

Biological Analysis Report

SE-DIST-2019-09-24-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **SMP-Kevin Run**
Request ID: **RQ-2019-09-23-14**
Customer: **SE-DIST**
Project ID: **SMP**

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

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Certified by: Puja Jasrotia, Environmental Manager

Date Certified: 12-NOV-2019 10:13

A handwritten signature in black ink, appearing to be 'Puja Jasrotia', with a horizontal line underneath it.

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, Microbiology and Molecular.

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 by the Florida Department of Health Environmental Laboratory Certification Program 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: Popash Slough @ 67th Dr.

Collection Date/Time: 09/23/2019 10:15

Field ID: G1SE0027

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2121819	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.9	U	ug/L	P371645	
		Phaeophytin-a	4.3	U	ug/L	P371645	
		Chlorophyll-a, Uncorrected	2.9	U	ug/L	P371645	
2121825	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P371086	
	SOP-PCR-1.4	BacR-qPCR**	1.5E+03	U	TSC/100 mL	P371086	LCS
2121863	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	17.3	Q	MPN/100 mL	P371732	

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: Precision data unavailable for Analysis Batch A95022.

SOP-PCR-1.4: Precision data unavailable for Analysis Batch A95062.

SM 9223 Quanti-Tray: Precision data is unavailable due to the high amount of analyte in the QC sample.

Sample Location: L-62 upstream of S-154C

Collection Date/Time: 09/23/2019 10:40

Field ID: G1SE0028

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2121821	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.4	I	ug/L	P371778	
		Phaeophytin-a	1.7	U	ug/L	P371778	
		Chlorophyll-a, Uncorrected	3.4	I	ug/L	P371778	
2121864	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	2.0	Q	MPN/100 mL	P371732	

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.

SM 9223 Quanti-Tray: Precision data is unavailable due to the high amount of analyte in the QC sample.

Sample Location: Lemkin Creek @ 78

Collection Date/Time: 09/23/2019 12:00

Field ID: G1SE0026

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2121820	SM 10200 H (mod.)	Chlorophyll-a, Corrected	22		ug/L	P371645	
		Phaeophytin-a	6.3		ug/L	P371645	
		Chlorophyll-a, Uncorrected	27		ug/L	P371645	
2121826	SOP-PCR-1.0	HF183-qPCR**	140	U	GEU/100 mL	P371086	
	SOP-PCR-1.4	BacR-qPCR**	6.5E+03	I	TSC/100 mL	P371086	LCS
2121862	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	6.3	Q	MPN/100 mL	P371732	

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: Precision data unavailable for Analysis Batch A95022.

SOP-PCR-1.4: Precision data unavailable for Analysis Batch A95062.

SM 9223 Quanti-Tray: Precision data is unavailable due to the high amount of analyte in the QC sample.

Sample Location: Taylor Creek @ 98

Collection Date/Time: 09/23/2019 12:30

Field ID: G1SE0025

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2121822	SM 10200 H (mod.)	Chlorophyll-a, Corrected	94		ug/L	P371778	
		Phaeophytin-a	27		ug/L	P371778	
		Chlorophyll-a, Uncorrected	110		ug/L	P371778	

Field ID: G1SE0025

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2121861	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	816.4	Q	MPN/100 mL	P371732	

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.

SM 9223 Quanti-Tray: Precision data is unavailable due to the high amount of analyte in the QC sample.

Sample Location: L-65 upstream of S-153

Collection Date/Time: 09/23/2019 13:10

Field ID: G1SE0050

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2121823	SM 10200 H (mod.)	Chlorophyll-a, Corrected	43		ug/L	P371778	
		Phaeophytin-a	14		ug/L	P371778	
		Chlorophyll-a, Uncorrected	52		ug/L	P371778	
2121865	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	1.0	UQ	MPN/100 mL	P371732	

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.

SM 9223 Quanti-Tray: Precision data is unavailable due to the high amount of analyte in the QC sample.

