

Biological Analysis Report

CEN-DIST-2019-03-15-02

Florida Department of Environmental Protection
Central Laboratory
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DOH Accreditation E31780

Overflow Analyses Performed By:
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DOH Accreditation E1031026

Event Description: **Crane Crk / Eau X2**
Request ID: **RQ-2019-03-11-43**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Jacqueline Savage, Environmental Administrator

Date Certified: 15-MAY-2019 14:56

A handwritten signature in black ink that reads "Jackie Savage". The signature is written in a cursive, flowing style.

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: Crane Creek @ 200m upstream of RR bridge

Collection Date/Time: 03/14/2019 11:13

Field ID: G5CE0097

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2070534	SM 9230 C	Enterococci-Membrane Filter**	140	B	cfu/100 mL		
2070547	SM 10200 H (mod.)	Chlorophyll-a, Corrected	12		ug/L	P361427	
		Phaeophytin-a	1.8	I	ug/L	P361427	
		Chlorophyll-a, Uncorrected	13		ug/L	P361427	
2070548	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P361913	
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	U	TSC/100 mL	P361913	
	SOP-PCR-1.3	GFD-purified-qPCR**	570	IJ	TSC/100 mL	P361911	LCS, MS, RPD
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P361913	MS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold			P360428	

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-1.2: Precision data unavailable for Analysis Batch A90879

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

Sample Location: Crane Creek @ 200m upstream of RR bridge

Collection Date/Time: 03/14/2019 11:15

Field ID: G5CE0097_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2070535	SM 9230 C	Enterococci-Membrane Filter**	120	B	cfu/100 mL		
2070549	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold			P360428	

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P361427

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: P361913

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

Reference Method: SOP-PCR-1.2

Batch ID: P361913

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

Reference Method: SOP-PCR-1.3

Batch ID: P361911

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.4
Batch ID: P361913

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: P361427

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	99.6		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P361913

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	99.7	153	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P361913

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	154	202	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P361911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	151	13.2	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P361913

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	110	83.8	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P361913

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069298	HF183-qPCR	92.0		P	50 - 175
2070024	HF183-qPCR	113		P	50 - 175
2070548	HF183-qPCR	79.3		P	50 - 175
2071394	HF183-qPCR	81.6		P	50 - 175
2071762	HF183-qPCR	67.7		P	50 - 175
2072420	HF183-qPCR	78.4		P	50 - 175
2074722	HF183-qPCR	67.4		P	50 - 175
2077085	HF183-qPCR	89.1		P	50 - 175
2077086	HF183-qPCR	99.6		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P361913

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2077952	HF183-qPCR	75.8		P	50 - 175
2077953	HF183-qPCR	87.1		P	50 - 175
2077954	HF183-qPCR	78.5		P	50 - 175
2077955	HF183-qPCR	79.2	73.8	P/P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P361913

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069298	GULL2-qPCR	115		P	50 - 300
2070024	GULL2-qPCR	114		P	50 - 300
2070548	GULL2-qPCR	136		P	50 - 300
2071762	GULL2-qPCR	97.8		P	50 - 300
2074722	GULL2-qPCR	96.0		P	50 - 300
2077085	GULL2-qPCR	118		P	50 - 300
2077086	GULL2-qPCR	150		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P361911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068767	GFD-purified-qPCR	239		F	50 - 175
2068768	GFD-purified-qPCR	253		F	50 - 175
2069251	GFD-purified-qPCR	234		F	50 - 175
2069252	GFD-purified-qPCR	152		P	50 - 175
2069253	GFD-purified-qPCR	260		F	50 - 175
2069298	GFD-purified-qPCR	146		P	50 - 175
2070024	GFD-purified-qPCR	143		P	50 - 175
2070548	GFD-purified-qPCR	153		P	50 - 175
2070871	GFD-purified-qPCR	231		F	50 - 175
2070983	GFD-purified-qPCR	182		F	50 - 175
2071059	GFD-purified-qPCR	141		P	50 - 175
2071300	GFD-purified-qPCR	138		P	50 - 175
2071762	GFD-purified-qPCR	140		P	50 - 175
2072205	GFD-purified-qPCR	133		P	50 - 175
2077083	GFD-purified-qPCR	137		P	50 - 175
2077084	GFD-purified-qPCR	210		F	50 - 175
2077085	GFD-purified-qPCR	183		F	50 - 175
2077086	GFD-purified-qPCR	293	218	F/F	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P361913

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069298	BacR-qPCR	76.8		P	50 - 175
2070024	BacR-qPCR	51.3		P	50 - 175
2070548	BacR-qPCR	56.7		P	50 - 175
2071762	BacR-qPCR	72.6		P	50 - 175
2074722	BacR-qPCR	57.3		P	50 - 175
2077952	BacR-qPCR	54.2		P	50 - 175
2077953	BacR-qPCR	57.8		P	50 - 175
2077954	BacR-qPCR	44.8		F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
 Batch ID: P361913

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2077955	BacR-qPCR	74.7	74.4	P/P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
 Batch ID: P361427

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2070374	Chlorophyll-a, Corrected	7.19	Sample	P	0 - 25
2070374	Chlorophyll-a, Uncorrected	5.76	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
 Batch ID: P361913

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077955	HF183-qPCR	7.14	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P361911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077086	GFD-purified-qPCR	29.4	Spike	F	0 - 25

Reference Method: SOP-PCR-1.4
 Batch ID: P361913

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2077955	BacR-qPCR	0.391	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: 2070548
 Field Sample ID: G5CE0097

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	53.0	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	105	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	108	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	99.6						7.19	
	Chlorophyll-a, Uncorrected							5.76	
SOP-PCR-1.0	HF183-qPCR	153	99.7	75.8	87.1	78.5			7.14
				79.2					
SOP-PCR-1.2	GULL2-qPCR	202	154	114	136	150			
				118					
SOP-PCR-1.3	GFD-purified-qPCR	13.2	151	137	210	183			29.4
				293					
SOP-PCR-1.4	BacR-qPCR	83.8	110	72.6	57.3	51.3			0.391
				56.7					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2070547
SM 9230 C / E1031026	Enterococci by membrane filter method by ERD Laboratory	2070534, 2070535
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2070548
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2070548
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2070548
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2070548
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2070548, 2070549

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	03/15/2019	03/15/2019 13:10	Jennifer Mihalic	04/01/2019 15:00	Peterson Janvier	2070547
SM 9230 C	03/14/2019	03/14/2019 15:20		03/16/2019 15:30	Environmental Research & Design, Inc.	2070534, 2070535
SOP-PCR-1.0	03/15/2019	03/15/2019 15:00	Sarah Menz	04/18/2019 12:02	Mailin Lopez	2070548
SOP-PCR-1.2	03/15/2019	03/15/2019 15:00	Sarah Menz	04/22/2019 09:44	Mailin Lopez	2070548
SOP-PCR-1.3	03/15/2019	03/15/2019 15:00	Angela Smith	04/22/2019 10:54	Sarah Menz	2070548
SOP-PCR-1.4	03/15/2019	03/15/2019 15:00	Sarah Menz	04/19/2019 12:02	Mailin Lopez	2070548
SOP-PCR-4.0	03/15/2019	03/15/2019 15:00	Angela Smith	04/10/2019 15:42	Sarah Menz	2070548, 2070549