

Chemical Analysis Report

WQAP-2020-09-11-01

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

Event Description: **Algal Bloom Response - CEROC**
Request ID: **RQ-2020-03-09-29**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
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Date Certified: 30-SEP-2020 10:49



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 Weir @ boat ramp

Collection Date/Time: 09/10/2020 12:11

Field ID: HABCE0041_LakeWeir2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2195450	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P387244	
		Cylindrospermopsin**	0.25	U	ug/L	P387244	
		Desmethyl microcystin LR**	0.25	U	ug/L	P387244	
		Microcystin LA**	0.25	U	ug/L	P387244	
		Microcystin LF**	0.25	U	ug/L	P387244	
		Microcystin LR**	0.25	U	ug/L	P387244	
		Microcystin LW**	0.25	U	ug/L	P387244	
		Microcystin LY**	0.25	U	ug/L	P387244	
		Microcystin RR**	0.25	U	ug/L	P387244	
		Microcystin WR**	0.50	U	ug/L	P387244	
		Microcystin YR**	0.25	U	ug/L	P387244	
2195451	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P387304	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.68		mg N/L	P387459	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P387337	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P387673	
2195452	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P387282	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387304

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387459

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387337

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387673

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387282

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

Reference Method: EPA 8321B
Batch ID: P387244

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Cylindrospermopsin	0.25	U	ug/L
Desmethyl microcystin LR	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 LW	0.25	U	ug/L
Microcystin LY	0.25	U	ug/L
Microcystin RR	0.25	U	ug/L
Microcystin WR	0.50	U	ug/L
Microcystin YR	0.25	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P387304

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P387459

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P387337

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: P387673

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: P387282

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

Reference Method: EPA 8321B
 Batch ID: P387244

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	92.3		P	40 - 140
Cylindrospermopsin	97.6		P	40 - 140
Desmethyl microcystin LR	87.6		P	40 - 140
Microcystin LA	102		P	40 - 140
Microcystin LF	67.8		P	40 - 140
Microcystin LR	84.8		P	40 - 140
Microcystin LW	107		P	40 - 140
Microcystin LY	93.8		P	40 - 140
Microcystin RR	99.4		P	40 - 140
Microcystin WR	103		P	40 - 140
Microcystin YR	86.8		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387304

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2195397	Ammonia-N	96.2	96.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387459

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2195457	Kjeldahl Nitrogen	90.0	90.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387337

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2195338	NO2NO3-N	97.9	98.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387673

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2195398	Total-P	106	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387282

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2195513	O-Phosphate-P	102	102	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P387244

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2195569	Anatoxin-a	88.3	82.0	P/P	40 - 140
2195569	Cylindrospermopsin	89.1	82.2	P/P	40 - 140
2195569	Desmethyl microcystin LR	100	93.8	P/P	40 - 140
2195569	Microcystin LA	102	95.9	P/P	40 - 140
2195569	Microcystin LF	66.5	57.7	P/P	40 - 140
2195569	Microcystin LR	97.9	82.5	P/P	40 - 140
2195569	Microcystin LW	98.6	88.9	P/P	40 - 140
2195569	Microcystin LY	95.8	95.0	P/P	40 - 140
2195569	Microcystin RR	107	104	P/P	40 - 140
2195569	Microcystin WR	109	108	P/P	40 - 140
2195569	Microcystin YR	100	100	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387304

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2195397	Ammonia-N	0.189	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387459

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2195457	Kjeldahl Nitrogen	0.281	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387337

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2195338	NO2NO3-N	0.687	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387673

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2195398	Total-P	1.62	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387282

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2195513	O-Phosphate-P	0.295	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P387244

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2195569	Anatoxin-a	7.34	Spike	P	0 - 30
2195569	Cylindrospermopsin	7.62	Spike	P	0 - 30
2195569	Desmethyl microcystin LR	6.38	Spike	P	0 - 30
2195569	Microcystin LA	5.98	Spike	P	0 - 30
2195569	Microcystin LF	14.1	Spike	P	0 - 30
2195569	Microcystin LR	17.1	Spike	P	0 - 30
2195569	Microcystin LW	10.3	Spike	P	0 - 30
2195569	Microcystin LY	0.811	Spike	P	0 - 30
2195569	Microcystin RR	2.95	Spike	P	0 - 30
2195569	Microcystin WR	1.25	Spike	P	0 - 30
2195569	Microcystin YR	0.0854	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2195450

Field Sample ID: HABCE0041_LakeWeir2

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	81.2	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	67.7	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A100940

Included Lab Sample IDs: 2195452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.6	96.8	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A100943

Included Lab Sample IDs: 2195450

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	94.2	94.7	P/P	50 - 160
Cylindrospermopsin	102	99.4	P/P	60 - 160
Desmethyl microcystin LR	95.5	92.3	P/P	60 - 160
Microcystin LA	104	103	P/P	50 - 160
Microcystin LF	68.9	57.4	P/P	50 - 160
Microcystin LR	84.8	78.1	P/P	60 - 160
Microcystin LW	80.5	73.6	P/P	60 - 160
Microcystin LY	95.2	94.4	P/P	60 - 160
Microcystin RR	100	102	P/P	60 - 160
Microcystin WR	87.8	83.1	P/P	60 - 160
Microcystin YR	91.1	81.0	P/P	60 - 160

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A100947

Included Lab Sample IDs: 2195451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.1	98.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A100959

Included Lab Sample IDs: 2195451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A101057

Included Lab Sample IDs: 2195451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	95.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A101168

Included Lab Sample IDs: 2195451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	91.8	92.8	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	97.1	96.2	96.0			0.189
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	90.0	90.5			0.281
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	97.9	98.9			0.687
EPA 365.1 Rev. 2.0	Total-P	107	106	108			1.62
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	102	102			0.295
EPA 8321B	Anatoxin-a	92.3	88.3	82.0			7.34
	Cylindrospermopsin	97.6	89.1	82.2			7.62
	Desmethyl microcystin LR	87.6	100	93.8			6.38
	Microcystin LA	102	102	95.9			5.98
	Microcystin LF	67.8	66.5	57.7			14.1
	Microcystin LR	84.8	97.9	82.5			17.1
	Microcystin LW	107	98.6	88.9			10.3
	Microcystin LY	93.8	95.8	95.0			0.811
	Microcystin RR	99.4	107	104			2.95
	Microcystin WR	103	109	108			1.25
	Microcystin YR	86.8	100	100			0.0854

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2195451
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2195451
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2195451
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2195451
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2195452
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2195450

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	09/11/2020			09/13/2020 13:14	Ping Hua	2195451
EPA 351.2 Rev. 2.0	09/11/2020	09/16/2020 12:40	David Boose	09/17/2020 11:18	Virginia P. Brown	2195451
EPA 353.2 Rev. 2.0	09/11/2020			09/14/2020 11:06	Beverly Y. Sanders	2195451
EPA 365.1 Rev. 2.0	09/11/2020	09/22/2020 11:37	Yen Ta	09/23/2020 15:57	Lipi Saha	2195451
EPA 365.1 Rev. 2.0 dissolved	09/11/2020			09/11/2020 15:35	Samantha Davila	2195452
EPA 8321B	09/11/2020	09/11/2020 11:30	Pramila Ghimire	09/11/2020 21:48	Pramila Ghimire	2195450