

Biological Analysis Report

CEN-DIST-2018-08-28-01

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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Suite 102
Belle Isle (Orlando), FL 32812-4864
DOH Accreditation E1031026

Event Description: **Salt X2 / Sweet / Crane Strand / CSD**
Request ID: **RQ-2018-08-27-28**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Date Certified: 18-OCT-2018 15:39



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 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 Strand Drain @ 100m US of University Blvd (3014)

Collection Date/Time: 08/27/2018 09:26

Field ID: G2CE0077

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2020374	EPA 1603	Escherichia coli-Membrane Filter	354		cfu/100 mL		
2020381	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.0		ug/L	P351475	
		Phaeophytin-a	2.1		ug/L	P351475	
		Chlorophyll-a, Uncorrected	4.4		ug/L	P351475	
2020383	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: Crane Strand Drain @ 250m North of University Blvd (3014)

Collection Date/Time: 08/27/2018 09:43

Field ID: G2CE0157

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2020375	EPA 1603	Escherichia coli-Membrane Filter	640		cfu/100 mL		
2020382	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.1		ug/L	P351475	
		Phaeophytin-a	1.9		ug/L	P351475	
		Chlorophyll-a, Uncorrected	4.4		ug/L	P351475	
2020384	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P353091	
	SOP-PCR-1.2	GULL2-qPCR**	8.4E+03	U	TSC/100 mL	P353091	
	SOP-PCR-1.3	GFD-purified-qPCR**	260	I	TSC/100 mL	P353092	LCS
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P353091	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Ref. Method and Comment:
 SOP-PCR-1.2: Precision data unavailable for Analysis Batch A87071.

Sample Location: Crane Strand @ 100m DS of Econ Trl Bridge (3023)

Collection Date/Time: 08/27/2018 10:10

Field ID: G2CE0076

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2020378	EPA 1603	Escherichia coli-Membrane Filter	28		cfu/100 mL		

Sample Location: Crane Strand at Herrell Rd (3023)

Collection Date/Time: 08/27/2018 10:30

Field ID: G2CE0156

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2020379	EPA 1603	Escherichia coli-Membrane Filter	63		cfu/100 mL		

Sample Location: Sweetwater Creek @ US of Deleon St (2996)

Collection Date/Time: 08/27/2018 10:53

Field ID: G2CE0119

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2020380	EPA 1603	Escherichia coli-Membrane Filter	209		cfu/100 mL		

Sample Location: Salt Creek @ Packard Avenue (2990)

Collection Date/Time: 08/27/2018 11:10

Field ID: G2CE0088

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Field ID: G2CE0088

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2020376	EPA 1603	Escherichia coli-Membrane Filter	280		cfu/100 mL		
2020385	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				

Sample Location: Salt Creek @ Stone St (2990)

Collection Date/Time: 08/27/2018 11:19

Field ID: G2CE0143

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2020377	EPA 1603	Escherichia coli-Membrane Filter	577		cfu/100 mL		
2020386	SOP-PCR-1.0	HF183-qPCR**	260	I	GEU/100 mL	P352672	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				

Quality Assurance Report
Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P351475

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.55	U	ug/L
Chlorophyll-a, Uncorrected	0.40	U	ug/L
Phaeophytin-a	0.40	U	ug/L

Reference Method: SOP-PCR-1.0
Batch ID: P352672

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

Reference Method: SOP-PCR-1.0
Batch ID: P353091

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

Reference Method: SOP-PCR-1.2
Batch ID: P353091

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

Reference Method: SOP-PCR-1.3
Batch ID: P353092

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

Reference Method: SOP-PCR-1.4
Batch ID: P353091

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: P351475

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	85.8		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P352672

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	93.0	111	P/P	50 - 175

Reference Method: SOP-PCR-1.0
Batch ID: P353091

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	115	129	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P353091

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	103	99.2	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P353092

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	131	41.0	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P353091

