

Chemical Analysis Report

WQAP-2023-05-26-03

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

Event Description: **Algal Bloom Response - CEROC**
Request ID: **RQ-2023-06-05-43**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
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Certified by: Colin Wright, Program Administrator

Date Certified: 12-JUN-2023 12:10

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light blue 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 groups are included in this report: Nutrients and 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 BALDWIN PARK BOAT RAMP

Collection Date/Time: 05/25/2023 11:08

Field ID: HABCE0188_LakeBaldwin2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2413030	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P430387	
		Cylindrospermopsin	0.10	U	ug/L	P430386	
		Desmethyl microcystin LR	0.25	U	ug/L	P430386	
		Microcystin HILR	0.25	U	ug/L	P430386	
		Microcystin HtyR	0.25	U	ug/L	P430386	
		Microcystin LA	0.10	U	ug/L	P430386	
		Microcystin LF	0.10	U	ug/L	P430386	
		Microcystin LR	0.25	U	ug/L	P430386	
		Microcystin LW	0.25	U	ug/L	P430386	
		Microcystin LY	0.10	U	ug/L	P430386	
		Microcystin RR	0.10	U	ug/L	P430386	
		Microcystin WR	0.50	U	ug/L	P430386	
		Neosaxitoxin	0.50	U	ug/L	P430387	
		Microcystin YR	0.25	U	ug/L	P430386	
		Saxitoxin	0.50	U	ug/L	P430387	
		Nodularin-R	0.10	U	ug/L	P430386	
2413031	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P430740	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.63		mg N/L	P430517	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P430837	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P430545	
2413032	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P430493	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430740

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430517

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430837

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P430545

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P430493

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: EPA 8321B
Batch ID: P430386

Component	Result	Code	Units
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin H1LR	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: P430387

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 350.1 Rev. 2.0

Batch ID: P430740

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P430517

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	106		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P430837

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P430545

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	101		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P430493

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	100		P	90 - 110

Reference Method: EPA 8321B

Batch ID: P430386

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	92.2		P	40 - 150
Desmethyl microcystin LR	97.6		P	40 - 150
Microcystin HILR	108		P	40 - 150
Microcystin HtyR	90.7		P	40 - 150
Microcystin LA	126		P	40 - 150
Microcystin LF	93.6		P	40 - 150
Microcystin LR	90.9		P	40 - 150
Microcystin LW	121		P	40 - 150
Microcystin LY	134		P	40 - 150
Microcystin RR	90.8		P	40 - 150
Microcystin WR	110		P	40 - 150
Microcystin YR	103		P	40 - 150
Nodularin-R	86.3		P	40 - 150

Reference Method: EPA 8321B

Batch ID: P430387

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	68.5		P	40 - 150
Neosaxitoxin	61.9		P	40 - 150
Saxitoxin	65.6		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430740

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2412931	Ammonia-N	94.6	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430517

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2412989	Kjeldahl Nitrogen	99.9	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430837

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2412988	NO2NO3-N	106	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P430545

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2413018	Total-P	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P430493

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2412990	O-Phosphate-P	95.4	95.5	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P430386

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2411787	Cylindrospermopsin	97.0	92.3	P/P	40 - 150
2411787	Desmethyl microcystin LR	113	113	P/P	40 - 150
2411787	Microcystin HiLR	128	124	P/P	40 - 150
2411787	Microcystin HtyR	109	114	P/P	40 - 150
2411787	Microcystin LA	138	139	P/P	40 - 150
2411787	Microcystin LF	132	124	P/P	40 - 150
2411787	Microcystin LR	121	120	P/P	40 - 150
2411787	Microcystin LW	112	114	P/P	40 - 150
2411787	Microcystin LY	121	131	P/P	40 - 150
2411787	Microcystin RR	101	95.3	P/P	40 - 150
2411787	Microcystin WR	114	118	P/P	40 - 150
2411787	Microcystin YR	131	130	P/P	40 - 150
2411787	Nodularin-R	125	123	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P430387

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2411787	Anatoxin-a	66.1	70.7	P/P	40 - 150
2411787	Neosaxitoxin	43.1	46.8	P/P	40 - 150
2411787	Saxitoxin	47.0	50.9	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P430740

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412931	Ammonia-N	1.69	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P430517

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412989	Kjeldahl Nitrogen	1.21	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P430837

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412988	NO2NO3-N	1.43	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P430545

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2413018	Total-P	0.763	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P430493

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2412990	O-Phosphate-P	0.105	Spike	P	0 - 20

