Chemical Analysis Report

CEN-DIST-2024-05-24-04

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Algal Bloom Response - CEROC**
Request ID: **RQ-2024-05-20-42**
Customer: **CEN-DIST**
Project ID: **BLOOM-RESP**

Send Reports to:
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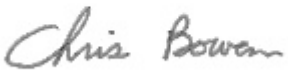
Certified by: Chris Bowen, Environmental Administrator

Date Certified: 29-MAY-2024 08:46



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: Cypress Lake - West Lobe **Collection Date/Time: 05/23/2024 10:20**

Field ID: HABCE0228 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2489062	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P445676	
		Cylindrospermopsin	0.10	U	ug/L	P445675	
		Desmethyl microcystin LR	0.25	U	ug/L	P445675	
		Microcystin HilR	0.25	U	ug/L	P445675	
		Microcystin HtyR	0.25	U	ug/L	P445675	
		Microcystin LA	0.10	U	ug/L	P445675	
		Microcystin LF	0.10	U	ug/L	P445675	
		Microcystin LR	0.25	U	ug/L	P445675	
		Microcystin LW	0.25	U	ug/L	P445675	
		Microcystin LY	0.10	U	ug/L	P445675	
		Microcystin RR	0.10	U	ug/L	P445675	
		Microcystin WR	0.50	U	ug/L	P445675	
		Neosaxitoxin	0.50	U	ug/L	P445676	
		Microcystin YR	0.25	U	ug/L	P445675	
		Saxitoxin	0.50	U	ug/L	P445676	
		Nodularin-R	0.10	U	ug/L	P445675	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 8321B
Batch ID: P445675

Component	Result	Code	Units
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

Reference Method: EPA 8321B
Batch ID: P445676

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Neosaxitoxin	0.50	U	ug/L
Saxitoxin	0.50	U	ug/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P445675

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	88.9		P	40 - 160
Desmethyl microcystin LR	81.5		P	40 - 160
Microcystin HilR	83.5		P	40 - 160
Microcystin HtyR	80.9		P	40 - 160
Microcystin LA	93.6		P	40 - 160
Microcystin LF	93.8		P	40 - 160
Microcystin LR	80.6		P	40 - 160
Microcystin LW	87.8		P	40 - 160
Microcystin LY	85.6		P	40 - 160
Microcystin RR	89.1		P	40 - 160
Microcystin WR	87.4		P	40 - 160
Microcystin YR	80.8		P	40 - 160
Nodularin-R	85.6		P	40 - 160

Reference Method: EPA 8321B
Batch ID: P445676

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	98.2		P	40 - 150
Neosaxitoxin	72.3		P	40 - 150
Saxitoxin	81.2		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P445675

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2488997	Cylindrospermopsin	92.5	90.4	P/P	40 - 160
2488997	Desmethyl microcystin LR	86.8	84.6	P/P	40 - 160
2488997	Microcystin HilR	90.0	86.9	P/P	40 - 160
2488997	Microcystin HtyR	86.3	85.1	P/P	40 - 160
2488997	Microcystin LA	96.3	93.8	P/P	40 - 160
2488997	Microcystin LF	98.1	103	P/P	40 - 160
2488997	Microcystin LR	83.3	84.1	P/P	40 - 160
2488997	Microcystin LW	87.7	93.0	P/P	40 - 160
2488997	Microcystin LY	85.6	85.0	P/P	40 - 160
2488997	Microcystin RR	89.7	91.2	P/P	40 - 160
2488997	Microcystin WR	92.6	89.5	P/P	40 - 160
2488997	Microcystin YR	85.1	85.6	P/P	40 - 160
2488997	Nodularin-R	91.2	92.2	P/P	40 - 160

Reference Method: EPA 8321B
Batch ID: P445676

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2488997	Anatoxin-a	97.8	97.3	P/P	40 - 150
2488997	Neosaxitoxin	64.1	64.2	P/P	40 - 150
2488997	Saxitoxin	78.1	78.6	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P445675

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2488997	Cylindrospermopsin	2.23	Spike	P	0 - 30
2488997	Desmethyl microcystin LR	2.54	Spike	P	0 - 30
2488997	Microcystin HilR	3.57	Spike	P	0 - 30
2488997	Microcystin HtyR	1.45	Spike	P	0 - 30
2488997	Microcystin LA	2.60	Spike	P	0 - 30
2488997	Microcystin LF	5.04	Spike	P	0 - 30
2488997	Microcystin LR	0.967	Spike	P	0 - 30
2488997	Microcystin LW	5.83	Spike	P	0 - 30
2488997	Microcystin LY	0.735	Spike	P	0 - 30
2488997	Microcystin RR	1.72	Spike	P	0 - 30
2488997	Microcystin WR	3.44	Spike	P	0 - 30
2488997	Microcystin YR	0.570	Spike	P	0 - 30
2488997	Nodularin-R	1.09	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P445676

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2488997	Anatoxin-a	0.490	Spike	P	0 - 30
2488997	Neosaxitoxin	0.197	Spike	P	0 - 30
2488997	Saxitoxin	0.566	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2489062
Field Sample ID: HABCE0228

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	103	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	104	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 8321B
Run ID: A125847
Included Lab Sample IDs: 2489062

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	99.9	97.9	P/P	50 - 160
Neosaxitoxin	83.1	84.0	P/P	50 - 160
Saxitoxin	91.5	91.8	P/P	50 - 160

Reference Method: EPA 8321B
Run ID: A125858
Included Lab Sample IDs: 2489062

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	89.9	89.3	P/P	60 - 160
Desmethyl microcystin LR	81.6	83.0	P/P	60 - 160
Microcystin HilR	83.8	83.6	P/P	60 - 160
Microcystin HtyR	83.1	81.5	P/P	60 - 160
Microcystin LA	94.5	87.2	P/P	50 - 160
Microcystin LF	92.1	91.0	P/P	50 - 160
Microcystin LR	81.4	79.8	P/P	60 - 160
Microcystin LW	84.9	84.3	P/P	60 - 160
Microcystin LY	87.6	88.0	P/P	60 - 160
Microcystin RR	86.8	85.0	P/P	60 - 160
Microcystin WR	83.0	87.9	P/P	60 - 160
Microcystin YR	81.4	78.7	P/P	60 - 160
Nodularin-R	87.6	92.2	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	98.2	97.8	97.3			0.490
	Cylindrospermopsin	88.9	92.5	90.4			2.23
	Desmethyl microcystin LR	81.5	86.8	84.6			2.54
	Microcystin HilR	83.5	90.0	86.9			3.57
	Microcystin HtyR	80.9	86.3	85.1			1.45
	Microcystin LA	93.6	96.3	93.8			2.60
	Microcystin LF	93.8	98.1	103			5.04
	Microcystin LR	80.6	83.3	84.1			0.967
	Microcystin LW	87.8	87.7	93.0			5.83
	Microcystin LY	85.6	85.6	85.0			0.735
	Microcystin RR	89.1	89.7	91.2			1.72
	Microcystin WR	87.4	92.6	89.5			3.44
	Microcystin YR	80.8	85.1	85.6			0.570
	Neosaxitoxin	72.3	64.1	64.2			0.197
	Nodularin-R	85.6	91.2	92.2			1.09
	Saxitoxin	81.2	78.1	78.6			0.566

Reference Method Descriptions

Method	Description	Associated Samples
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2489062
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2489062

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	05/24/2024	05/24/2024 12:30	Hana Lee	05/24/2024 19:35	Hana Lee	2489062
	05/24/2024	05/24/2024 12:40	Hana Lee	05/24/2024 19:08	Hana Lee	2489062