

Biological Analysis Report

SE-DIST-2018-02-01-01

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- Fort Pierce Run**
Request ID: **RQ-2018-01-29-61**
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
Cheryl Swanson - Administrator
J. Marshall Faircloth - Aquatic Toxicology
Jacqueline Savage - Bench Biology
Jacqueline Savage - Microbiology
Puja Jasrotia, Ph.D. - Molecular Biology
Jennifer Walters - Taxonomy (Invertebrate & Algal)
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 22-MAR-2018 09:29



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: C-25 Canal West @ Godwin

Collection Date/Time: 01/31/2018 10:00

Field ID: G2SE0001

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963632	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.0		ug/L	P339738	
		Phaeophytin-a	1.3		ug/L	P339738	
		Chlorophyll-a, Uncorrected	3.9		ug/L	P339738	
1963641	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	10.0	U	MPN/100 mL		

Sample Location: Fort Pierce Farms Canal @ Taylor Dairy

Collection Date/Time: 01/31/2018 10:40

Field ID: G2SE0002

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963631	SM 10200 H (mod.)	Chlorophyll-a, Corrected	18		ug/L	P339738	
		Phaeophytin-a	3.9		ug/L	P339738	
		Chlorophyll-a, Uncorrected	21		ug/L	P339738	
1963640	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	63.0		MPN/100 mL		

Sample Location: Moores Creek @ 7th

Collection Date/Time: 01/31/2018 11:05

Field ID: G2SE0021

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963634	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.3		ug/L	P339738	
		Phaeophytin-a	2.6		ug/L	P339738	
		Chlorophyll-a, Uncorrected	3.9		ug/L	P339738	
1963638	SOP-PCR-1.0	HF183-qPCR**	24	T	GEU/100 mL	P340391	
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1963642	Enterolert/QT	Enterococci-Quanti-Tray	207		MPN/100 mL		

Sample Location: Moores Creek @ 2nd

Collection Date/Time: 01/31/2018 11:30

Field ID: G2SE0023

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963635	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.2	I	ug/L	P339738	
		Phaeophytin-a	0.82	I	ug/L	P339738	
		Chlorophyll-a, Uncorrected	1.8		ug/L	P339738	
1963639	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1963643	Enterolert/QT	Enterococci-Quanti-Tray	10.0	U	MPN/100 mL		

Sample Location: South IRL @ Melody Lane Pier

Collection Date/Time: 01/31/2018 12:00

Field ID: G2SE0015

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963633	SM 10200 H (mod.)	Chlorophyll-a, Corrected	4.2		ug/L	P339738	
		Phaeophytin-a	2.1		ug/L	P339738	
		Chlorophyll-a, Uncorrected	5.6		ug/L	P339738	

Sample Location: Five-mile Creek @ Okeechobee

Collection Date/Time: 01/31/2018 13:30

Field ID: G2SE0018

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963637	SM 10200 H (mod.)	Chlorophyll-a, Corrected	5.7		ug/L	P339548	
		Phaeophytin-a	2.2		ug/L	P339548	
		Chlorophyll-a, Uncorrected	7.2		ug/L	P339548	
1963645	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	201		MPN/100 mL		

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: Ten-mile Creek @ Gordy

Collection Date/Time: 01/31/2018 14:00

Field ID: G2SE0019

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963636	SM 10200 H (mod.)	Chlorophyll-a, Corrected	16		ug/L	P339548	
		Phaeophytin-a	2.0		ug/L	P339548	
		Chlorophyll-a, Uncorrected	17		ug/L	P339548	
1963644	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	317		MPN/100 mL		

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P339548

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: SM 10200 H (mod.)

Batch ID: P339738

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: P340391

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)

Batch ID: P339548

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	115		P	84 - 116

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P339738

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

Reference Method: SOP-PCR-1.0
Batch ID: P340391

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	138	113	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P340391

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1960726	HF183-qPCR	102		P	50 - 175
1963638	HF183-qPCR	94.3		P	50 - 175
1964775	HF183-qPCR	89.7		P	50 - 175
1964776	HF183-qPCR	71.2		P	50 - 175
1964919	HF183-qPCR	82.4		P	50 - 175
1965315	HF183-qPCR	86.0		P	50 - 175
1965316	HF183-qPCR	96.5		P	50 - 175
1965318	HF183-qPCR	81.8		P	50 - 175
1965319	HF183-qPCR	93.1		P	50 - 175
1966062	HF183-qPCR	93.4	88.9	P/P	50 - 175
1966298	HF183-qPCR	88.9		P	50 - 175
1967544	HF183-qPCR	112		P	50 - 175
1969521	HF183-qPCR	87.3		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P339548

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963665	Chlorophyll-a, Corrected	11.3	Sample	P	0 - 25
1963665	Chlorophyll-a, Uncorrected	11.1	Sample	P	0 - 25

Reference Method: SM 10200 H (mod.)
Batch ID: P339738

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963527	Chlorophyll-a, Corrected	2.18	Sample	P	0 - 25
1963527	Chlorophyll-a, Uncorrected	2.22	Sample	P	0 - 25
1963527	Phaeophytin-a	4.44	Sample	P	0 - 25

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P340391

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1966062	HF183-qPCR	5.00	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: 1963638
Field Sample ID: G2SE0021

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	99.3	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
				LCS				
SM 10200 H (mod.)	Chlorophyll-a, Corrected	115					11.3	
	Chlorophyll-a, Corrected	112					2.18	
	Chlorophyll-a, Uncorrected						11.1	
	Chlorophyll-a, Uncorrected						2.22	
	Phaeophytin-a						4.44	
SOP-PCR-1.0	HF183-qPCR	113	138	87.3	102	88.9		5.00
				112				

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
Enterolert/QT / E86562	Enterococci by Enterolert Quanti-Tray method by Flowers Overflow Laboratory for Southeast District	1963642, 1963643
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1963631, 1963632, 1963633, 1963634, 1963635, 1963636, 1963637
SM 9223 Quanti-Tray / E86562	Escherichia coli by Colilert 18 Quanti-Tray method by FlowersOverflow Laboratory for Southeast District	1963640, 1963641, 1963644, 1963645
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1963638
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1963638, 1963639

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	01/31/2018	01/31/2018 15:15		02/01/2018 15:55	Flowers-PSL	1963642, 1963643
SM 10200 H (mod.)	02/01/2018	02/01/2018 13:04	Cathy Sherrer	02/07/2018	Jennifer Mihalic	1963631, 1963632, 1963633, 1963634, 1963635, 1963636, 1963637
SM 9223 Quanti-Tray	01/31/2018	01/31/2018 15:25		02/01/2018 10:00	Flowers-PSL	1963640, 1963641, 1963644, 1963645
SOP-PCR-1.0	02/01/2018	02/01/2018 12:30	Angela Smith	02/28/2018	Sarah Menz	1963638
SOP-PCR-4.0	02/01/2018	02/01/2018 12:30	Angela Smith	02/27/2018	Puja Jasrotia	1963638, 1963639