

Chemical Analysis Report

WQAP-2022-10-12-03

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

Event Description: **Algal Bloom Response - CEROC**
Request ID: **RQ-2022-08-29-41**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
FL Dept. of Environmental Protection
3319 Maguire Blvd. Suite 232
Orlando, FL 32803
Attn: Matt Bearden

For additional information please contact
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Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 28-OCT-2022 11:45

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

NON-CONFORMANCE REPORT INCLUDED

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: Blackwater Creek - S of Lake Norris

Collection Date/Time: 10/11/2022 12:52

Field ID: HABCE0146_BlackwaterCreek

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2361928	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P420710	
		Cylindrospermopsin	0.10	U	ug/L	P420709	
		Desmethyl microcystin LR	0.25	U	ug/L	P420709	
		Microcystin HILR	0.25	U	ug/L	P420709	
		Microcystin HtyR	0.25	U	ug/L	P420709	
		Microcystin LA	0.10	U	ug/L	P420709	
		Microcystin LF	0.10	U	ug/L	P420709	
		Microcystin LR	0.25	U	ug/L	P420709	
		Microcystin LW	0.25	U	ug/L	P420709	
		Microcystin LY	0.10	U	ug/L	P420709	
		Microcystin RR	0.10	U	ug/L	P420709	
		Microcystin WR	0.50	U	ug/L	P420709	
		Microcystin YR	0.25	U	ug/L	P420709	
		Nodularin-R	0.10	U	ug/L	P420709	
2361931	EPA 350.1 Rev. 2.0	Ammonia-N	0.01	Y	mg N/L	P421164	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P420959	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P420928	
	EPA 365.1 Rev. 2.0	Total-P	0.17		mg P/L	P420864	
2361932	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.096		mg P/L	P420805	

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: Sample stored outside of the acceptable temperature range. Please see NCR.

Non-Conformance Report

NCR ID: 9589

Event(s)

WQAP-2022-10-12-03

Job(s)

TLH-2022-10-12-63

Sample(s)

2361931

Test(s)

NCR Type: CUSTODY

NCR Category: General

Observation: Samples stored at room temperature overnight on 10/17/2022.

Resolution: Samples placed in refrigerator on 10/18/2022 at 9:20 AM. Data generated after this time will be qualified where appropriate.

Authorized by/Date: Patrick M. Roche 10/27/2022

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421164

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420959

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420928

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420864

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P420805

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

Reference Method: EPA 8321B
Batch ID: P420709

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: P420710

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421164

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420959

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420928

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: P420864

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	107		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P420805

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

Reference Method: EPA 8321B
Batch ID: P420709

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	85.8		P	40 - 150
Desmethyl microcystin LR	95.2		P	40 - 150
Microcystin HILR	84.1		P	40 - 150
Microcystin HtyR	89.3		P	40 - 150
Microcystin LA	93.4		P	40 - 150
Microcystin LF	80.5		P	40 - 150
Microcystin LR	93.9		P	40 - 150
Microcystin LW	79.2		P	40 - 150
Microcystin LY	109		P	40 - 150
Microcystin RR	81.6		P	40 - 150
Microcystin WR	88.8		P	40 - 150
Microcystin YR	84.6		P	40 - 150
Nodularin-R	80.8		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P420710

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	105		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P421164

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361980	Ammonia-N	97.2	98.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P420959

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361961	Kjeldahl Nitrogen	93.5	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P420928

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361960	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P420864

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361961	Total-P	105	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P420805

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361962	O-Phosphate-P	95.8	98.2	P/P	90 - 110

Reference Method: EPA 8321B

Batch ID: P420709

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361825	Cylindrospermopsin	96.5	92.9	P/P	40 - 150
2361825	Desmethyl microcystin LR	112	114	P/P	40 - 150
2361825	Microcystin HiLR	105	98.1	P/P	40 - 150
2361825	Microcystin HtyR	103	101	P/P	40 - 150
2361825	Microcystin LA	113	104	P/P	40 - 150
2361825	Microcystin LF	79.0	83.9	P/P	40 - 150
2361825	Microcystin LR	127	124	P/P	40 - 150
2361825	Microcystin LW	97.5	107	P/P	40 - 150
2361825	Microcystin LY	145	116	P/P	40 - 150
2361825	Microcystin RR	90.7	88.7	P/P	40 - 150
2361825	Microcystin WR	115	103	P/P	40 - 150
2361825	Microcystin YR	104	107	P/P	40 - 150
2361825	Nodularin-R	98.6	103	P/P	40 - 150

Reference Method: EPA 8321B

Batch ID: P420710

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361607	Anatoxin-a	101	97.3	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P421164

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361980	Ammonia-N	0.621	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P420959

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361961	Kjeldahl Nitrogen	4.44	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P420928

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361960	NO2NO3-N	0.980	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P420864

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361961	Total-P	0.973	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P420805

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361962	O-Phosphate-P	2.47	Spike	P	0 - 20

