

Biological Analysis Report

SW-DIST-2018-07-18-01

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 - Tampa
9610 Princess Palm Avenue
Tampa, Florida 33619
DOH Accreditation E84589

Event Description: **Rattlesnake, Braden, Cedar**
Request ID: **RQ-2018-07-16-04**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Puja Jasrotia, Environmental Manager

Date Certified: 21-AUG-2018 15:56



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: CEDAR CREEK @ SADDLEHORN

Collection Date/Time: 07/17/2018 10:40

Field ID: G2SW0018

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2008532	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2008551	EPA 1603	Escherichia coli-Membrane Filter**	12	B	cfu/100 mL		

Sample Location: CEDAR CREEK NEAR END OF WBID

Collection Date/Time: 07/17/2018 10:25

Field ID: G2SW0042

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2008533	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2008552	EPA 1603	Escherichia coli-Membrane Filter**	44	B	cfu/100 mL		

Sample Location: RATTLESNAKE SLOUGH @ LINDEN

Collection Date/Time: 07/17/2018 11:10

Field ID: G2SW0017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2008534	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P349475	
	SOP-PCR-1.2	GULL2-qPCR**	5.6E+03	U	TSC/100 mL	P349475	
	SOP-PCR-1.3	GFD-purified-qPCR**	210	I	TSC/100 mL	P350112	LCS, RPD
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P349475	LCS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
2008553	EPA 1603	Escherichia coli-Membrane Filter**	9300	B	cfu/100 mL		

Ref. Method and Comment:

SOP-PCR-1.0: Precision data unavailable due to inhibition in QC sample.

SOP-PCR-1.2: Precision data unavailable for Analysis Batch A85869

SOP-PCR-1.4: Precision data unavailable for Analysis batch A85854

Sample Location: RATTLESNAKE SLOUGH @ LOCKWOOD

Collection Date/Time: 07/17/2018 10:55

Field ID: G2SW0043

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2008535	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2008554	EPA 1603	Escherichia coli-Membrane Filter**	72	B	cfu/100 mL		

Sample Location: BRADEN RIVER @ LINKER LODGE

Collection Date/Time: 07/17/2018 09:35

Field ID: G2SW0016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2008536	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2008555	EPA 1603	Escherichia coli-Membrane Filter**	72	B	cfu/100 mL		

Sample Location: BRADEN RIVER @ CYPRESS BEND

Collection Date/Time: 07/17/2018 09:54

Field ID: G2SW0044

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2008537	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2008556	EPA 1603	Escherichia coli-Membrane Filter**	44	B	cfu/100 mL		

Sample Location: BRADEN RIVER @ CYPRESS BEND

Collection Date/Time: 07/17/2018 09:40

Field ID: G2SW0016_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2008538	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
2008557	EPA 1603	Escherichia coli-Membrane Filter**	80		cfu/100 mL		

Quality Assurance Report
Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P349475

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

Reference Method: SOP-PCR-1.2
Batch ID: P349475

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

Reference Method: SOP-PCR-1.3
Batch ID: P350112

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

Reference Method: SOP-PCR-1.4
Batch ID: P349475

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: P349475

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	99.8	101	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P349475

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	93.7	111	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P350112

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	128	42.2	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P349475

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.4
 Batch ID: P349475

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	104	231	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
 Batch ID: P349475

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998583	HF183-qPCR	86.0		P	50 - 175
2008534	HF183-qPCR	86.7		P	50 - 175
2012785	HF183-qPCR	97.4		P	50 - 175
2012786	HF183-qPCR	93.7		P	50 - 175
2012896	HF183-qPCR	100		P	50 - 175
2012938	HF183-qPCR	77.1		P	50 - 175
2012939	HF183-qPCR	88.2		P	50 - 175
2012940	HF183-qPCR	85.6		P	50 - 175
2012941	HF183-qPCR	87.3		P	50 - 175
2012942	HF183-qPCR	88.2		P	50 - 175
2012943	HF183-qPCR	95.7		P	50 - 175

