Chemical Analysis Report

SFWMD-2021-05-25-02

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**
Request ID: **RQ-2021-05-17-66**
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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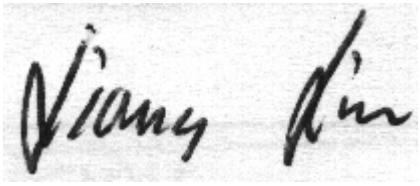
Certified by: Liang Lin, Environmental Administrator

Date Certified: 26-MAY-2021 13:55



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: S77 **Collection Date/Time: 05/24/2021 08:51**

Field ID: S77 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2249739	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P398708	
		Cylindrospermopsin	0.10	U	ug/L	P398708	
		Desmethyl microcystin LR	0.25	U	ug/L	P398708	
		Microcystin HilR**	0.25	U	ug/L	P398708	
		Microcystin HtyR**	0.25	U	ug/L	P398708	
		Microcystin LA	0.10	U	ug/L	P398708	
		Microcystin LF	0.10	U	ug/L	P398708	
		Microcystin LR	0.56	I	ug/L	P398708	
		Microcystin LW	0.25	U	ug/L	P398708	
		Microcystin LY	0.10	U	ug/L	P398708	
		Microcystin RR	0.10	U	ug/L	P398708	
		Microcystin WR	0.50	U	ug/L	P398708	
		Microcystin YR	0.25	U	ug/L	P398708	
		Nodularin-R**	0.10	U	ug/L	P398708	

Sample Location: S79 **Collection Date/Time: 05/24/2021 11:28**

Field ID: S79 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2249740	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P398708	
		Cylindrospermopsin	0.10	U	ug/L	P398708	
		Desmethyl microcystin LR	0.25	U	ug/L	P398708	
		Microcystin HilR**	0.25	U	ug/L	P398708	
		Microcystin HtyR**	0.25	U	ug/L	P398708	
		Microcystin LA	0.10	U	ug/L	P398708	
		Microcystin LF	0.10	U	ug/L	P398708	
		Microcystin LR	0.45	I	ug/L	P398708	
		Microcystin LW	0.25	U	ug/L	P398708	
		Microcystin LY	0.10	U	ug/L	P398708	
		Microcystin RR	0.10	U	ug/L	P398708	
		Microcystin WR	0.50	U	ug/L	P398708	
		Microcystin YR	0.25	U	ug/L	P398708	
		Nodularin-R**	0.10	U	ug/L	P398708	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 8321B
Batch ID: P398708

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: P398708

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	90.8		P	40 - 150
Cylindrospermopsin	96.3		P	40 - 150
Desmethyl microcystin LR	85.4		P	40 - 150
Microcystin HilR	79.3		P	40 - 150
Microcystin HtyR	73.5		P	40 - 150
Microcystin LA	94.0		P	40 - 150
Microcystin LF	93.1		P	40 - 150
Microcystin LR	77.2		P	40 - 150
Microcystin LW	89.4		P	40 - 150
Microcystin LY	83.8		P	40 - 150
Microcystin RR	94.0		P	40 - 150
Microcystin WR	86.1		P	40 - 150
Microcystin YR	70.8		P	40 - 150
Nodularin-R	88.6		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P398708

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249704	Anatoxin-a	88.3	86.4	P/P	40 - 150
2249704	Cylindrospermopsin	90.1	84.5	P/P	40 - 150
2249704	Desmethyl microcystin LR	75.1	80.0	P/P	40 - 150
2249704	Microcystin HilR	80.3	85.6	P/P	40 - 150
2249704	Microcystin HtyR	75.5	69.4	P/P	40 - 150
2249704	Microcystin LA	88.3	89.2	P/P	40 - 150
2249704	Microcystin LF	91.0	86.2	P/P	40 - 150
2249704	Microcystin LR	78.5	71.5	P/P	40 - 150
2249704	Microcystin LW	84.4	85.9	P/P	40 - 150
2249704	Microcystin LY	81.5	80.8	P/P	40 - 150
2249704	Microcystin RR	90.7	88.9	P/P	40 - 150
2249704	Microcystin WR	83.1	77.0	P/P	40 - 150
2249704	Microcystin YR	68.2	71.0	P/P	40 - 150
2249704	Nodularin-R	96.6	99.9	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P398708

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249704	Anatoxin-a	2.22	Spike	P	0 - 30
2249704	Cylindrospermopsin	6.41	Spike	P	0 - 30
2249704	Desmethyl microcystin LR	6.25	Spike	P	0 - 30
2249704	Microcystin HilR	6.31	Spike	P	0 - 30
2249704	Microcystin HtyR	8.39	Spike	P	0 - 30
2249704	Microcystin LA	0.938	Spike	P	0 - 30
2249704	Microcystin LF	5.43	Spike	P	0 - 30
2249704	Microcystin LR	8.94	Spike	P	0 - 30
2249704	Microcystin LW	1.67	Spike	P	0 - 30
2249704	Microcystin LY	0.946	Spike	P	0 - 30
2249704	Microcystin RR	2.01	Spike	P	0 - 30
2249704	Microcystin WR	7.66	Spike	P	0 - 30
2249704	Microcystin YR	3.98	Spike	P	0 - 30
2249704	Nodularin-R	3.41	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2249739
Field Sample ID: S77

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	85.7	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	91.4	P	30 - 160

Lab Sample ID: 2249740
Field Sample ID: S79

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	81.4	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: A105645
Included Lab Sample IDs: 2249739, 2249740

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	103	100	P/P	50 - 160
Cylindrospermopsin	105	109	P/P	50 - 160
Desmethyl microcystin LR	92.6	87.6	P/P	50 - 160
Microcystin HilR	86.6	88.3	P/P	50 - 160
Microcystin HtyR	84.3	84.3	P/P	50 - 160
Microcystin LA	105	107	P/P	50 - 160
Microcystin LF	107	105	P/P	50 - 160
Microcystin LR	83.2	81.5	P/P	50 - 160
Microcystin LW	101	99.3	P/P	50 - 160
Microcystin LY	90.0	93.1	P/P	50 - 160
Microcystin RR	103	104	P/P	50 - 160
Microcystin WR	89.0	87.6	P/P	50 - 160
Microcystin YR	79.6	78.4	P/P	50 - 160
Nodularin-R	97.2	100	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		
					LCS	SMP	MS
EPA 8321B	Anatoxin-a	90.8	88.3	86.4			2.22
	Cylindrospermopsin	96.3	90.1	84.5			6.41
	Desmethyl microcystin LR	85.4	75.1	80.0			6.25
	Microcystin HilR	79.3	80.3	85.6			6.31
	Microcystin HtyR	73.5	75.5	69.4			8.39
	Microcystin LA	94.0	88.3	89.2			0.938
	Microcystin LF	93.1	91.0	86.2			5.43
	Microcystin LR	77.2	78.5	71.5			8.94
	Microcystin LW	89.4	84.4	85.9			1.67
	Microcystin LY	83.8	81.5	80.8			0.946
	Microcystin RR	94.0	90.7	88.9			2.01
	Microcystin WR	86.1	83.1	77.0			7.66
	Microcystin YR	70.8	68.2	71.0			3.98
	Nodularin-R	88.6	96.6	99.9			3.41

Reference Method Descriptions

Method	Description	Associated Samples
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2249739, 2249740

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	05/25/2021	05/25/2021 11:30	Pramila Ghimire	05/25/2021 19:42	Pramila Ghimire	2249739
	05/25/2021	05/25/2021 11:30	Pramila Ghimire	05/25/2021 19:59	Pramila Ghimire	2249740