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	91.4	162	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P352672

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020386	HF183-qPCR	65.7		P	50 - 175
2021428	HF183-qPCR	83.8	75.7	P/P	50 - 175
2021429	HF183-qPCR	82.9		P	50 - 175
2021682	HF183-qPCR	76.5		P	50 - 175
2021684	HF183-qPCR	63.8		P	50 - 175
2021685	HF183-qPCR	63.3		P	50 - 175
2025198	HF183-qPCR	96.2		P	50 - 175
2027905	HF183-qPCR	75.8		P	50 - 175
2028725	HF183-qPCR	91.8		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P353091

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020384	HF183-qPCR	92.8		P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P353091

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020384	GULL2-qPCR	80.8		P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P353092

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020384	GFD-purified-qPCR	148		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P353091

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020384	BacR-qPCR	54.3		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P351475

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020412	Chlorophyll-a, Corrected	1.82	Sample	P	0 - 25
2020412	Chlorophyll-a, Uncorrected	1.06	Sample	P	0 - 25
2020412	Phaeophytin-a	3.40	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P352672

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021428	HF183-qPCR	10.2	Spike	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P353091

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2022097	HF183-qPCR	11.3	Spike	P	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P353092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: SOP-PCR-1.3
 Batch ID: P353092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2026792	GFD-purified-qPCR	12.7	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
 Batch ID: P353091

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2022097	BacR-qPCR	2.98	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: 2020384
 Field Sample ID: G2CE0157

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	105	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	102	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	90.9	P	50 - 300

Lab Sample ID: 2020386
 Field Sample ID: G2CE0143

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	92.2	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	85.8						1.82	
	Chlorophyll-a, Uncorrected							1.06	
	Phaeophytin-a							3.40	
SOP-PCR-1.0	HF183-qPCR	111	93.0	96.2	75.8	65.7			10.2
				83.8					
	HF183-qPCR	129	115	92.8					11.3
SOP-PCR-1.2	GULL2-qPCR	99.2	103	80.8					
SOP-PCR-1.3	GFD-purified-qPCR	41.0	131	148					12.7
SOP-PCR-1.4	BacR-qPCR	162	91.4	54.3					2.98

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 1603 / E1031026	Escherichia coli by membrane filter method by ERD Laboratory	2020374, 2020375, 2020376, 2020377, 2020378, 2020379, 2020380

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2020381, 2020382
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2020384, 2020386
SOP-PCR-1.2 / E31780	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2020384
SOP-PCR-1.3 / E31780	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2020384
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2020384
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	2020383, 2020384, 2020385, 2020386

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 1603	08/27/2018	08/27/2018 14:10		08/28/2018 15:00	Environmental Research & Design, Inc.	2020374, 2020375, 2020376, 2020377, 2020378, 2020379, 2020380
SM 10200 H (mod.)	08/28/2018	08/28/2018 14:05	Mariam Hanna	09/06/2018 09:35	Carina A. Tull	2020381, 2020382
SOP-PCR-1.0	08/28/2018	08/28/2018 14:00	Sarah Menz	09/07/2018 11:00	Sarah Menz	2020384
	08/28/2018	08/28/2018 14:00	Sarah Menz	10/08/2018 13:26	Mailin Lopez	2020386
SOP-PCR-1.2	08/28/2018	08/28/2018 14:00	Sarah Menz	09/10/2018 13:07	Sarah Menz	2020384
SOP-PCR-1.3	08/28/2018	08/28/2018 14:00	Sarah Menz	09/21/2018 12:01	Sarah Menz	2020384
SOP-PCR-1.4	08/28/2018	08/28/2018 14:00	Sarah Menz	09/07/2018 15:36	Sarah Menz	2020384
SOP-PCR-4.0	08/28/2018	08/28/2018 14:00	Angela Smith	10/05/2018 13:59	Sarah Menz	2020383, 2020384, 2020385, 2020386