Chemical Analysis Report

WQAP-2019-05-15-04

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **NEROC Algae Bloom Response-as needed**
Request ID: **RQ-2019-05-06-31**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
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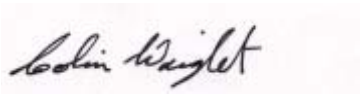
Date Certified: 16-MAY-2019 16:22



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: SJR @ WELAKA BT RMP **Collection Date/Time: 05/14/2019 10:05**

Field ID: SJR @ WELAKA BT RMP Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2086264	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P363972	
		Cylindrospermopsin**	0.25	U	ug/L	P363972	
		Microcystin LA**	0.25	U	ug/L	P363972	
		Microcystin LF**	0.25	U	ug/L	P363972	MS
		Microcystin LR**	0.25	U	ug/L	P363972	
		Microcystin LY**	0.25	U	ug/L	P363972	
		Microcystin RR**	0.25	U	ug/L	P363972	
		Microcystin YR**	0.25	U	ug/L	P363972	
		Saxitoxin**	0.25	UJ	ug/L	P363972	MS

Ref. Method and Comment:
EPA 8321B: Method validation for saxitoxin is still in progress. Second source was not analyzed.

Sample Location: SJR @ CM 6 PUTNAM CO **Collection Date/Time: 05/14/2019 11:55**

Field ID: SJR @ CM 6 PUTNAM CO Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2086265	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P363972	
		Cylindrospermopsin**	0.27	I	ug/L	P363972	
		Microcystin LA**	0.25	U	ug/L	P363972	
		Microcystin LF**	0.25	U	ug/L	P363972	MS
		Microcystin LR**	0.25	U	ug/L	P363972	
		Microcystin LY**	0.25	U	ug/L	P363972	
		Microcystin RR**	0.25	U	ug/L	P363972	
		Microcystin YR**	0.25	U	ug/L	P363972	
		Saxitoxin**	0.25	UJ	ug/L	P363972	MS

Ref. Method and Comment:
EPA 8321B: Method validation for saxitoxin is still in progress. Second source was not analyzed.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 8321B
Batch ID: P363972

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Cylindrospermopsin	0.25	U	ug/L
Microcystin LA	0.25	U	ug/L
Microcystin LF	0.25	U	ug/L
Microcystin LR	0.25	U	ug/L
Microcystin LY	0.25	U	ug/L
Microcystin RR	0.25	U	ug/L
Microcystin YR	0.25	U	ug/L
Saxitoxin	0.25	U	ug/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P363972

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	95.3		P	40 - 140
Cylindrospermopsin	102		P	40 - 140
Microcystin LA	93.1		P	40 - 140
Microcystin LF	124		P	40 - 140
Microcystin LR	99.5		P	40 - 140
Microcystin LY	105		P	40 - 140
Microcystin RR	104		P	40 - 140
Microcystin YR	109		P	40 - 140
Saxitoxin	73.7		P	40 - 140

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P363972

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2086069	Anatoxin-a	91.5	103	P/P	40 - 140
2086069	Cylindrospermopsin	98.9	99.6	P/P	40 - 140
2086069	Microcystin LA	104	103	P/P	40 - 140
2086069	Microcystin LF	138	142	P/F	40 - 140
2086069	Microcystin LR	102	110	P/P	40 - 140
2086069	Microcystin LY	109	99.6	P/P	40 - 140
2086069	Microcystin RR	101	104	P/P	40 - 140
2086069	Microcystin YR	118	121	P/P	40 - 140
2086069	Saxitoxin	22.6	18.5	F/F	40 - 140

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P363972

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086069	Anatoxin-a	12.0	Spike	P	0 - 30
2086069	Cylindrospermopsin	0.695	Spike	P	0 - 30
2086069	Microcystin LA	1.13	Spike	P	0 - 30
2086069	Microcystin LF	2.49	Spike	P	0 - 30
2086069	Microcystin LR	7.83	Spike	P	0 - 30
2086069	Microcystin LY	9.21	Spike	P	0 - 30
2086069	Microcystin RR	2.98	Spike	P	0 - 30
2086069	Microcystin YR	2.33	Spike	P	0 - 30
2086069	Saxitoxin	20.1	Spike	P	0 - 30

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report
Surrogates

Lab Sample ID: 2086264
Field Sample ID: SJR @ WELAKA BT RMP

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Carbamazepine-d10	98.6	P	30 - 165

Lab Sample ID: 2086265
Field Sample ID: SJR @ CM 6 PUTNAM CO

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Carbamazepine-d10	102	P	30 - 165

Quality Assurance Report
Calibration Verification

Reference Method: EPA 8321B
Run ID: A91475
Included Lab Sample IDs: 2086264, 2086265

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	101	104	P/P	50 - 160
Cylindrospermopsin	99.0	103	P/P	60 - 160
Microcystin LA	103	111	P/P	50 - 160
Microcystin LF	106	135	P/P	60 - 160
Microcystin LR	97.0	94.9	P/P	60 - 160
Microcystin LY	99.4	110	P/P	60 - 160
Microcystin RR	105	102	P/P	60 - 160
Microcystin YR	101	104	P/P	60 - 160
Saxitoxin	99.1	97.4	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	95.3	91.5	103			12.0
	Cylindrospermopsin	102	98.9	99.6			0.695
	Microcystin LA	93.1	104	103			1.13
	Microcystin LF	124	138	142			2.49
	Microcystin LR	99.5	102	110			7.83
	Microcystin LY	105	109	99.6			9.21
	Microcystin RR	104	101	104			2.98
	Microcystin YR	109	118	121			2.33
	Saxitoxin	73.7	22.6	18.5			20.1

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Microcystins in water matrices by HPLC/MS/MS	2086264, 2086265

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	05/15/2019	05/16/2019 09:00	Juyoung Kim	05/16/2019 13:33	Juyoung Kim	2086264
	05/15/2019	05/16/2019 09:00	Juyoung Kim	05/16/2019 13:50	Juyoung Kim	2086265