Chemical Analysis Report

WQAP-2023-07-14-02

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

Event Description: **Algae Bloom Response NEROC-as needed**
Request ID: **RQ-2023-05-22-64**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

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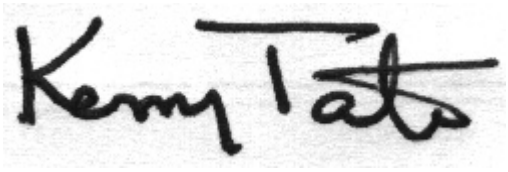
Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 19-JUL-2023 11:14



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 Eaton - Ocala Conservation Center Dock **Collection Date/Time: 07/13/2023 10:30**

Field ID: NEHAB0105 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2423984	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P432475	
		Cylindrospermopsin	0.10	U	ug/L	P432473	
		Desmethyl microcystin LR	0.25	U	ug/L	P432473	
		Microcystin HilR	0.25	U	ug/L	P432473	
		Microcystin HtyR	0.25	U	ug/L	P432473	
		Microcystin LA	0.10	U	ug/L	P432473	
		Microcystin LF	0.10	U	ug/L	P432473	
		Microcystin LR	0.25	U	ug/L	P432473	
		Microcystin LW	0.25	U	ug/L	P432473	
		Microcystin LY	0.10	U	ug/L	P432473	
		Microcystin RR	0.10	U	ug/L	P432473	
		Microcystin WR	0.50	U	ug/L	P432473	
		Neosaxitoxin	0.50	U	ug/L	P432475	
		Microcystin YR	0.25	U	ug/L	P432473	
		Saxitoxin	0.50	U	ug/L	P432475	
		Nodularin-R	0.10	U	ug/L	P432473	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 8321B
Batch ID: P432473

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: P432475

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: P432473

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	107		P	40 - 160
Desmethyl microcystin LR	106		P	40 - 160
Microcystin HilR	109		P	40 - 160
Microcystin HtyR	101		P	40 - 160
Microcystin LA	112		P	40 - 160
Microcystin LF	100		P	40 - 160
Microcystin LR	109		P	40 - 160
Microcystin LW	95.1		P	40 - 160
Microcystin LY	112		P	40 - 160
Microcystin RR	102		P	40 - 160
Microcystin WR	109		P	40 - 160
Microcystin YR	97.0		P	40 - 160
Nodularin-R	97.4		P	40 - 160

Reference Method: EPA 8321B
Batch ID: P432475

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	102		P	40 - 150
Neosaxitoxin	86.4		P	40 - 150
Saxitoxin	85.9		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P432473

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2423955	Cylindrospermopsin	119	118	P/P	40 - 160
2423955	Desmethyl microcystin LR	124	121	P/P	40 - 160
2423955	Microcystin HilR	119	121	P/P	40 - 160
2423955	Microcystin HtyR	109	112	P/P	40 - 160
2423955	Microcystin LA	124	126	P/P	40 - 160
2423955	Microcystin LF	111	113	P/P	40 - 160
2423955	Microcystin LR	125	119	P/P	40 - 160
2423955	Microcystin LW	113	116	P/P	40 - 160
2423955	Microcystin LY	123	125	P/P	40 - 160
2423955	Microcystin RR	111	113	P/P	40 - 160
2423955	Microcystin WR	111	118	P/P	40 - 160
2423955	Microcystin YR	106	109	P/P	40 - 160
2423955	Nodularin-R	109	108	P/P	40 - 160

Reference Method: EPA 8321B
Batch ID: P432475

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2423955	Anatoxin-a	86.2	89.5	P/P	40 - 150
2423955	Neosaxitoxin	60.8	65.3	P/P	40 - 150
2423955	Saxitoxin	67.5	72.4	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P432473

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2423955	Cylindrospermopsin	1.38	Spike	P	0 - 30
2423955	Desmethyl microcystin LR	2.12	Spike	P	0 - 30
2423955	Microcystin HilR	1.96	Spike	P	0 - 30
2423955	Microcystin HtyR	2.88	Spike	P	0 - 30
2423955	Microcystin LA	1.19	Spike	P	0 - 30
2423955	Microcystin LF	1.60	Spike	P	0 - 30
2423955	Microcystin LR	3.00	Spike	P	0 - 30
2423955	Microcystin LW	2.32	Spike	P	0 - 30
2423955	Microcystin LY	1.61	Spike	P	0 - 30
2423955	Microcystin RR	2.09	Spike	P	0 - 30
2423955	Microcystin WR	5.86	Spike	P	0 - 30
2423955	Microcystin YR	2.57	Spike	P	0 - 30
2423955	Nodularin-R	1.55	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P432475

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2423955	Anatoxin-a	3.77	Spike	P	0 - 30
2423955	Neosaxitoxin	7.05	Spike	P	0 - 30
2423955	Saxitoxin	7.07	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2423984
Field Sample ID: NEHAB0105

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	94.0	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	125	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 8321B
Run ID: A120398
Included Lab Sample IDs: 2423984

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	123	124	P/P	60 - 160
Desmethyl microcystin LR	116	116	P/P	50 - 160
Microcystin HilR	118	117	P/P	60 - 160
Microcystin HtyR	107	108	P/P	60 - 160
Microcystin LA	125	123	P/P	50 - 160
Microcystin LF	101	104	P/P	60 - 160
Microcystin LR	120	121	P/P	60 - 160
Microcystin LW	86.3	90.8	P/P	60 - 160
Microcystin LY	116	130	P/P	60 - 160
Microcystin RR	112	109	P/P	60 - 160
Microcystin WR	103	103	P/P	60 - 160
Microcystin YR	96.8	104	P/P	60 - 160
Nodularin-R	101	103	P/P	60 - 160

Reference Method: EPA 8321B
Run ID: A120410
Included Lab Sample IDs: 2423984

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	98.9	100	P/P	50 - 160
Neosaxitoxin	88.8	88.2	P/P	50 - 160
Saxitoxin	85.0	85.9	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	102	86.2	89.5			3.77
	Cylindrospermopsin	107	119	118			1.38
	Desmethyl microcystin LR	106	124	121			2.12
	Microcystin HilR	109	119	121			1.96
	Microcystin HtyR	101	109	112			2.88
	Microcystin LA	112	124	126			1.19
	Microcystin LF	100	111	113			1.60
	Microcystin LR	109	125	119			3.00
	Microcystin LW	95.1	113	116			2.32
	Microcystin LY	112	123	125			1.61
	Microcystin RR	102	111	113			2.09
	Microcystin WR	109	111	118			5.86
	Microcystin YR	97.0	106	109			2.57
	Neosaxitoxin	86.4	60.8	65.3			7.05
	Nodularin-R	97.4	109	108			1.55
	Saxitoxin	85.9	67.5	72.4			7.07

Reference Method Descriptions

Method	Description	Associated Samples
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2423984
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2423984

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	07/14/2023	07/14/2023 11:30	Hana Lee	07/14/2023 18:44	Tae K Lee	2423984
	07/14/2023	07/14/2023 11:30	Hana Lee	07/14/2023 19:01	Tae K Lee	2423984