

Biological Analysis Report

CEN-DIST-2017-12-20-01

Florida Department of Environmental Protection
Central Laboratory
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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: **Gee / Soldier / Lil Wekiva River / Smith**
Request ID: **RQ-2017-12-18-26**
Customer: **CEN-DIST**
Project ID: **SMP**

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Date Certified: 08-FEB-2018 08:08



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: Gee Creek @ SR Hwy 419

Collection Date/Time: 12/19/2017 11:30

Field ID: G2CE0075

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1955232	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	921		MPN/100 mL		
1955239	SOP-PCR-1.0	HF183-qPCR**	590	I	GEU/100 mL	P336939	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Sample Location: Soldier Creek @ 150m Upstream of SR Hwy 419 **Collection Date/Time: 12/19/2017 11:54**

Field ID: G2CE0071

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1955233	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	122		MPN/100 mL		
1955240	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P336939	
	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: Smith Canal upstream of Nebraska Ave

Collection Date/Time: 12/19/2017 13:49

Field ID: G2CE0073

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1955235	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	192		MPN/100 mL		
1955242	SOP-PCR-1.2	GULL2-qPCR**	5.6E+03	U	TSC/100 mL	P337261	
	SOP-PCR-1.3	GFD-purified-qPCR**	43	TJ	TSC/100 mL	P336940	LCS, MS, RPD
	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Ref. Method and Comment:
 SOP-PCR-1.2: No amplification of GULL2 marker.
 SOP-PCR-1.3: Quality control failure(s) observed. See QA report for details.

Sample Location: Little Wekiva River @ 300m NE of Palm Spring **Collection Date/Time: 12/19/2017 14:37**

Field ID: G2CE0140

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1955234	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	517		MPN/100 mL		
1955241	SOP-PCR-1.0	HF183-qPCR**	89	T	GEU/100 mL	P336939	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0

Batch ID: P336939

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

Reference Method: SOP-PCR-1.2

Batch ID: P337261

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

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.2
Batch ID: P337261

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

Reference Method: SOP-PCR-1.3
Batch ID: P336940

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: P336939

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	141	104	P/P	50 - 175
HF183-qPCR	164	127	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P337261

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	135	59.3	P/P	50 - 300
GULL2-qPCR	108	99.0	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P336940

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	125	42.2	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P336939

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1954866	HF183-qPCR	97.7		P	50 - 175
1954892	HF183-qPCR	96.3		P	50 - 175
1954999	HF183-qPCR	95.2		P	50 - 175
1955000	HF183-qPCR	110	106	P/P	50 - 175
1955001	HF183-qPCR	108		P	50 - 175
1955239	HF183-qPCR	93.9		P	50 - 175
1955240	HF183-qPCR	78.6		P	50 - 175
1955241	HF183-qPCR	90.6		P	50 - 175
1955266	HF183-qPCR	86.9		P	50 - 175
1956283	HF183-qPCR	85.9		P	50 - 175
1956284	HF183-qPCR	80.4		P	50 - 175
1956285	HF183-qPCR	80.8		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.2
Batch ID: P337261

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1953423	GULL2-qPCR	89.2		P	50 - 300
1955242	GULL2-qPCR	56.4		P	50 - 300
1955372	GULL2-qPCR	54.7		P	50 - 300
1955375	GULL2-qPCR	53.1	60.5	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P336940

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947920	GFD-purified-qPCR	111		P	50 - 175
1953444	GFD-purified-qPCR	58.6		P	50 - 175
1955242	GFD-purified-qPCR	393		F	50 - 175
1955372	GFD-purified-qPCR	363		F	50 - 175
1955374	GFD-purified-qPCR	291		F	50 - 175
1955375	GFD-purified-qPCR	193	419	F/F	50 - 175
1955528	GFD-purified-qPCR	214		F	50 - 175
1956355	GFD-purified-qPCR	264		F	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P336939

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955000	HF183-qPCR	3.09	Spike	P	0 - 25
1958501	HF183-qPCR	3.82	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P337261

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955375	GULL2-qPCR	13.0	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P336940

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1955375	GFD-purified-qPCR	74.0	Spike	F	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

Quality Assurance Report Surrogates

Lab Sample ID: 1955239
Field Sample ID: G2CE0075

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

Lab Sample ID: 1955240
Field Sample ID: G2CE0071

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	94.7	P	50 - 300

Lab Sample ID: 1955241
Field Sample ID: G2CE0140

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	113	P	50 - 300

Lab Sample ID: 1955242
Field Sample ID: G2CE0073

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

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery			MS % Recovery			LCS	Precision	
									SMP	MS
SOP-PCR-1.0	HF183-qPCR	141	127	164	78.6	97.7	96.3			3.82
		104			95.2					3.09
SOP-PCR-1.2	GULL2-qPCR	135	99.0	108	89.2	56.4	54.7			13.0
		59.3			53.1					
SOP-PCR-1.3	GFD-purified-qPCR	42.2	125		58.6	111	393			74.0
					363					

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	1955232, 1955233, 1955234, 1955235
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1955239, 1955240, 1955241
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	1955242
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	1955242
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1955239, 1955240, 1955241, 1955242

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 9223 Quanti-Tray	12/19/2017	12/19/2017 16:45		12/20/2017 11:15	Flowers - Altamonte Springs	1955232, 1955233, 1955234, 1955235
SOP-PCR-1.0	12/20/2017	12/20/2017 13:30	Avril Wood	01/09/2018	Sarah Menz	1955239, 1955241
	12/20/2017	12/20/2017 13:30	Avril Wood	01/17/2018	Sarah Menz	1955240
SOP-PCR-1.2	12/20/2017	12/20/2017 13:30	Sarah Menz	01/03/2018	Sarah Menz	1955242
SOP-PCR-1.3	12/20/2017	12/20/2017 13:00	Avril Wood	01/05/2018	Sarah Menz	1955242
SOP-PCR-4.0	12/20/2017	12/20/2017 13:30	Avril Wood	01/16/2018	Puja Jasrotia	1955239, 1955240, 1955241
	12/20/2017	12/20/2017 13:30	Sarah Menz	01/16/2018	Puja Jasrotia	1955242