

Biological Analysis Report

SE-DIST-2017-07-21-01

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-G2 Martin**
Request ID: **RQ-2017-07-17-13**
Customer: **SE-DIST**
Project ID: **SMP**

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Date Certified: 01-SEP-2017 12:44



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: South Fork St.Lucie @ Halpatiokee

Collection Date/Time: 07/20/2017 14:30

Field ID: G2SE0015

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915396	SM 10200 H (mod.)	Chlorophyll-a, Corrected	8.6		ug/L	P329353	
		Phaeophytin-a	1.6		ug/L	P329353	
		Chlorophyll/Phaeophytin Ratio	1.6			P329353	
		Chlorophyll-a, Uncorrected	9.8		ug/L	P329353	

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: South Fork St.Lucie near Leighton Park

Collection Date/Time: 07/20/2017 15:00

Field ID: G2SE0013

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915402	SM 10200 H (mod.)	Chlorophyll-a, Corrected	45.2		ug/L	P329353	
		Phaeophytin-a	6.4		ug/L	P329353	
		Chlorophyll/Phaeophytin Ratio	1.6			P329353	
		Chlorophyll-a, Uncorrected	50.6		ug/L	P329353	
1915411	Enterolert/QT	Enterococci-Quanti-Tray	20.0		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: Danforth Creek @ Martin Hwy

Collection Date/Time: 07/20/2017 15:15

Field ID: G2SE0018

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915398	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.0		ug/L	P329353	
		Phaeophytin-a	2.1		ug/L	P329353	
		Chlorophyll/Phaeophytin Ratio	1.5			P329353	
		Chlorophyll-a, Uncorrected	7.4		ug/L	P329353	
1915407	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	89.6		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: Bessey Creek @ Murphy Rd

Collection Date/Time: 07/20/2017 15:45

Field ID: G2SE0017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915403	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.1		ug/L	P329353	
		Phaeophytin-a	1.5		ug/L	P329353	
		Chlorophyll/Phaeophytin Ratio	1.6			P329353	
		Chlorophyll-a, Uncorrected	7.2		ug/L	P329353	
1915412	Enterolert/QT	Enterococci-Quanti-Tray	169		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: St.Lucie North Fork @ Veterans Park

Collection Date/Time: 07/20/2017 11:00

Field ID: G2SE0007

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915400	SM 10200 H (mod.)	Chlorophyll-a, Corrected	31.5		ug/L	P329353	
		Phaeophytin-a	10.2		ug/L	P329353	
		Chlorophyll/Phaeophytin Ratio	1.5			P329353	
		Chlorophyll-a, Uncorrected	38.9		ug/L	P329353	
1915405	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1915409	Enterolert/QT	Enterococci-Quanti-Tray	31.0		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: Roebuck Creek @ Locks Rd

Collection Date/Time: 07/20/2017 12:10

Field ID: G2SE0029

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915399	SM 10200 H (mod.)	Chlorophyll-a, Corrected	1.0	I	ug/L	P329353	
		Phaeophytin-a	0.40	U	ug/L	P329353	
		Chlorophyll/Phaeophytin Ratio	1.5			P329353	
		Chlorophyll-a, Uncorrected	1.3		ug/L	P329353	
1915408	Enterolert/QT	Enterococci-Quanti-Tray	405		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: Manatee Pocket, Port Salerno

Collection Date/Time: 07/20/2017 13:20

Field ID: G2SE0012

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915397	SM 10200 H (mod.)	Chlorophyll-a, Corrected	36.1		ug/L	P329353	
		Phaeophytin-a	7.1		ug/L	P329353	
		Chlorophyll/Phaeophytin Ratio	1.6			P329353	
		Chlorophyll-a, Uncorrected	41.6		ug/L	P329353	

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: South Fork St.Lucie @ Hosford Park

