

Biological Analysis Report

CEN-DIST-2017-06-29-01

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

Overflow Analyses Performed By:
Flowers Chemical Laboratories Inc. - Altamonte
Springs
481 Newburyport Avenue
Altamonte Springs, Florida 32701
DOH Accreditation E83018

Event Description: **Howell Creek / Smith Canal**
Request ID: **RQ-2017-06-26-63**
Customer: **CEN-DIST**
Project ID: **SMP**

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Certified by: Jennifer Walters, Environmental Manager

Date Certified: 30-AUG-2017 11:35



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: 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: Howell Creek @ 150m Upstream of Lake Howell Collection Date/Time: 06/28/2017 10:43

Field ID: G2CE0072

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1910227	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	486		MPN/100 mL		
1910229	SOP-PCR-1.0	HF183-qPCR**	33	T	GEU/100 mL	P328342	
	SOP-PCR-1.2	GULL2-qPCR**	1.7E+04	U	TSC/100 mL	P327551	LCS
	SOP-PCR-1.3	GFD-purified-qPCR**	42	T	TSC/100 mL	P327537	LCS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:
 SOP-PCR-1.2: No amplification of GULL2 marker.

Sample Location: Smith Canal Upstream of Nebraska Ave.

Collection Date/Time: 06/28/2017 10:02

Field ID: G2CE0073

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1910228	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	46.4		MPN/100 mL		
1910230	SOP-PCR-1.2	GULL2-qPCR**	5.6E+03	U	TSC/100 mL	P327551	LCS
	SOP-PCR-1.3	GFD-purified-qPCR**	7.6	T	TSC/100 mL	P327537	LCS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Ref. Method and Comment:
 SOP-PCR-1.2: No amplification of GULL2 marker.

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P328342

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

Reference Method: SOP-PCR-1.2
Batch ID: P327551

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

Reference Method: SOP-PCR-1.3
Batch ID: P327537

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P328342

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	117	72.3	P/P	50 - 175

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P327551

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	27.6	97.2	F/P	50 - 300
GULL2-qPCR	19.2	76.7	F/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P327537

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	112	30.8	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P328342

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905621	HF183-qPCR	101		P	50 - 175
1905622	HF183-qPCR	113		P	50 - 175
1905625	HF183-qPCR	83.7		P	50 - 175
1906223	HF183-qPCR	114		P	50 - 175
1910229	HF183-qPCR	111		P	50 - 175
1910583	HF183-qPCR	90.7		P	50 - 175
1912962	HF183-qPCR	92.0		P	50 - 175
1912963	HF183-qPCR	74.0		P	50 - 175
1913038	HF183-qPCR	129	112	P/P	50 - 175
1913039	HF183-qPCR	94.6		P	50 - 175
1913238	HF183-qPCR	82.3		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P327551

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1908836	GULL2-qPCR	71.2		P	50 - 300
1908837	GULL2-qPCR	59.1		P	50 - 300
1908838	GULL2-qPCR	70.4	75.3	P/P	50 - 300
1908839	GULL2-qPCR	79.1		P	50 - 300
1908840	GULL2-qPCR	80.5		P	50 - 300
1908841	GULL2-qPCR	62.5		P	50 - 300
1910229	GULL2-qPCR	77.8		P	50 - 300
1910230	GULL2-qPCR	73.5		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P327537

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1908836	GFD-purified-qPCR	142		P	50 - 175
1908837	GFD-purified-qPCR	152		P	50 - 175
1908838	GFD-purified-qPCR	172	157	P/P	50 - 175
1908839	GFD-purified-qPCR	155		P	50 - 175
1908840	GFD-purified-qPCR	94.1		P	50 - 175
1908841	GFD-purified-qPCR	154		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.3
 Batch ID: P327537

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909047	GFD-purified-qPCR	86.5		P	50 - 175
1909880	GFD-purified-qPCR	143		P	50 - 175
1910229	GFD-purified-qPCR	74.0		P	50 - 175
1910230	GFD-purified-qPCR	131		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
 Batch ID: P328342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1913038	HF183-qPCR	13.9	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
 Batch ID: P327551

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879804	GULL2-qPCR	11.1	Spike	P	0 - 25
1908838	GULL2-qPCR	6.69	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
 Batch ID: P327537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1908838	GFD-purified-qPCR	8.95	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: 1910229
 Field Sample ID: G2CE0072

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	87.4	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	108	P	50 - 300

Lab Sample ID: 1910230
 Field Sample ID: G2CE0073

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.2	SKETA-qPCR	110	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	116	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery			MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	72.3	117		92.0	74.0	129			13.9
SOP-PCR-1.2	GULL2-qPCR	27.6	76.7	19.2	71.2	59.1	70.4			6.69 11.1
SOP-PCR-1.3	GFD-purified-qPCR	97.2			75.3					
		30.8	112		142	152	172			8.95
					157					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 9223 Quanti-Tray / E83018	Escherichia coli by Colilert 18 Quanti-Tray method by FlowersOverflow Laboratory for Central District	1910227, 1910228
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1910229
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium genetic marker with quantitative polymerase chain reaction	1910229, 1910230
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter genetic marker with quantitative polymerase chain reaction	1910229, 1910230
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1910229, 1910230

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 9223 Quanti-Tray	06/28/2017			06/28/2017 16:50	Flowers - Altamonte Springs	1910227, 1910228
SOP-PCR-1.0	06/29/2017	06/29/2017 13:00	Sarah Menz	07/18/2017	Puja Jasrotia	1910229
SOP-PCR-1.2	06/29/2017	06/29/2017 13:00	Avril Wood	07/13/2017	Sarah Menz	1910229
	06/29/2017	06/29/2017 13:00	Avril Wood	07/21/2017	Sarah Menz	1910230
SOP-PCR-1.3	06/29/2017	06/29/2017 13:00	Avril Wood	07/03/2017	Sarah Menz	1910229, 1910230
SOP-PCR-4.0	06/29/2017	06/29/2017 13:00	Avril Wood	07/14/2017	Puja Jasrotia	1910229, 1910230