NE0906

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2117896	SM 10200 H (mod.)	Chlorophyll-a, Corrected	4.3	I	ug/L	P370628	
		Phaeophytin-a	2.8	I	ug/L	P370628	
		Chlorophyll-a, Uncorrected	6.2		ug/L	P370628	
2117905	EPA 1603	Escherichia coli-Membrane Filter	330		cfu/100 mL		
2117914	SOP-PCR-1.0	HF183-qPCR**	190	I	GEU/100 mL	P370409	
	SOP-PCR-1.4	BacR-qPCR**	6.22E+05		TSC/100 mL	P370409	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P370409	

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.

SOP-PCR-1.0: Precision data unavailable for analysis batch A94682.

SOP-PCR-1.4: Precision data unavailable for Analysis Batch A94740.

Sample Location: PARANERS BRANCH

Collection Date/Time: 09/10/2019 10:20

Field ID: G1NE0917

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2117897	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.6	U	ug/L	P370628	
		Phaeophytin-a	1.8	U	ug/L	P370628	
		Chlorophyll-a, Uncorrected	1.2	U	ug/L	P370628	
2117906	EPA 1603	Escherichia coli-Membrane Filter	320		cfu/100 mL		
2117915	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P370409	
	SOP-PCR-1.4	BacR-qPCR**	2.03E+06		TSC/100 mL	P370409	
	SOP-PCR-1.5	DG3-qPCR**	1.3E+03	U	TSC/100 mL	P370409	

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.

SOP-PCR-1.0: Precision data unavailable for analysis batch A94682.

SOP-PCR-1.4: Precision data unavailable for Analysis Batch A94740.

Sample Location: MILL CREEK - E of OLD BELAMY RD

Collection Date/Time: 09/10/2019 10:50

Field ID: G1NE0907

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2117898	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.6	U	ug/L	P370628	
		Phaeophytin-a	1.8	U	ug/L	P370628	
		Chlorophyll-a, Uncorrected	1.2	U	ug/L	P370628	
2117907	EPA 1603	Escherichia coli-Membrane Filter	266		cfu/100 mL		
2117916	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P370409	
	SOP-PCR-1.4	BacR-qPCR**	3.1E+03	I	TSC/100 mL	P370409	
	SOP-PCR-1.5	DG3-qPCR**	2.4E+03	I	TSC/100 mL	P370409	

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.

SOP-PCR-1.0: Precision data unavailable for analysis batch A94682.

SOP-PCR-1.4: Precision data unavailable for Analysis Batch A94740.

Sample Location: TURKEY CREEK UPSTREAM OF THE BRIDGE ON NW 74th TERR

Collection Date/Time: 09/10/2019 12:40

Field ID: G1NE0915

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2117899	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.6	U	ug/L	P370628	
		Phaeophytin-a	1.8	U	ug/L	P370628	
		Chlorophyll-a, Uncorrected	1.2	U	ug/L	P370628	
2117908	EPA 1603	Escherichia coli-Membrane Filter	435		cfu/100 mL		
2117917	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P370409	
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	U	TSC/100 mL	P370409	
	SOP-PCR-1.3	GFD-purified-qPCR**	170	UJ	TSC/100 mL	P371838	MS
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	UJ	TSC/100 mL	P370409	
	SOP-PCR-1.5	DG3-qPCR**	2.6E+03	UJ	TSC/100 mL	P370409	SUR

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.

SOP-PCR-1.0: Precision data unavailable for analysis batch A94682.

SOP-PCR-1.3: Quality control failure(s) observed. See QA report for details.

SOP-PCR-1.4: Precision data unavailable for Analysis Batch A94740. Refer to the Lab Analysis Report for an explanation of QC Codes.

SOP-PCR-1.5: Quality control failure(s) observed. See QA report for details.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P370628

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: SOP-PCR-1.0

Batch ID: P370409

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

Reference Method: SOP-PCR-1.2

Batch ID: P370409

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

Reference Method: SOP-PCR-1.3

Batch ID: P371838

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

Reference Method: SOP-PCR-1.4

Batch ID: P370409

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.5
 Batch ID: P370409

Component	Result	Code	Units
DG3-qPCR	2.6E+03	U	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
 Batch ID: P370628

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	91.7		P	84 - 116

Reference Method: SOP-PCR-1.0
 Batch ID: P370409

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	115	120	P/P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P370409

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	75.7	57.4	P/P	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P371838

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	94.5	90.6	P/P	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P370409

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	65.3	73.1	P/P	50 - 175

Reference Method: SOP-PCR-1.5
 Batch ID: P370409

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	95.9	131	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P370409

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117509	HF183-qPCR	108		P	50 - 175
2117889	HF183-qPCR	110		P	50 - 175
2117890	HF183-qPCR	99.5		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P370409

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117914	HF183-qPCR	111		P	50 - 175
2117915	HF183-qPCR	108		P	50 - 175
2117916	HF183-qPCR	125		P	50 - 175
2117917	HF183-qPCR	98.6		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P370409

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117394	GULL2-qPCR	77.8	92.7	P/P	50 - 300
2117486	GULL2-qPCR	158		P	50 - 300
2117509	GULL2-qPCR	68.6		P	50 - 300
2117917	GULL2-qPCR	116		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P371838

