

Biological Analysis Report

SE-DIST-2018-01-25-01

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.
571 NW Mercantile Pl. Ste. 111
Port St. Lucie, FL 34986
DOH Accreditation E86562

Event Description: **SMP- Okeechobee Run**
Request ID: **RQ-2018-01-15-46**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Matthew Sewell

For additional information please contact
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J. Marshall Faircloth - Aquatic Toxicology
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Certified by: Puja Jasrotia,

Date Certified: 07-MAR-2018 16:24



NON-CONFORMANCE REPORT INCLUDED

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: Otter Creek @ 441

Collection Date/Time: 01/24/2018 10:00

Field ID: G1SE0003

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1962102	SOP-PCR-1.0	HF183-qPCR**	280	U	GEU/100 mL	P340022	
	SOP-PCR-1.4	BacR-qPCR**	2.24E+05		TSC/100 mL	P340022	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1962109	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	3080		MPN/100 mL		

Ref. Method and Comment:

SOP-PCR-1.0: No amplification of HF183 marker. Precision data unavailable for Analysis Batch A82377.

SOP-PCR-1.4: Precision data unavailable for Analysis Batch A82382.

Sample Location: Otter Creek @ 68

Collection Date/Time: 01/24/2018 10:15

Field ID: G1SE0009

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1962103	SOP-PCR-1.0	HF183-qPCR**	120	T	GEU/100 mL	P340022	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1962110	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	8160		MPN/100 mL		

Sample Location: Taylor Creek @ 441

Collection Date/Time: 01/24/2018 10:40

Field ID: G1SE0008

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1962094	SM 10200 H (mod.)	Chlorophyll-a, Corrected	50		ug/L	P339320	
		Phaeophytin-a	4.6		ug/L	P339320	
		Chlorophyll-a, Uncorrected	54		ug/L	P339320	
1962104	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1962111	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	10.0		MPN/100 mL		

Sample Location: Popash @ 70

Collection Date/Time: 01/24/2018 11:15

Field ID: G1SE0007

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1962096	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.5		ug/L	P339320	
		Phaeophytin-a	3.2		ug/L	P339320	
		Chlorophyll-a, Uncorrected	5.6		ug/L	P339320	
1962113	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	288		MPN/100 mL		

Sample Location: Taylor Creek @ 70

Collection Date/Time: 01/24/2018 12:15

Field ID: G1SE0004

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1962095	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.0		ug/L	P339320	
		Phaeophytin-a	4.2		ug/L	P339320	
		Chlorophyll-a, Uncorrected	8.8		ug/L	P339320	
1962105	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1962112	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	199		MPN/100 mL		

Sample Location: Mosquito Creek @ 70

Collection Date/Time: 01/24/2018 12:45

Field ID: G1SE0010

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1962106	SOP-PCR-1.0	HF183-qPCR**	33	T	GEU/100 mL	P340022	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1962114	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	932		MPN/100 mL		

Sample Location: Mosquito Creek @ 710

Collection Date/Time: 01/24/2018 13:00

Field ID: G1SE0005

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1962107	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1962115	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	309		MPN/100 mL		

Sample Location: Site in Nubbin Slough

Collection Date/Time: 01/24/2018 13:30

Field ID: G1SE0002

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1962099	SM 10200 H (mod.)	Chlorophyll-a, Corrected	13		ug/L	P339320	
		Phaeophytin-a	3.1		ug/L	P339320	
		Chlorophyll-a, Uncorrected	15		ug/L	P339320	
1962108	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1962116	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	332		MPN/100 mL		

Sample Location: Henry Creek @ 710

Collection Date/Time: 01/24/2018 14:00

Field ID: G1SE0001

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1962117	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	350		MPN/100 mL		

Sample Location: Lettuce Creek @ 710

Collection Date/Time: 01/24/2018 14:20

Field ID: G1SE0006

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1962118	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	712		MPN/100 mL		

Non-Conformance Report

NCR ID: 6886

Event(s)

Job(s)

Sample(s)

Test(s)

SE-DIST-2018-01-25-01
 SE-DIST-2018-01-25-01
 SE-DIST-2018-01-25-01
 SE-DIST-2018-01-25-01

TLH-2018-01-25-39
 TLH-2018-01-25-39
 TLH-2018-01-25-39
 TLH-2018-01-25-39

1962034
 1962035
 1962040
 1962049

NCR Type: CUSTODY

NCR Category: General

Observation: Samples stored at room temperature overnight on 01/25/2018 because of an oversight. Samples require refrigeration for proper preservation.

