Biological Analysis Report

CEN-DIST-2018-12-19-02

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

Overflow Analyses Performed By:
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DOH Accreditation E1031026

Event Description: **Salt Creek X2**
Request ID: **RQ-2018-12-03-53**
Customer: **CEN-DIST**
Project ID: **SMP**

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Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 27-FEB-2019 16:43

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 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: Salt Creek @ Packard Avenue **Collection Date/Time: 12/18/2018 10:40**

Field ID: G2CE0088 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2049762	EPA 1603	Escherichia coli-Membrane Filter	520		cfu/100 mL		
2049763	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P357602	
	SOP-PCR-1.2	GULL2-qPCR**	8.6E+03	I	TSC/100 mL	P357602	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P357602	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Quality Assurance Report
Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P357602

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

Reference Method: SOP-PCR-1.2
Batch ID: P357602

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

Reference Method: SOP-PCR-1.4
Batch ID: P357602

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P357602

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	121	149	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P357602

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	198	128	P/P	50 - 300

Reference Method: SOP-PCR-1.4
Batch ID: P357602

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	90.1	118	P/P	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P357602

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047013	HF183-qPCR	88.4		P	50 - 175
2049763	HF183-qPCR	98.8		P	50 - 175
2055951	HF183-qPCR	98.8		P	50 - 175
2056897	HF183-qPCR	89.0		P	50 - 175
2056898	HF183-qPCR	83.9		P	50 - 175
2056899	HF183-qPCR	107		P	50 - 175
2057759	HF183-qPCR	97.0	96.6	P/P	50 - 175
2057761	HF183-qPCR	85.1		P	50 - 175
2057762	HF183-qPCR	84.8		P	50 - 175
2058102	HF183-qPCR	95.4		P	50 - 175
2058250	HF183-qPCR	100		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P357602

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2049763	GULL2-qPCR	174		P	50 - 300

Reference Method: SOP-PCR-1.4
Batch ID: P357602

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2049763	BacR-qPCR	74.0		P	50 - 175
2057759	BacR-qPCR	65.9	71.7	P/P	50 - 175
2057761	BacR-qPCR	63.2		P	50 - 175
2057762	BacR-qPCR	68.4		P	50 - 175
2058102	BacR-qPCR	74.0		P	50 - 175

Quality Assurance Report
Precision

Reference Method: SOP-PCR-1.0
Batch ID: P357602

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057759	HF183-qPCR	0.494	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P357602

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2059326	GULL2-qPCR	3.59	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P357602

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057759	BacR-qPCR	8.34	Spike	P	0 - 25

Quality Assurance Report
Precision

* 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: 2049763
Field Sample ID: G2CE0088

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	96.8	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	85.4	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	101	P	50 - 300

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision		
				LCS	SMP	MS
SOP-PCR-1.0	HF183-qPCR	149 121	88.4 98.8 98.8 89.0			0.494
SOP-PCR-1.2	GULL2-qPCR	128 198	174			3.59
SOP-PCR-1.4	BacR-qPCR	118 90.1	74.0 65.9 71.7 63.2			8.34

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 1603 / E1031026	Escherichia coli by membrane filter method by ERD Laboratory	2049762
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2049763
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2049763
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2049763
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2049763

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	12/18/2018	12/18/2018 13:35		12/19/2018 15:00	Environmental Research & Design, Inc.	2049762
SOP-PCR-1.0	12/19/2018	12/19/2018 15:00	Sarah Menz	02/05/2019 14:56	Mailin Lopez	2049763
SOP-PCR-1.2	12/19/2018	12/19/2018 15:00	Sarah Menz	02/08/2019 08:53	Mailin Lopez	2049763
SOP-PCR-1.4	12/19/2018	12/19/2018 15:00	Sarah Menz	02/06/2019 12:29	Mailin Lopez	2049763
SOP-PCR-4.0	12/19/2018	12/19/2018 15:00	Angela Smith	02/13/2019 13:02	Sarah Menz	2049763