

Chemical Analysis Report

SFWMD-2022-01-26-02

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 (OKEE)**

Request ID: **RQ-2021-08-16-53**

Customer: **SFWMD**

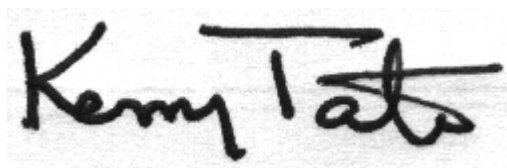
Project ID: **BLOOM-RESP**

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: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 31-JAN-2022 08:55

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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: Lake Okeechobee

Collection Date/Time: 01/24/2022 08:40

Field ID: S308C Lakeside

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2301622	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P408912	
		Cylindrospermopsin	0.10	U	ug/L	P408912	
		Desmethyl microcystin LR	0.25	U	ug/L	P408912	
		Microcystin H1LR**	0.25	U	ug/L	P408912	
		Microcystin HtyR**	0.25	U	ug/L	P408912	
		Microcystin LA	0.10	U	ug/L	P408912	
		Microcystin LF	0.10	U	ug/L	P408912	
		Microcystin LR	0.25	U	ug/L	P408912	
		Microcystin LW	0.25	U	ug/L	P408912	
		Microcystin LY	0.10	U	ug/L	P408912	
		Microcystin RR	0.10	U	ug/L	P408912	
		Microcystin WR	0.50	U	ug/L	P408912	
		Microcystin YR	0.25	U	ug/L	P408912	
		Nodularin-R**	0.10	U	ug/L	P408912	

Sample Location: Lake Okeechobee

Collection Date/Time: 01/24/2022 08:50

Field ID: S308C Canalside

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2301623	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P408912	
		Cylindrospermopsin	0.10	U	ug/L	P408912	
		Desmethyl microcystin LR	0.25	U	ug/L	P408912	
		Microcystin HILR**	0.25	U	ug/L	P408912	
		Microcystin HtyR**	0.25	U	ug/L	P408912	
		Microcystin LA	0.10	U	ug/L	P408912	
		Microcystin LF	0.10	U	ug/L	P408912	
		Microcystin LR	0.25	U	ug/L	P408912	
		Microcystin LW	0.25	U	ug/L	P408912	
		Microcystin LY	0.10	U	ug/L	P408912	
		Microcystin RR	0.10	U	ug/L	P408912	
		Microcystin WR	0.50	U	ug/L	P408912	
		Microcystin YR	0.25	U	ug/L	P408912	
		Nodularin-R**	0.10	U	ug/L	P408912	

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P408912

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: P408912

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	77.4		P	40 - 150
Cylindrospermopsin	102		P	40 - 150
Desmethyl microcystin LR	94.2		P	40 - 150
Microcystin HilR	97.2		P	40 - 150
Microcystin HtyR	93.3		P	40 - 150
Microcystin LA	96.8		P	40 - 150
Microcystin LF	81.4		P	40 - 150
Microcystin LR	78.5		P	40 - 150
Microcystin LW	90.1		P	40 - 150
Microcystin LY	90.1		P	40 - 150
Microcystin RR	91.5		P	40 - 150
Microcystin WR	96.3		P	40 - 150
Microcystin YR	102		P	40 - 150
Nodularin-R	79.0		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B

Batch ID: P408912

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2301570	Anatoxin-a	104	100	P/P	40 - 150
2301570	Cylindrospermopsin	123	133	P/P	40 - 150
2301570	Desmethyl microcystin LR	111	113	P/P	40 - 150
2301570	Microcystin HilR	112	114	P/P	40 - 150
2301570	Microcystin HtyR	120	121	P/P	40 - 150
2301570	Microcystin LA	108	114	P/P	40 - 150
2301570	Microcystin LF	120	104	P/P	40 - 150
2301570	Microcystin LR	96.1	97.0	P/P	40 - 150
2301570	Microcystin LW	111	110	P/P	40 - 150
2301570	Microcystin LY	99.0	96.4	P/P	40 - 150
2301570	Microcystin RR	110	110	P/P	40 - 150
2301570	Microcystin WR	111	117	P/P	40 - 150
2301570	Microcystin YR	116	125	P/P	40 - 150
2301570	Nodularin-R	94.1	96.6	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B

Batch ID: P408912

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2301570	Anatoxin-a	3.53	Spike	P	0 - 30
2301570	Cylindrospermopsin	7.60	Spike	P	0 - 30
2301570	Desmethyl microcystin LR	1.91	Spike	P	0 - 30
2301570	Microcystin HiLR	1.62	Spike	P	0 - 30
2301570	Microcystin HtyR	1.20	Spike	P	0 - 30
2301570	Microcystin LA	5.64	Spike	P	0 - 30
2301570	Microcystin LF	14.1	Spike	P	0 - 30
2301570	Microcystin LR	0.889	Spike	P	0 - 30
2301570	Microcystin LW	1.11	Spike	P	0 - 30
2301570	Microcystin LY	2.65	Spike	P	0 - 30
2301570	Microcystin RR	0.397	Spike	P	0 - 30
2301570	Microcystin WR	5.31	Spike	P	0 - 30
2301570	Microcystin YR	7.63	Spike	P	0 - 30
2301570	Nodularin-R	2.60	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2301622
Field Sample ID: S308C Lakeside

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	55.5	P	30 - 160

Lab Sample ID: 2301623
Field Sample ID: S308C Canalside

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	53.1	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A110066

Included Lab Sample IDs: 2301622, 2301623

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	91.8	94.0	P/P	50 - 160
Cylindrospermopsin	129	118	P/P	50 - 160
Desmethyl microcystin LR	110	107	P/P	50 - 160
Microcystin H1R	112	112	P/P	50 - 160
Microcystin HtyR	113	117	P/P	50 - 160
Microcystin LA	100	111	P/P	50 - 160
Microcystin LF	112	110	P/P	50 - 160
Microcystin LR	99.7	96.0	P/P	50 - 160
Microcystin LW	117	109	P/P	50 - 160
Microcystin LY	94.6	101	P/P	50 - 160
Microcystin RR	107	108	P/P	50 - 160
Microcystin WR	109	111	P/P	50 - 160
Microcystin YR	105	112	P/P	50 - 160
Nodularin-R	91.5	92.7	P/P	50 - 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 SMP	MS
			LCS	MS		
EPA 8321B	Anatoxin-a	77.4	104	100		3.53
	Cylindrospermopsin	102	123	133		7.60
	Desmethyl microcystin LR	94.2	111	113		1.91
	Microcystin HILR	97.2	112	114		1.62
	Microcystin HtyR	93.3	120	121		1.20
	Microcystin LA	96.8	108	114		5.64
	Microcystin LF	81.4	120	104		14.1
	Microcystin LR	78.5	96.1	97.0		0.889
	Microcystin LW	90.1	111	110		1.11
	Microcystin LY	90.1	99.0	96.4		2.65
	Microcystin RR	91.5	110	110		0.397
	Microcystin WR	96.3	111	117		5.31
	Microcystin YR	102	116	125		7.63
	Nodularin-R	79.0	94.1	96.6		2.60

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2301622, 2301623

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	01/26/2022	01/27/2022 11:00	Manjita Shrestha	01/27/2022 16:40	Manjita Shrestha	2301622
	01/26/2022	01/27/2022 11:00	Manjita Shrestha	01/27/2022 16:57	Manjita Shrestha	2301623