Reference Method: SOP-PCR-1.2
 Batch ID: P349475

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008534	GULL2-qPCR	57.9		P	50 - 300
2012785	GULL2-qPCR	93.3		P	50 - 300
2012786	GULL2-qPCR	82.5		P	50 - 300
2012896	GULL2-qPCR	80.8		P	50 - 300
2012939	GULL2-qPCR	94.1		P	50 - 300
2012940	GULL2-qPCR	81.8		P	50 - 300
2012941	GULL2-qPCR	82.7		P	50 - 300
2012942	GULL2-qPCR	79.3		P	50 - 300
2012943	GULL2-qPCR	71.7		P	50 - 300

Reference Method: SOP-PCR-1.3
 Batch ID: P350112

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2005027	GFD-purified-qPCR	88.4	51.4	P/P	50 - 175
2007462	GFD-purified-qPCR	82.1		P	50 - 175
2007463	GFD-purified-qPCR	81.6		P	50 - 175
2008534	GFD-purified-qPCR	81.2		P	50 - 175
2012391	GFD-purified-qPCR	101		P	50 - 175
2012392	GFD-purified-qPCR	148		P	50 - 175
2012393	GFD-purified-qPCR	116		P	50 - 175

Reference Method: SOP-PCR-1.4
 Batch ID: P349475

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P349475

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008534	BacR-qPCR	76.4		P	50 - 175
2012785	BacR-qPCR	89.5		P	50 - 175
2012786	BacR-qPCR	91.3		P	50 - 175
2012896	BacR-qPCR	93.8		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.3
Batch ID: P350112

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2005027	GFD-purified-qPCR	52.9	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

Lab Sample ID: 2008534
Field Sample ID: G2SW0017

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	104	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	99.1	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	103	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.0	HF183-qPCR	101	99.8	97.4	93.7	100			
SOP-PCR-1.2	GULL2-qPCR	111	93.7	93.3	82.5	80.8			
SOP-PCR-1.3	GFD-purified-qPCR	42.2	128	88.4	51.4	101			52.9
SOP-PCR-1.4	BacR-qPCR	231	104	89.5	91.3	93.8			

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 1603 / E84589	Escherichia coli by membrane filter Advanced Environmental Laboratory in Tampa	2008551, 2008552, 2008553, 2008554, 2008555, 2008556, 2008557
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2008534

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific <i>Catelliboccus marimammalium</i> Gull2 genetic marker with quantitative polymerase chain reaction	2008534
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific <i>Helicobacter</i> GFD genetic marker with quantitative polymerase chain reaction	2008534
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific <i>Bacteroidetes</i> BacR genetic marker with quantitative polymerase chain reaction	2008534
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2008532, 2008533, 2008534, 2008535, 2008536, 2008537, 2008538

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	07/17/2018	07/17/2018 17:00		07/18/2018 15:30	AEL - Tampa	2008551, 2008552, 2008553, 2008554, 2008555, 2008556, 2008557
SOP-PCR-1.0	07/18/2018	07/18/2018 13:05	Sarah Menz	08/08/2018 09:33	Mailin Lopez	2008534
SOP-PCR-1.2	07/18/2018	07/18/2018 13:05	Sarah Menz	08/14/2018 18:14	Mailin Lopez	2008534
SOP-PCR-1.3	07/18/2018	07/18/2018 13:05	Mailin Lopez	08/16/2018 11:54	Sarah Menz	2008534
SOP-PCR-1.4	07/18/2018	07/18/2018 13:05	Sarah Menz	08/14/2018 09:07	Mailin Lopez	2008534
SOP-PCR-4.0	07/18/2018	07/18/2018 13:05	Angela Smith	08/07/2018 09:19	Sarah Menz	2008532, 2008533, 2008534, 2008535, 2008536, 2008537, 2008538