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117509	GFD-purified-qPCR	331		F	50 - 175
2117917	GFD-purified-qPCR	335		F	50 - 175
2118519	GFD-purified-qPCR	248		F	50 - 175
2118520	GFD-purified-qPCR	290		F	50 - 175
2119036	GFD-purified-qPCR	291		F	50 - 175
2119037	GFD-purified-qPCR	302		F	50 - 175
2119038	GFD-purified-qPCR	248		F	50 - 175
2119186	GFD-purified-qPCR	304		F	50 - 175
2124376	GFD-purified-qPCR	358		F	50 - 175
2124432	GFD-purified-qPCR	326		F	50 - 175
2124433	GFD-purified-qPCR	339		F	50 - 175
2124434	GFD-purified-qPCR	398		F	50 - 175
2124578	GFD-purified-qPCR	321	317	F/F	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P370409

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117509	BacR-qPCR	65.1		P	50 - 175
2117914	BacR-qPCR	88.5		P	50 - 175
2117915	BacR-qPCR	93.9		P	50 - 175
2117916	BacR-qPCR	96.9		P	50 - 175
2117917	BacR-qPCR	72.8		P	50 - 175

Reference Method: SOP-PCR-1.5

Batch ID: P370409

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117394	DG3-qPCR	112	106	P/P	50 - 175
2117486	DG3-qPCR	101		P	50 - 175
2117509	DG3-qPCR	109		P	50 - 175
2117914	DG3-qPCR	111		P	50 - 175
2117915	DG3-qPCR	107		P	50 - 175
2117916	DG3-qPCR	93.7		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.5
Batch ID: P370409

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117917	DG3-qPCR	91.0		P	50 - 175
2117972	DG3-qPCR	85.5		P	50 - 175
2117974	DG3-qPCR	128		P	50 - 175
2117980	DG3-qPCR	86.5		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P370628

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2118023	Chlorophyll-a, Corrected	0.945	Sample	P	0 - 25
2118023	Chlorophyll-a, Uncorrected	1.12	Sample	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P370409

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117394	GULL2-qPCR	17.5	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P371838

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2124578	GFD-purified-qPCR	1.35	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P370409

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117394	DG3-qPCR	5.18	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2117914
Field Sample ID: G1NE0906

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	100	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	92.6	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	121	P	50 - 300

Quality Assurance Report Surrogates

Lab Sample ID: 2117915
Field Sample ID: G1NE0917

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	103	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	100	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	116	P	50 - 300

Lab Sample ID: 2117916
Field Sample ID: G1NE0907

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	103	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	98.1	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	117	P	50 - 300

Lab Sample ID: 2117917
Field Sample ID: G1NE0915

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	79.9	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	112	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	86.5	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	26.5	F	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	91.7						0.945	
	Chlorophyll-a, Uncorrected							1.12	
SOP-PCR-1.0	HF183-qPCR	120	115	108	110	99.5			
SOP-PCR-1.2	GULL2-qPCR	57.4	75.7	77.8	92.7	158			17.5
SOP-PCR-1.3	GFD-purified-qPCR	90.6	94.5	358	326	339			1.35
SOP-PCR-1.4	BacR-qPCR	65.3	73.1	65.1	88.5	93.9			
SOP-PCR-1.5	DG3-qPCR	131	95.9	112	106	101			5.18

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 1603 / E82001	E. coli by MF by AEL in Gainesville	2117905, 2117906, 2117907, 2117908
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2117896, 2117897, 2117898, 2117899
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2117914, 2117915, 2117916, 2117917
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2117917
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2117917

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2117914, 2117915, 2117916, 2117917
SOP-PCR-1.5 / E31780	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2117914, 2117915, 2117916, 2117917

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	09/10/2019	09/10/2019 15:55		09/11/2019 14:15	AEL - Gainesville	2117905, 2117906, 2117907, 2117908
SM 10200 H (mod.)	09/11/2019	09/11/2019 13:34	Yuliya Danyuk	09/12/2019 15:45	Yuliya Danyuk	2117896, 2117897, 2117898, 2117899
SOP-PCR-1.0	09/11/2019	09/11/2019 15:55	Lauren Campbell	10/02/2019 11:47	Lauren Campbell	2117914, 2117915
	09/11/2019	09/12/2019 09:45	Lauren Campbell	10/02/2019 11:47	Lauren Campbell	2117916, 2117917
SOP-PCR-1.2	09/11/2019	09/12/2019 09:45	Lauren Campbell	10/10/2019 09:16	Mailin Lopez	2117917
SOP-PCR-1.3	09/11/2019	09/12/2019 09:45	Angela Smith	10/17/2019 12:31	Mailin Lopez	2117917
SOP-PCR-1.4	09/11/2019	09/11/2019 15:55	Lauren Campbell	10/04/2019 14:26	Lauren Campbell	2117914, 2117915
	09/11/2019	09/12/2019 09:45	Lauren Campbell	10/04/2019 14:26	Lauren Campbell	2117916, 2117917
SOP-PCR-1.5	09/11/2019	09/11/2019 15:55	Lauren Campbell	10/07/2019 14:43	Lauren Campbell	2117914, 2117915
	09/11/2019	09/12/2019 09:45	Lauren Campbell	10/07/2019 14:43	Lauren Campbell	2117916, 2117917