

Biological Analysis Report

BSSP-2022-05-11-01

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

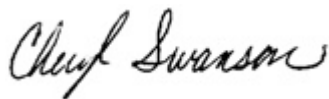
Event Description: **Reference Stream Sampling**
Request ID: **RQ-2022-03-28-10**
Customer: **BSSP**
Project ID: **SCIREF**

Send Reports to:
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Certified by: Cheryl A. Swanson, Program Administrator

Date Certified: 05-AUG-2022 17:45



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, InvertZool, 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: Steinhatchee @ Canal Rd

Collection Date/Time: 05/10/2022 10:40

Field ID: STEINCANAL

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2326116	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.82	U	ug/L	P413993	
		Phaeophytin-a	0.90	U	ug/L	P413993	
		Chlorophyll-a, Uncorrected	0.60	U	ug/L	P413993	
2326118	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	80.4	AQ	MPN/100 mL	P413784	
2326122	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	UJ	TSC/100 mL	P413411	SUR
	SOP-PCR-1.3	GFD-qPCR**	720	U	TSC/100 mL	P415150	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	UJ	TSC/100 mL	P413411	MS

Ref. Method and Comment:

SOP-PCR-1.0: Refer to the Lab Analysis Report for an explanation of QC Codes.

SOP-PCR-1.3: Precision data unavailable for GFD-qPCR component.

SOP-PCR-1.4: Precision data unavailable for BacR-qPCR component. Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: Steinhatchee @ Canal Rd

Collection Date/Time: 05/10/2022 10:40

Field ID: STEINCANAL

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2326120	SOP-IZ06	Stream Condition Index (SCI)**	80		Points	P417170	
		Macroinvert-FW-Qual-DipnetX20-#Taxa-Rep2**	36		# Taxa	P417170	

Sample Location: Rocky Creek @ Woods Rd

Collection Date/Time: 05/10/2022 14:38

Field ID: Rocky Wds Rd

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2326117	SM 10200 H (mod.)	Chlorophyll-a, Corrected	0.82	U	ug/L	P413993	
		Phaeophytin-a	0.90	U	ug/L	P413993	
		Chlorophyll-a, Uncorrected	0.60	U	ug/L	P413993	
2326119	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	34.5	Q	MPN/100 mL	P413784	
2326123	SOP-PCR-1.0	HF183-qPCR**	3.3E+03	U	TSC/100 mL	P413411	
	SOP-PCR-1.3	GFD-qPCR**	720	U	TSC/100 mL	P415150	
	SOP-PCR-1.4	BacR-qPCR**	3.0E+03	U	TSC/100 mL	P413411	

Ref. Method and Comment:

SOP-PCR-1.3: Precision data unavailable for GFD-qPCR component.

SOP-PCR-1.4: Precision data unavailable for BacR-qPCR component.

Sample Location: Rocky Creek @ Woods Rd

Collection Date/Time: 05/10/2022 14:38

Field ID: Rocky Wds Rd

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2326121	SOP-IZ06	Stream Condition Index (SCI)**	70		Points	P417196	
		Macroinvert-FW-Qual-DipnetX20-#Taxa-Rep2**	33		# Taxa	P417196	

Quality Assurance Report

Method Blank Results

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P413993

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.89	U	ug/L
Chlorophyll-a, Uncorrected	0.65	U	ug/L
Phaeophytin-a	0.98	U	ug/L

Reference Method: SM 9223 B Quanti-Tray
Batch ID: P413784

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

Reference Method: SOP-PCR-1.0
Batch ID: P413411

Component	Result	Code	Units
HF183-qPCR	3.3E+03	U	TSC/100 mL

Reference Method: SOP-PCR-1.3
Batch ID: P415150

Component	Result	Code	Units
GFD-qPCR	720	U	TSC/100 mL

Reference Method: SOP-PCR-1.4
Batch ID: P413411

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: P413993

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	89.9		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P413411

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	82.6	74.0	P/P	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P415150

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-qPCR	66.9	64.0	P/P	50 - 175

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P413411

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	68.3	59.3	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0
Batch ID: P413411