Sample Location: Lemkin Creek @ 78

Collection Date/Time: 09/23/2019 12:10

Field ID: EB_09232019

Matrix: W-EQPMT-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2121860	SM 9223 Quanti-Tray	Escherichia Coli-Quanti-Tray	1.0	UQ	MPN/100 mL	P371732	

Ref. Method and Comment:

SM 9223 Quanti-Tray: Laboratory duplicate result is 1.0 U. Precision data is unavailable due to the small amount of analyte in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)

Batch ID: P371645

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.82	U	ug/L
Chlorophyll-a, Uncorrected	0.60	U	ug/L
Phaeophytin-a	0.90	U	ug/L

Reference Method: SM 10200 H (mod.)

Batch ID: P371778

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.82	U	ug/L
Chlorophyll-a, Uncorrected	0.60	U	ug/L
Phaeophytin-a	0.90	U	ug/L

Reference Method: SM 9223 Quanti-Tray

Batch ID: P371732

Component	Result	Code	Units
Escherichia Coli-Quanti-Tray	1.0	U	MPN/100 mL

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.0
Batch ID: P371086

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

Reference Method: SOP-PCR-1.4
Batch ID: P371086

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: P371645

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	102		P	84 - 116

Reference Method: SM 10200 H (mod.)
Batch ID: P371778

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	102		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P371086

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	90.3	130	P/P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P371086

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	105	365	P/F	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P371086

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121620	HF183-qPCR	95.1		P	50 - 175
2121759	HF183-qPCR	112		P	50 - 175
2121825	HF183-qPCR	99.5		P	50 - 175
2121826	HF183-qPCR	104		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P371086

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-1.4
Batch ID: P371086

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121825	BacR-qPCR	79.0		P	50 - 175
2121826	BacR-qPCR	81.1		P	50 - 175
2121874	BacR-qPCR	73.2		P	50 - 175
2121875	BacR-qPCR	74.8		P	50 - 175
2121876	BacR-qPCR	87.9		P	50 - 175
2121877	BacR-qPCR	75.7		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P371645

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121731	Chlorophyll-a, Corrected	5.45	Sample	P	0 - 25
2121731	Chlorophyll-a, Uncorrected	5.11	Sample	P	0 - 25

Reference Method: SM 10200 H (mod.)
Batch ID: P371778

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121974	Chlorophyll-a, Corrected	1.69	Sample	P	0 - 25
2121974	Chlorophyll-a, Uncorrected	2.14	Sample	P	0 - 25

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Surrogates

Lab Sample ID: 2121825
Field Sample ID: G1SE0027

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	83.7	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	92.6	P	50 - 300

Lab Sample ID: 2121826
Field Sample ID: G1SE0026

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	82.3	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	93.7	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision	MS
								SMP	
SM 10200 H (mod.)	Chlorophyll-a, Corrected	102						5.45	
	Chlorophyll-a, Corrected	102						1.69	
	Chlorophyll-a, Uncorrected							5.11	
	Chlorophyll-a, Uncorrected							2.14	
SOP-PCR-1.0	HF183-qPCR	130	90.3	95.1	112	99.5			
				104					
SOP-PCR-1.4	BacR-qPCR	365	105	79.0	81.1	73.2			
				74.8					

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2121819, 2121820, 2121821, 2121822, 2121823
SM 9223 Quanti-Tray / E31780	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2121860, 2121861, 2121862, 2121863, 2121864, 2121865
SOP-PCR-1.0 / E31780	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2121825, 2121826
SOP-PCR-1.4 / E31780	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2121825, 2121826

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	09/24/2019	09/24/2019 14:11	Yuliya Danyuk	09/30/2019 13:05	Carina A. Tull	2121819, 2121820
	09/24/2019	09/24/2019 14:11	Yuliya Danyuk	10/02/2019 09:12	Carina A. Tull	2121821, 2121822, 2121823
SM 9223 Quanti-Tray	09/24/2019	09/24/2019 15:29	Jessica Sherman	09/25/2019 09:36	Carina A. Tull	2121860, 2121861, 2121862, 2121863, 2121864, 2121865
SOP-PCR-1.0	09/24/2019	09/24/2019 14:30	Sarah Menz	10/16/2019 12:17	Lauren Campbell	2121825, 2121826
SOP-PCR-1.4	09/24/2019	09/24/2019 14:30	Sarah Menz	10/18/2019 11:28	Lauren Campbell	2121825, 2121826