Reference Method: EPA 8321B

Batch ID: P420709

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361825	Cylindrospermopsin	3.87	Spike	P	0 - 30
2361825	Desmethyl microcystin LR	1.36	Spike	P	0 - 30
2361825	Microcystin H1LR	7.03	Spike	P	0 - 30
2361825	Microcystin HtyR	1.53	Spike	P	0 - 30
2361825	Microcystin LA	8.41	Spike	P	0 - 30
2361825	Microcystin LF	6.04	Spike	P	0 - 30
2361825	Microcystin LR	2.33	Spike	P	0 - 30
2361825	Microcystin LW	9.22	Spike	P	0 - 30
2361825	Microcystin LY	22.3	Spike	P	0 - 30
2361825	Microcystin RR	2.28	Spike	P	0 - 30
2361825	Microcystin WR	10.5	Spike	P	0 - 30
2361825	Microcystin YR	2.78	Spike	P	0 - 30
2361825	Nodularin-R	4.77	Spike	P	0 - 30

Quality Assurance Report

Precision

Reference Method: EPA 8321B
Batch ID: P420710

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361607	Anatoxin-a	3.55	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2361928

Field Sample ID: HABCE0146_BlackwaterCreek

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	63.3	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	42.4	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A115258

Included Lab Sample IDs: 2361932

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	98.7	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A115300

Included Lab Sample IDs: 2361928

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	82.4	86.0	P/P	50 - 160
Desmethyl microcystin LR	89.7	86.6	P/P	50 - 160
Microcystin HtIR	70.5	76.8	P/P	50 - 160
Microcystin HtyR	89.1	83.2	P/P	50 - 160
Microcystin LA	73.1	73.4	P/P	50 - 160
Microcystin LF	70.6	67.5	P/P	50 - 160
Microcystin LR	103	101	P/P	50 - 160
Microcystin LW	94.0	75.8	P/P	50 - 160
Microcystin LY	83.9	81.4	P/P	50 - 160
Microcystin RR	77.6	77.4	P/P	50 - 160
Microcystin WR	74.1	91.5	P/P	50 - 160
Microcystin YR	88.6	95.0	P/P	50 - 160
Nodularin-R	79.9	85.9	P/P	50 - 160

Reference Method: EPA 8321B

Run ID: A115311

Included Lab Sample IDs: 2361928

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	92.5	105	P/P	50 - 160

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A115315

Included Lab Sample IDs: 2361931

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A115368

Included Lab Sample IDs: 2361931

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A115389

Included Lab Sample IDs: 2361931

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	104	P/P	90 - 110

Quality Assurance Report

Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A115422

Included Lab Sample IDs: 2361931

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.9	99.4	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		LCS	Precision	MS
						SMP	
EPA 350.1 Rev. 2.0	Ammonia-N	98.6	97.2	98.4			0.621
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	93.5	100			4.44
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	102	102			0.980
EPA 365.1 Rev. 2.0	Total-P	107	105	104			0.973
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.2	95.8			2.47
EPA 8321B	Anatoxin-a	105	101	97.3			3.55
	Cylindrospermopsin	85.8	96.5	92.9			3.87
	Desmethyl microcystin LR	95.2	112	114			1.36
	Microcystin HiLR	84.1	105	98.1			7.03
	Microcystin HtyR	89.3	103	101			1.53
	Microcystin LA	93.4	113	104			8.41
	Microcystin LF	80.5	79.0	83.9			6.04
	Microcystin LR	93.9	127	124			2.33
	Microcystin LW	79.2	97.5	107			9.22
	Microcystin LY	109	145	116			22.3
	Microcystin RR	81.6	90.7	88.7			2.28
	Microcystin WR	88.8	115	103			10.5
	Microcystin YR	84.6	104	107			2.78
	Nodularin-R	80.8	98.6	103			4.77

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2361931
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2361931
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2361931
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2361931
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2361932
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2361928
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2361928

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	10/12/2022			10/19/2022 13:41	Ping Hua	2361931
EPA 351.2 Rev. 2.0	10/12/2022	10/17/2022 12:50	Simonne.V. Calhoun	10/18/2022 13:13	Samantha L Bates	2361931
EPA 353.2 Rev. 2.0	10/12/2022			10/14/2022 11:36	Beverly Y. Sanders	2361931
EPA 365.1 Rev. 2.0	10/12/2022	10/14/2022 14:05	Adam P Silver	10/19/2022 11:59	Simonne.V. Calhoun	2361931
EPA 365.1 Rev. 2.0 dissolved	10/12/2022			10/12/2022 14:58	Elise M. Gillis	2361932
EPA 8321B	10/12/2022	10/13/2022 12:00	Manjita Shrestha	10/14/2022 00:54	Manjita Shrestha	2361928
	10/12/2022	10/13/2022 13:00	Manjita Shrestha	10/14/2022 09:51	Manjita Shrestha	2361928