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2324765	HF183-qPCR	91.7	93.4	P/P	50 - 175
2324766	HF183-qPCR	88.0		P	50 - 175
2324767	HF183-qPCR	97.9		P	50 - 175
2324768	HF183-qPCR	94.7		P	50 - 175
2324769	HF183-qPCR	98.3		P	50 - 175
2324770	HF183-qPCR	94.7		P	50 - 175
2325456	HF183-qPCR	75.6		P	50 - 175
2325770	HF183-qPCR	80.5		P	50 - 175
2326095	HF183-qPCR	75.4		P	50 - 175
2326096	HF183-qPCR	77.1		P	50 - 175
2326122	HF183-qPCR	86.0		P	50 - 175
2326123	HF183-qPCR	91.5		P	50 - 175

Reference Method: SOP-PCR-1.3
Batch ID: P415150

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2325770	GFD-qPCR	73.9		P	50 - 175
2326122	GFD-qPCR	86.6		P	50 - 175
2326123	GFD-qPCR	83.6		P	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P413411

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2325455	BacR-qPCR	59.0		P	50 - 175
2325456	BacR-qPCR	65.9		P	50 - 175
2325770	BacR-qPCR	53.8		P	50 - 175
2326095	BacR-qPCR	54.3		P	50 - 175
2326096	BacR-qPCR	53.3		P	50 - 175
2326122	BacR-qPCR	47.2		F	50 - 175
2326123	BacR-qPCR	60.1		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P413993

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2326160	Chlorophyll-a, Corrected	12.2	Sample	P	0 - 25

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P413993

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2326160	Chlorophyll-a, Uncorrected	11.0	Sample	P	0 - 25
2326160	Phaeophytin-a	2.50	Sample	P	0 - 25

Reference Method: SM 9223 B Quanti-Tray
Batch ID: P413784

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2326118	Escherichia Coli-Quanti-Tray	20.0	Sample	P	0 - 80

Reference Method: SOP-PCR-1.0
Batch ID: P413411

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2324765	HF183-qPCR	1.82	Spike	P	0 - 25

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

Quality Assurance Report Surrogates

Lab Sample ID: 2326122
Field Sample ID: STEINCANAL

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	36.9	F	50 - 300
SOP-PCR-1.3	SKETA-qPCR	91.4	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	85.2	P	50 - 300

Lab Sample ID: 2326123
Field Sample ID: Rocky Wds Rd

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	52.9	P	50 - 300
SOP-PCR-1.3	SKETA-qPCR	130	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	122	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	89.9					12.2	
	Chlorophyll-a, Uncorrected						11.0	
	Phaeophytin-a						2.50	
SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray						20.0	
SOP-PCR-1.0	HF183-qPCR	74.0	82.6	77.1	86.0	91.5		1.82
				91.7				

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision SMP	MS
SOP-PCR-1.3	GFD-qPCR	64.0	66.9	73.9	86.6	83.6			
SOP-PCR-1.4	BacR-qPCR	59.3	68.3	59.0	65.9	53.8			
				54.3					

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2326116, 2326117
SM 9223 B Quanti-Tray	Escherichia coli by Colilert 18 Quanti-Tray method - non-chlorinated water systems	2326118, 2326119
SOP-IZ06	No. Taxa of FW macroinverts, qual samp, 20 dipnets.	2326120, 2326121
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2326122, 2326123
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2326122, 2326123
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2326122, 2326123

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 10200 H (mod.)	05/11/2022	05/11/2022 14:20	Ethan Wickline	05/17/2022 09:36	Joel Wharton	2326116, 2326117
SM 9223 B Quanti-Tray	05/11/2022	05/11/2022 16:04	Austin Nolan	05/12/2022 10:05	Austin Nolan	2326118, 2326119
SOP-IZ06	05/11/2022	07/20/2022 06:36	Jessica S. Shorter	07/28/2022 08:56	Michael Heyn	2326120
	05/11/2022	07/20/2022 11:58	William T Broome	07/28/2022 08:56	Todd R. Risk	2326121
SOP-PCR-1.0	05/11/2022	05/11/2022 14:22	Claudia Castro	06/07/2022 14:46	Roberta Tatti	2326122, 2326123
SOP-PCR-1.3	05/11/2022	05/11/2022 14:22	Claudia Castro	06/14/2022 09:13	DeAsia Armster	2326122, 2326123
SOP-PCR-1.4	05/11/2022	05/11/2022 14:22	Claudia Castro	06/08/2022 09:27	Roberta Tatti	2326122, 2326123