Resolution: Samples were returned to the refrigerator in the afternoon on 01/26/2018. All affected analyses performed after 01/25/2018 were Y qualified.

Authorized by/Date: Colin Wright 2/28/2018

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry Colin Wright (850) 245-8085
Biology Cheryl Swanson (850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P339320

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: P340022

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

Reference Method: SOP-PCR-1.4
Batch ID: P340022

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: P339320

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	112		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P340022

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	117	124	P/P	50 - 175
HF183-qPCR	110	111	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P340022

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	108	91.1	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P340022

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-1.0
Batch ID: P340022

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1959971	HF183-qPCR	111		P	50 - 175
1961507	HF183-qPCR	103		P	50 - 175
1961508	HF183-qPCR	109		P	50 - 175
1961601	HF183-qPCR	121		P	50 - 175
1961840	HF183-qPCR	104		P	50 - 175
1961841	HF183-qPCR	99.5		P	50 - 175
1962102	HF183-qPCR	72.9		P	50 - 175
1962103	HF183-qPCR	92.8		P	50 - 175
1962106	HF183-qPCR	87.9		P	50 - 175
1963115	HF183-qPCR	94.8		P	50 - 175
1963116	HF183-qPCR	101		P	50 - 175
1968122	HF183-qPCR	98.0		P	50 - 175
1968560	HF183-qPCR	98.7	118	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P340022

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1961840	BacR-qPCR	111		P	50 - 175
1961841	BacR-qPCR	84.0		P	50 - 175
1962102	BacR-qPCR	87.2		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P339320

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1962024	Chlorophyll-a, Corrected	3.16	Sample	P	0 - 25
1962024	Chlorophyll-a, Uncorrected	0.753	Sample	P	0 - 25
1962024	Phaeophytin-a	11.8	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P340022

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1968560	HF183-qPCR	17.8	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: 1962102
Field Sample ID: G1SE0003

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
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Quality Assurance Report Surrogates

Lab Sample ID: 1962102
Field Sample ID: G1SE0003

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	169	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	182	P	50 - 300

Lab Sample ID: 1962103
Field Sample ID: G1SE0009

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	90.3	P	50 - 300

Lab Sample ID: 1962106
Field Sample ID: G1SE0010

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	101	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	112							3.16	
	Chlorophyll-a, Uncorrected								0.753	
	Phaeophytin-a								11.8	
SOP-PCR-1.0	HF183-qPCR	117	111	110	98.0	111	103			17.8
		124			109					
SOP-PCR-1.4	BacR-qPCR	91.1	108		111	84.0	87.2			

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1962094, 1962095, 1962096, 1962099
SM 9223 Quanti-Tray / E86562	Escherichia coli by Colilert 18 Quanti-Tray method by FlowersOverflow Laboratory for Southeast District	1962109, 1962110, 1962111, 1962112, 1962113, 1962114, 1962115, 1962116, 1962117, 1962118
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1962102, 1962103, 1962106
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1962102
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1962102, 1962103, 1962104, 1962105, 1962106, 1962107, 1962108

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	01/25/2018	01/25/2018 12:53	Cathy Sherrer	02/05/2018	Jennifer Mihalic	1962094, 1962095, 1962096, 1962099
SM 9223 Quanti-Tray	01/24/2018	01/24/2018 15:30		01/25/2018 11:45	Flowers-PSL	1962109, 1962110, 1962111, 1962112, 1962113, 1962114, 1962115, 1962116, 1962117, 1962118
SOP-PCR-1.0	01/25/2018	01/25/2018 14:30	Angela Smith	02/21/2018	Sarah Menz	1962103, 1962106
	01/25/2018	01/25/2018 14:30	Angela Smith	02/28/2018	Sarah Menz	1962102
SOP-PCR-1.4	01/25/2018	01/25/2018 14:30	Angela Smith	03/01/2018	Sarah Menz	1962102
SOP-PCR-4.0	01/25/2018	01/25/2018 14:30	Mailin Lopez	02/15/2018	Puja Jasrotia	1962102, 1962103, 1962104, 1962105, 1962106, 1962107, 1962108