

Chemical Analysis Report

WQAP-2020-07-17-01

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-2020-04-06-27**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 05-AUG-2020 19:11



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 @ NE Shore

Collection Date/Time: 07/16/2020 12:00

Field ID: HABCE0036_Lake Weir1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2183924	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P384952	
		Cylindrospermopsin**	0.25	U	ug/L	P384952	
		Desmethyl microcystin LR**	0.25	U	ug/L	P384952	
		Microcystin LA**	0.25	U	ug/L	P384952	
		Microcystin LF**	0.25	U	ug/L	P384952	
		Microcystin LR**	0.25	U	ug/L	P384952	
		Microcystin LW**	0.25	U	ug/L	P384952	
		Microcystin LY**	0.25	U	ug/L	P384952	
		Microcystin RR**	0.25	U	ug/L	P384952	MS
		Microcystin WR**	0.50	U	ug/L	P384952	
		Microcystin YR**	0.25	U	ug/L	P384952	
2183925	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P384827	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P384934	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P384916	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P385035	
2183926	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P384831	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P384827

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P384934

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P384916

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385035

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P384831

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

Reference Method: EPA 8321B
Batch ID: P384952

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: P384827

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P384934

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.4		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P384916

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: P385035

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P384831

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.0		P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P384952

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	103		P	40 - 140
Cylindrospermopsin	96.0		P	40 - 140
Desmethyl microcystin LR	94.3		P	40 - 140
Microcystin LA	109		P	40 - 140
Microcystin LF	105		P	40 - 140
Microcystin LR	94.9		P	40 - 140
Microcystin LW	107		P	40 - 140
Microcystin LY	111		P	40 - 140
Microcystin RR	124		P	40 - 140
Microcystin WR	105		P	40 - 140
Microcystin YR	106		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P384827

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2183530	Ammonia-N	98.8	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P384934

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2183925	Kjeldahl Nitrogen	99.7	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P384916

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2183874	NO2NO3-N	98.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385035

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2183925	Total-P	107	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P384831

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2183855	O-Phosphate-P	101	101	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P384952

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184265	Anatoxin-a	104	101	P/P	40 - 140
2184265	Cylindrospermopsin	97.1	99.8	P/P	40 - 140
2184265	Desmethyl microcystin LR	105	115	P/P	40 - 140
2184265	Microcystin LA	102	101	P/P	40 - 140
2184265	Microcystin LF	89.3	107	P/P	40 - 140
2184265	Microcystin LR	95.9	114	P/P	40 - 140
2184265	Microcystin LW	94.6	105	P/P	40 - 140
2184265	Microcystin LY	92.3	104	P/P	40 - 140
2184265	Microcystin RR	135	141	P/F	40 - 140
2184265	Microcystin WR	111	110	P/P	40 - 140
2184265	Microcystin YR	102	122	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P384827

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2183530	Ammonia-N	1.34	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P384934

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2183925	Kjeldahl Nitrogen	4.79	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P384916

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2183874	NO2NO3-N	0.237	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385035

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2183925	Total-P	1.78	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P384831

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2183855	O-Phosphate-P	0.395	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P384952

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184265	Anatoxin-a	2.63	Spike	P	0 - 30
2184265	Cylindrospermopsin	2.71	Spike	P	0 - 30
2184265	Desmethyl microcystin LR	9.42	Spike	P	0 - 30
2184265	Microcystin LA	1.11	Spike	P	0 - 30
2184265	Microcystin LF	18.0	Spike	P	0 - 30
2184265	Microcystin LR	16.9	Spike	P	0 - 30
2184265	Microcystin LW	10.8	Spike	P	0 - 30
2184265	Microcystin LY	12.0	Spike	P	0 - 30
2184265	Microcystin RR	4.43	Spike	P	0 - 30
2184265	Microcystin WR	0.651	Spike	P	0 - 30
2184265	Microcystin YR	17.5	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2183924

Field Sample ID: HABCE0036_Lake Weir1

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	112	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A100027
Included Lab Sample IDs: 2183924

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	97.6	98.0	P/P	50 - 160
Cylindrospermopsin	104	106	P/P	60 - 160
Desmethyl microcystin LR	92.5	98.1	P/P	60 - 160
Microcystin LA	98.7	99.4	P/P	50 - 160
Microcystin LF	99.8	95.7	P/P	60 - 160
Microcystin LR	97.5	101	P/P	60 - 160
Microcystin LW	95.4	101	P/P	60 - 160
Microcystin LY	101	94.0	P/P	60 - 160
Microcystin RR	103	113	P/P	60 - 160
Microcystin WR	96.5	109	P/P	60 - 160
Microcystin YR	93.3	94.6	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A100083
Included Lab Sample IDs: 2183925

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.5	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A100109
Included Lab Sample IDs: 2183925

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A99955
Included Lab Sample IDs: 2183925

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A99958
Included Lab Sample IDs: 2183926

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.5	96.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A99985
Included Lab Sample IDs: 2183925

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	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	98.4	98.8	100			1.34
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.4	99.7	108			4.79
EPA 353.2 Rev. 2.0	NO2NO3-N	102	98.2				0.237
EPA 365.1 Rev. 2.0	Total-P	105	107	105			1.78
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.0	101	101			0.395
EPA 8321B	Anatoxin-a	103	104	101			2.63
	Cylindrospermopsin	96.0	97.1	99.8			2.71
	Desmethyl microcystin LR	94.3	105	115			9.42
	Microcystin LA	109	102	101			1.11
	Microcystin LF	105	89.3	107			18.0
	Microcystin LR	94.9	95.9	114			16.9
	Microcystin LW	107	94.6	105			10.8
	Microcystin LY	111	92.3	104			12.0
	Microcystin RR	124	135	141			4.43
	Microcystin WR	105	111	110			0.651
	Microcystin YR	106	102	122			17.5

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2183925
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2183925
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2183925
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2183925
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2183926
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2183924

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	07/17/2020			07/19/2020 12:03	Ping Hua	2183925
EPA 351.2 Rev. 2.0	07/17/2020	07/21/2020 15:30	Sima Feizi	07/22/2020 13:37	Julia Storbeck	2183925
EPA 353.2 Rev. 2.0	07/17/2020			07/21/2020 09:38	Beverly Y. Sanders	2183925
EPA 365.1 Rev. 2.0	07/17/2020	07/23/2020 10:00	Lipi Saha	07/27/2020 08:35	Lipi Saha	2183925
EPA 365.1 Rev. 2.0 dissolved	07/17/2020			07/17/2020 18:20	Virginia P. Brown	2183926
EPA 8321B	07/17/2020	07/22/2020 12:55	Juyoung Kim	07/22/2020 15:15	Juyoung Kim	2183924