

Biological Analysis Report

SE-DIST-2017-02-21-01

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 Jupiter Run**
Request ID: **RQ-2017-02-20-09**
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

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Certified by: Daisys Matthews,

Date Certified: 04-APR-2017 11:21

A handwritten signature in cursive script, reading "D Matthews", written in dark ink.

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-24 CANAL @ PSL BLVD.

Collection Date/Time: 02/20/2017 10:50

Field ID: G2SE0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1873933	SM 10200 H (mod.)	Chlorophyll-a, Corrected	14		ug/L	P320529	
		Phaeophytin-a	2.5		ug/L	P320529	
		Chlorophyll/Phaeophytin Ratio	1.6			P320529	
		Chlorophyll-a, Uncorrected	16		ug/L	P320529	
1873937	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1873944	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	16.1		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: SW FORK LOX @ LOXAHATCHEE RIVER RD.

Collection Date/Time: 02/20/2017 12:10

Field ID: G2SE0023

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1873931	SM 10200 H (mod.)	Chlorophyll-a, Corrected	8.0		ug/L	P320529	
		Phaeophytin-a	3.6		ug/L	P320529	
		Chlorophyll/Phaeophytin Ratio	1.5			P320529	
		Chlorophyll-a, Uncorrected	10		ug/L	P320529	
1873935	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1873940	Enterolert/QT	Enterococci-Quanti-Tray	31.0		MPN/100 mL		
1873942	SM 9222 D	Fecal Coliforms-Membrane Filter	22.0	B	cfu/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: TIDAL CREEK TO LOX

Collection Date/Time: 02/20/2017 12:30

Field ID: G2SE0027

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1873929	SM 10200 H (mod.)	Chlorophyll-a, Corrected	4.8		ug/L	P320529	
		Phaeophytin-a	0.98	I	ug/L	P320529	
		Chlorophyll/Phaeophytin Ratio	1.6			P320529	
		Chlorophyll-a, Uncorrected	5.5		ug/L	P320529	
1873934	SOP-PCR-1.0	HF183-qPCR**	67	T	GEU/100 mL	P321084	LCS, MS
	SOP-PCR-4.0	HF183 - Human Source Marker**	Above Threshold				
1873938	Enterolert/QT	Enterococci-Quanti-Tray	448		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: NORTH FORK LOX @ COUNTY LINE

Collection Date/Time: 02/20/2017 13:10

Field ID: G2SE0021

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1873932	SM 10200 H (mod.)	Chlorophyll-a, Corrected	11		ug/L	P320529	
		Phaeophytin-a	2.2		ug/L	P320529	
		Chlorophyll/Phaeophytin Ratio	1.6			P320529	

Field ID: G2SE0021

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1873932	SM 10200 H (mod.)	Chlorophyll-a, Uncorrected	13		ug/L	P320529	
1873936	SOP-PCR-4.0	HF183 - Human Source Marker**	Below Threshold				
1873941	Enterolert/QT	Enterococci-Quanti-Tray	31.0		MPN/100 mL		
1873943	SM 9222 D	Fecal Coliforms-Membrane Filter	104		cfu/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: NORTH FORK UPPER LOX

Collection Date/Time: 02/20/2017 13:50

Field ID: G2SE0020

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1873930	SM 10200 H (mod.)	Chlorophyll-a, Corrected	25		ug/L	P320529	
		Phaeophytin-a	2.3		ug/L	P320529	
		Chlorophyll/Phaeophytin Ratio	1.6			P320529	
		Chlorophyll-a, Uncorrected	27		ug/L	P320529	
1873939	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	36.8		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: HENDERSON POND

Collection Date/Time: 02/20/2017 15:00

Field ID: G2SE0010

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1873979	SM 10200 H (mod.)	Chlorophyll-a, Corrected	6.0		ug/L	P320529	
		Phaeophytin-a	2.1		ug/L	P320529	
		Chlorophyll/Phaeophytin Ratio	1.5			P320529	
		Chlorophyll-a, Uncorrected	7.4		ug/L	P320529	

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: P320529

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: P321084

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: P320529

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	95.8		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P321084

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	42.3	97.2	F/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P321084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1873069	HF183-qPCR	64.1		P	50 - 175
1873070	HF183-qPCR	56.9		P	50 - 175
1873071	HF183-qPCR	61.4		P	50 - 175
1873934	HF183-qPCR	66.8		P	50 - 175
1878102	HF183-qPCR	72.6		P	50 - 175
1878103	HF183-qPCR	80.1	70.0	P/P	50 - 175
1878104	HF183-qPCR	66.6	68.3	P/P	50 - 175
1878105	HF183-qPCR	66.3	75.9	P/P	50 - 175
1878106	HF183-qPCR	72.2	82.7	P/P	50 - 175
1879148	HF183-qPCR	23.8		F	50 - 175
1879149	HF183-qPCR	59.1		P	50 - 175
1879150	HF183-qPCR	51.2		P	50 - 175
1879151	HF183-qPCR	82.7		P	50 - 175

Quality Assurance Report Precision

Reference Method: SOP-PCR-1.0
Batch ID: P321084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1878104	HF183-qPCR	2.43	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: 1873934
Field Sample ID: G2SE0027

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	81.2	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	95.8						
SOP-PCR-1.0	HF183-qPCR	97.2	42.3	66.6	68.3	59.1		2.43
				51.2				

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	1873938, 1873940, 1873941
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, phaeophytin and ratio by spectrophotometry	1873929, 1873930, 1873931, 1873932, 1873933, 1873979
SM 9222 D / E86562	Fecal coliforms by membrane filter method by Flowers Overflow Laboratory for SED	1873942, 1873943
SM 9223 Quanti-Tray / E86562	Escherichia coli by Colilert 18 Quanti-Tray method by FlowersOverflow Laboratory for Southeast District	1873939, 1873944
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	1873934
SOP-PCR-4.0 / E31780	Preparation of Samples by Filtration and held for qPCR Analysis	1873934, 1873935, 1873936, 1873937

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	02/20/2017			02/20/2017 16:15	Flowers-PSL	1873938, 1873940, 1873941
SM 10200 H (mod.)	02/21/2017	02/21/2017 14:00	Carina A. Tull	02/24/2017	Brian Cumbie	1873929, 1873930, 1873931, 1873932, 1873933, 1873979
SM 9222 D	02/20/2017			02/20/2017 16:30	Flowers-PSL	1873942, 1873943
SM 9223 Quanti-Tray	02/20/2017			02/20/2017 16:25	Flowers-PSL	1873939, 1873944
SOP-PCR-1.0	02/21/2017	02/21/2017 14:00	Avril Wood	03/15/2017	Puja Jasrotia	1873934
SOP-PCR-4.0	02/21/2017	02/21/2017 14:00	Avril Wood	03/13/2017	Daisys Matthews	1873934, 1873935, 1873936, 1873937