

Chemical Analysis Report

SFWMD-2021-07-20-02

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-2021-06-07-60**
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: Michael Thompson

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Certified by: Colin Wright, Program Administrator

Date Certified: 21-JUL-2021 12:59

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular background.

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 / Pahokee Ramp

Collection Date/Time: 07/19/2021 09:05

Field ID: Lake Okeechobee / Pahokee Ramp

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2263068	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P401153	
		Cylindrospermopsin	0.10	U	ug/L	P401153	
		Desmethyl microcystin LR	0.25	U	ug/L	P401153	
		Microcystin HtIR**	0.25	U	ug/L	P401153	
		Microcystin HtyR**	0.25	U	ug/L	P401153	
		Microcystin LA	0.10	U	ug/L	P401153	
		Microcystin LF	0.10	U	ug/L	P401153	
		Microcystin LR	0.25	U	ug/L	P401153	
		Microcystin LW	0.25	U	ug/L	P401153	
		Microcystin LY	0.10	U	ug/L	P401153	
		Microcystin RR	0.10	U	ug/L	P401153	
		Microcystin WR	0.50	U	ug/L	P401153	
		Microcystin YR	0.25	U	ug/L	P401153	
		Nodularin-R**	0.10	U	ug/L	P401153	

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B

Batch ID: P401153

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: P401153

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	117		P	40 - 150
Cylindrospermopsin	115		P	40 - 150
Desmethyl microcystin LR	106		P	40 - 150
Microcystin HilR	121		P	40 - 150
Microcystin HtyR	115		P	40 - 150
Microcystin LA	120		P	40 - 150
Microcystin LF	124		P	40 - 150
Microcystin LR	117		P	40 - 150
Microcystin LW	130		P	40 - 150
Microcystin LY	114		P	40 - 150
Microcystin RR	121		P	40 - 150
Microcystin WR	125		P	40 - 150
Microcystin YR	130		P	40 - 150
Nodularin-R	124		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B

Batch ID: P401153

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2262551	Anatoxin-a	124	118	P/P	40 - 150
2262551	Cylindrospermopsin	110	101	P/P	40 - 150
2262551	Desmethyl microcystin LR	116	104	P/P	40 - 150
2262551	Microcystin HilR	120	119	P/P	40 - 150
2262551	Microcystin HtyR	119	99.4	P/P	40 - 150
2262551	Microcystin LA	119	106	P/P	40 - 150
2262551	Microcystin LF	117	112	P/P	40 - 150
2262551	Microcystin LR	98.3	111	P/P	40 - 150
2262551	Microcystin LW	115	105	P/P	40 - 150
2262551	Microcystin LY	109	103	P/P	40 - 150
2262551	Microcystin RR	108	103	P/P	40 - 150
2262551	Microcystin WR	120	109	P/P	40 - 150
2262551	Microcystin YR	110	111	P/P	40 - 150
2262551	Nodularin-R	117	108	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 8321B

Batch ID: P401153

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2262551	Anatoxin-a	5.05	Spike	P	0 - 30
2262551	Cylindrospermopsin	8.08	Spike	P	0 - 30
2262551	Desmethyl microcystin LR	11.4	Spike	P	0 - 30
2262551	Microcystin HiIR	0.696	Spike	P	0 - 30
2262551	Microcystin HtyR	17.8	Spike	P	0 - 30
2262551	Microcystin LA	11.0	Spike	P	0 - 30
2262551	Microcystin LF	4.42	Spike	P	0 - 30
2262551	Microcystin LR	11.8	Spike	P	0 - 30
2262551	Microcystin LW	8.71	Spike	P	0 - 30
2262551	Microcystin LY	5.45	Spike	P	0 - 30
2262551	Microcystin RR	4.58	Spike	P	0 - 30
2262551	Microcystin WR	9.34	Spike	P	0 - 30
2262551	Microcystin YR	0.447	Spike	P	0 - 30
2262551	Nodularin-R	7.86	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2263068

Field Sample ID: Lake Okeechobee / Pahokee Ramp

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	88.5	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	70.8	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A106717

Included Lab Sample IDs: 2263068

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	107	104	P/P	50 - 160
Cylindrospermopsin	101	95.9	P/P	50 - 160
Desmethyl microcystin LR	106	85.3	P/P	50 - 160
Microcystin H1R	93.5	101	P/P	50 - 160
Microcystin HtyR	103	95.1	P/P	50 - 160
Microcystin LA	107	106	P/P	50 - 160
Microcystin LF	105	104	P/P	50 - 160
Microcystin LR	96.1	89.6	P/P	50 - 160
Microcystin LW	107	106	P/P	50 - 160
Microcystin LY	102	92.0	P/P	50 - 160
Microcystin RR	97.9	96.9	P/P	50 - 160
Microcystin WR	109	96.1	P/P	50 - 160
Microcystin YR	104	94.1	P/P	50 - 160
Nodularin-R	103	99.3	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			
EPA 8321B	Anatoxin-a	117	124	118		5.05
	Cylindrospermopsin	115	110	101		8.08
	Desmethyl microcystin LR	106	116	104		11.4
	Microcystin HiLR	121	120	119		0.696
	Microcystin HtyR	115	119	99.4		17.8
	Microcystin LA	120	119	106		11.0
	Microcystin LF	124	117	112		4.42
	Microcystin LR	117	98.3	111		11.8
	Microcystin LW	130	115	105		8.71
	Microcystin LY	114	109	103		5.45
	Microcystin RR	121	108	103		4.58
	Microcystin WR	125	120	109		9.34
	Microcystin YR	130	110	111		0.447
	Nodularin-R	124	117	108		7.86

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2263068

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	07/20/2021	07/20/2021 12:00	Pramila Ghimire	07/20/2021 20:00	Pramila Ghimire	2263068