Chemical Analysis Report

SFWMD-2021-11-16-01

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

Event Description: **SFWMD Bloom Response--As Needed (WPB)**
Request ID: **RQ-2021-09-13-52**
Customer: **SFWMD**
Project ID: **BLOOM-RESP**

Send Reports to:
South Florida Water Management District
SFWMD
8894 Belvedere Rd. B374
West Palm Beach, FL 33411
Attn: Mickael Tompkins

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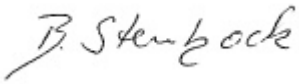
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 19-NOV-2021 18:11



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 group are included in this report: Pesticides.

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: C43 Canal - S77 (Upstream) **Collection Date/Time: 11/15/2021 09:11**

Field ID: C43 Canal - S77 (Upstream) Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2289572	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P406395	
		Cylindrospermopsin	0.10	U	ug/L	P406395	
		Desmethyl microcystin LR	0.25	U	ug/L	P406395	
		Microcystin HilR**	0.25	U	ug/L	P406395	
		Microcystin HtyR**	0.25	U	ug/L	P406395	
		Microcystin LA	0.10	U	ug/L	P406395	
		Microcystin LF	0.10	U	ug/L	P406395	
		Microcystin LR	0.25	U	ug/L	P406395	
		Microcystin LW	0.25	U	ug/L	P406395	
		Microcystin LY	0.10	U	ug/L	P406395	
		Microcystin RR	0.10	U	ug/L	P406395	
		Microcystin WR	0.50	U	ug/L	P406395	
		Microcystin YR	0.25	U	ug/L	P406395	
		Nodularin-R**	0.10	U	ug/L	P406395	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 8321B
Batch ID: P406395

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin HilR	0.25	U	ug/L
Microcystin HtyR	0.25	U	ug/L
Microcystin LA	0.10	U	ug/L
Microcystin LF	0.10	U	ug/L
Microcystin LR	0.25	U	ug/L
Microcystin LW	0.25	U	ug/L
Microcystin LY	0.10	U	ug/L
Microcystin RR	0.10	U	ug/L
Microcystin WR	0.50	U	ug/L
Microcystin YR	0.25	U	ug/L
Nodularin-R	0.10	U	ug/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P406395

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	96.1		P	40 - 150
Cylindrospermopsin	105		P	40 - 150
Desmethyl microcystin LR	111		P	40 - 150
Microcystin HilR	98.6		P	40 - 150
Microcystin HtyR	76.5		P	40 - 150
Microcystin LA	98.7		P	40 - 150
Microcystin LF	117		P	40 - 150
Microcystin LR	94.2		P	40 - 150
Microcystin LW	108		P	40 - 150
Microcystin LY	90.6		P	40 - 150
Microcystin RR	84.8		P	40 - 150
Microcystin WR	72.8		P	40 - 150
Microcystin YR	97.8		P	40 - 150
Nodularin-R	97.6		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P406395

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289572	Anatoxin-a	110	122	P/P	40 - 150
2289572	Cylindrospermopsin	96.0	107	P/P	40 - 150
2289572	Desmethyl microcystin LR	103	116	P/P	40 - 150
2289572	Microcystin HilR	95.5	108	P/P	40 - 150
2289572	Microcystin HtyR	72.0	80.5	P/P	40 - 150
2289572	Microcystin LA	93.3	102	P/P	40 - 150
2289572	Microcystin LF	109	123	P/P	40 - 150
2289572	Microcystin LR	93.5	99.6	P/P	40 - 150
2289572	Microcystin LW	103	109	P/P	40 - 150
2289572	Microcystin LY	86.3	92.1	P/P	40 - 150
2289572	Microcystin RR	77.2	88.8	P/P	40 - 150
2289572	Microcystin WR	66.7	83.4	P/P	40 - 150
2289572	Microcystin YR	94.7	107	P/P	40 - 150
2289572	Nodularin-R	95.4	103	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P406395

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289572	Anatoxin-a	10.5	Spike	P	0 - 30
2289572	Cylindrospermopsin	11.1	Spike	P	0 - 30
2289572	Desmethyl microcystin LR	12.2	Spike	P	0 - 30
2289572	Microcystin HilR	12.3	Spike	P	0 - 30
2289572	Microcystin HtyR	11.1	Spike	P	0 - 30
2289572	Microcystin LA	8.54	Spike	P	0 - 30
2289572	Microcystin LF	11.8	Spike	P	0 - 30
2289572	Microcystin LR	6.37	Spike	P	0 - 30
2289572	Microcystin LW	5.38	Spike	P	0 - 30
2289572	Microcystin LY	6.50	Spike	P	0 - 30
2289572	Microcystin RR	13.9	Spike	P	0 - 30
2289572	Microcystin WR	22.2	Spike	P	0 - 30
2289572	Microcystin YR	12.4	Spike	P	0 - 30
2289572	Nodularin-R	7.92	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2289572
Field Sample ID: C43 Canal - S77 (Upstream)

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	76.6	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	89.0	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 8321B
Run ID: A108983
Included Lab Sample IDs: 2289572

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	115	117	P/P	50 - 160
Cylindrospermopsin	107	110	P/P	60 - 160
Desmethyl microcystin LR	114	109	P/P	60 - 160
Microcystin HilR	101	95.7	P/P	60 - 160
Microcystin HtyR	82.3	78.9	P/P	60 - 160
Microcystin LA	106	101	P/P	50 - 160
Microcystin LF	130	120	P/P	60 - 160
Microcystin LR	99.7	91.4	P/P	60 - 160
Microcystin LW	122	111	P/P	60 - 160
Microcystin LY	98.1	88.7	P/P	60 - 160
Microcystin RR	86.5	88.0	P/P	60 - 160
Microcystin WR	81.4	75.4	P/P	60 - 160
Microcystin YR	98.2	104	P/P	60 - 160
Nodularin-R	102	94.4	P/P	60 - 160

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 8321B	Anatoxin-a	96.1	110	122			10.5
	Cylindrospermopsin	105	96.0	107			11.1
	Desmethyl microcystin LR	111	103	116			12.2
	Microcystin HilR	98.6	95.5	108			12.3
	Microcystin HtyR	76.5	72.0	80.5			11.1
	Microcystin LA	98.7	93.3	102			8.54
	Microcystin LF	117	109	123			11.8
	Microcystin LR	94.2	93.5	99.6			6.37
	Microcystin LW	108	103	109			5.38
	Microcystin LY	90.6	86.3	92.1			6.50
	Microcystin RR	84.8	77.2	88.8			13.9
	Microcystin WR	72.8	66.7	83.4			22.2
	Microcystin YR	97.8	94.7	107			12.4
	Nodularin-R	97.6	95.4	103			7.92

Reference Method Descriptions

Method	Description	Associated Samples
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2289572

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	11/16/2021	11/18/2021 08:00	Manjita Shrestha	11/18/2021 11:23	Manjita Shrestha	2289572