Reference Method: EPA 8321B

Batch ID: P430386

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2411787	Cylindrospermopsin	4.90	Spike	P	0 - 30
2411787	Desmethyl microcystin LR	0.359	Spike	P	0 - 30
2411787	Microcystin H1LR	3.21	Spike	P	0 - 30
2411787	Microcystin HtyR	4.96	Spike	P	0 - 30
2411787	Microcystin LA	1.21	Spike	P	0 - 30
2411787	Microcystin LF	6.36	Spike	P	0 - 30
2411787	Microcystin LR	0.964	Spike	P	0 - 30
2411787	Microcystin LW	1.75	Spike	P	0 - 30
2411787	Microcystin LY	8.18	Spike	P	0 - 30
2411787	Microcystin RR	5.97	Spike	P	0 - 30
2411787	Microcystin WR	3.24	Spike	P	0 - 30
2411787	Microcystin YR	0.863	Spike	P	0 - 30
2411787	Nodularin-R	1.76	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P430387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2411787	Anatoxin-a	6.61	Spike	P	0 - 30
2411787	Neosaxitoxin	8.34	Spike	P	0 - 30
2411787	Saxitoxin	8.02	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2413030

Field Sample ID: HABCE0188_LakeBaldwin2

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	142	P	30 - 160
EPA 8321B	Saxitoxin-15N7	71.5	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A119441

Included Lab Sample IDs: 2413032

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	98.8	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A119445

Included Lab Sample IDs: 2413030

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	86.1	88.1	P/P	50 - 160
Desmethyl microcystin LR	104	101	P/P	50 - 160
Microcystin HtR	110	113	P/P	50 - 160
Microcystin HtyR	91.7	99.9	P/P	50 - 160
Microcystin LA	115	117	P/P	50 - 160
Microcystin LF	96.3	99.1	P/P	50 - 160
Microcystin LR	92.0	99.5	P/P	50 - 160
Microcystin LW	129	121	P/P	50 - 160
Microcystin LY	121	138	P/P	50 - 160
Microcystin RR	86.0	89.7	P/P	50 - 160
Microcystin WR	115	116	P/P	50 - 160
Microcystin YR	113	115	P/P	50 - 160
Nodularin-R	80.2	89.9	P/P	50 - 160

Reference Method: EPA 8321B

Run ID: A119447

Included Lab Sample IDs: 2413030

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	91.2	88.3	P/P	50 - 160
Neosaxitoxin	91.2	93.4	P/P	50 - 160
Saxitoxin	87.4	88.0	P/P	50 - 160

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A119488

Included Lab Sample IDs: 2413031

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A119491

Included Lab Sample IDs: 2413031

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	96.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A119550

Included Lab Sample IDs: 2413031

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.4	98.9	P/P	90 - 110

Quality Assurance Report

Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A119596

Included Lab Sample IDs: 2413031

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	104	P/P	90 - 110

* 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 350.1 Rev. 2.0	Ammonia-N	96.2	94.6	97.0			1.69
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	99.9	102			1.21
EPA 353.2 Rev. 2.0	NO2NO3-N	102	106	104			1.43
EPA 365.1 Rev. 2.0	Total-P	101	104	105			0.763
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	95.4	95.5			0.105
EPA 8321B	Anatoxin-a	68.5	66.1	70.7			6.61
	Cylindrospermopsin	92.2	97.0	92.3			4.90
	Desmethyl microcystin LR	97.6	113	113			0.359
	Microcystin HiLR	108	128	124			3.21
	Microcystin HtyR	90.7	109	114			4.96
	Microcystin LA	126	138	139			1.21
	Microcystin LF	93.6	132	124			6.36
	Microcystin LR	90.9	121	120			0.964
	Microcystin LW	121	112	114			1.75
	Microcystin LY	134	121	131			8.18
	Microcystin RR	90.8	101	95.3			5.97
	Microcystin WR	110	114	118			3.24
	Microcystin YR	103	131	130			0.863
	Neosaxitoxin	61.9	43.1	46.8			8.34
	Nodularin-R	86.3	125	123			1.76
	Saxitoxin	65.6	47.0	50.9			8.02

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2413031
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2413031
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2413031
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2413031
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2413032
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2413030
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2413030

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 350.1 Rev. 2.0	05/26/2023			06/02/2023 13:51	Khloe J Berg	2413031
EPA 351.2 Rev. 2.0	05/26/2023	05/30/2023 12:30	Simonne.V. Calhoun	05/31/2023 12:42	Ping Hua	2413031
EPA 353.2 Rev. 2.0	05/26/2023			06/06/2023 10:02	Beverly Y. Sanders	2413031
EPA 365.1 Rev. 2.0	05/26/2023	05/30/2023 12:20	Alexis Price	05/31/2023 14:46	James L Waggeberby	2413031
EPA 365.1 Rev. 2.0 dissolved	05/26/2023			05/26/2023 15:37	Elise M. Gillis	2413032
EPA 8321B	05/26/2023	05/26/2023 12:00	Touraj Touran	05/26/2023 19:43	Touraj Touran	2413030
	05/26/2023	05/26/2023 12:00	Touraj Touran	05/27/2023 10:32	Touraj Touran	2413030