Collection Date/Time: 07/20/2017 13:50

Field ID: 28010478

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1915401	SM 10200 H (mod.)	Chlorophyll-a, Corrected	5.7		ug/L	P329353	
		Phaeophytin-a	2.5		ug/L	P329353	
		Chlorophyll/Phaeophytin Ratio	1.5			P329353	
		Chlorophyll-a, Uncorrected	7.4		ug/L	P329353	
1915406	SOP-PCR-1.0	HF183-qPCR**	190	U	GEU/100 mL	P330613	LCS
	SOP-PCR-1.4	BacR-qPCR**	1.7E+04	J	TSC/100 mL	P330613	LCS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1915410	Enterolert/QT	Enterococci-Quanti-Tray	235		MPN/100 mL		

Field ID: 28010478

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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. SOP-PCR-1.0: No amplification of HF183 marker. SOP-PCR-1.4: Quality control failure(s) observed. See QA report for details.							

Quality Assurance Report
Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P329353

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: P330613

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

Reference Method: SOP-PCR-1.4
Batch ID: P330613

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: P329353

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	107		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P330613

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	117	3.57	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P330613

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	72.4	604	P/F	50 - 175

Quality Assurance Report
Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P330613

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1913976	HF183-qPCR	102		P	50 - 175
1915406	HF183-qPCR	93.5		P	50 - 175
1915693	HF183-qPCR	95.2		P	50 - 175
1922795	HF183-qPCR	75.9		P	50 - 175
1922796	HF183-qPCR	92.0		P	50 - 175
1922809	HF183-qPCR	58.9		P	50 - 175
1923589	HF183-qPCR	108		P	50 - 175
1923590	HF183-qPCR	74.6		P	50 - 175
1923820	HF183-qPCR	83.5		P	50 - 175
1923821	HF183-qPCR	90.4		P	50 - 175
1923822	HF183-qPCR	73.8	68.0	P/P	50 - 175
1924464	HF183-qPCR	115		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P330613

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1915406	BacR-qPCR	61.3		P	50 - 175
1915693	BacR-qPCR	82.9		P	50 - 175
1923821	BacR-qPCR	68.9		P	50 - 175
1923822	BacR-qPCR	61.4	52.1	P/P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P329353

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1915347	Chlorophyll/Phaeophytin Ratio	0.0	Sample	P	0 - 25
1915347	Chlorophyll-a, Corrected	2.74	Sample	P	0 - 25
1915347	Chlorophyll-a, Uncorrected	2.90	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P330613

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1923822	HF183-qPCR	8.22	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P330613

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1923822	BacR-qPCR	16.8	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: 1915406
Field Sample ID: 28010478

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	72.1	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	61.4	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll/Phaeophytin Ratio							0.0	
	Chlorophyll-a, Corrected	107						2.74	
	Chlorophyll-a, Uncorrected							2.90	
SOP-PCR-1.0	HF183-qPCR	3.57	117	75.9	92.0	58.9			8.22
SOP-PCR-1.4	BacR-qPCR	604	72.4	68.9	61.4	52.1			16.8
				61.3					

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	1915408, 1915409, 1915410, 1915411, 1915412
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1915396, 1915397, 1915398, 1915399, 1915400, 1915401, 1915402, 1915403
SM 9223 Quanti-Tray / E86562	Escherichia coli by Colilert 18 Quanti-Tray method by FlowersOverflow Laboratory for Southeast District	1915407
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1915406
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	1915406
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1915405, 1915406

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	07/20/2017			07/20/2017 16:45	Flowers-PSL	1915408, 1915409, 1915410, 1915411, 1915412
SM 10200 H (mod.)	07/21/2017	07/21/2017 12:45	Morgan Lane	07/28/2017	Kim M. Spencer	1915396, 1915397, 1915398, 1915399, 1915400, 1915401, 1915402, 1915403
SM 9223 Quanti-Tray	07/20/2017			07/20/2017 17:05	Flowers-PSL	1915407
SOP-PCR-1.0	07/21/2017	07/21/2017 12:00	Puja Jasrotia	08/28/2017	Puja Jasrotia	1915406
SOP-PCR-1.4	07/21/2017	07/21/2017 12:00	Puja Jasrotia	08/30/2017	Sarah Menz	1915406
SOP-PCR-4.0	07/21/2017	07/21/2017 12:00	Avril Wood	08/25/2017	Puja Jasrotia	1915405, 1915406