

Chemical Analysis Report

WQAP-2021-01-20-03

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-2021-01-25-20**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 10-FEB-2021 10:46

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored 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: Unnamed Canal @ N Cory Dr

Collection Date/Time: 01/19/2021 12:20

Field ID: HABCE0061_Unnamed Canal

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2220142	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P392510	
		Cylindrospermopsin**	0.25	U	ug/L	P392510	
		Desmethyl microcystin LR**	0.25	U	ug/L	P392510	
		Microcystin LA**	0.25	U	ug/L	P392510	
		Microcystin LF**	0.25	U	ug/L	P392510	
		Microcystin LR**	0.25	U	ug/L	P392510	
		Microcystin LW**	0.25	U	ug/L	P392510	
		Microcystin LY**	0.25	U	ug/L	P392510	
		Microcystin RR**	0.25	U	ug/L	P392510	
		Microcystin WR**	0.50	U	ug/L	P392510	
		Microcystin YR**	0.25	U	ug/L	P392510	
2220143	EPA 350.1 Rev. 2.0	Ammonia-N	0.52		mg N/L	P393204	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P392958	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P392959	
	EPA 365.1 Rev. 2.0	Total-P	0.24		mg P/L	P392785	
2220144	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.16		mg P/L	P392636	

Ref. Method and Comment:

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393204

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P392958

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392959

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P392785

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392636

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

Reference Method: EPA 8321B
Batch ID: P392510

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: P393204

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P392958

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P392959

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P392785

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	103		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P392636

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

Reference Method: EPA 8321B
 Batch ID: P392510

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	140		P	40 - 150
Cylindrospermopsin	115		P	40 - 150
Desmethyl microcystin LR	92.0		P	40 - 150
Microcystin LA	106		P	40 - 150
Microcystin LF	93.9		P	40 - 150
Microcystin LR	70.5		P	40 - 150
Microcystin LW	98.2		P	40 - 150
Microcystin LY	78.8		P	40 - 150
Microcystin RR	114		P	40 - 150
Microcystin WR	78.1		P	40 - 150
Microcystin YR	91.2		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P393204

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219552	Ammonia-N	107	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P392958

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2218657	Kjeldahl Nitrogen	108	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P392959

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220038	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P392636

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220129	O-Phosphate-P	97.7	96.8	P/P	90 - 110

Reference Method: EPA 8321B

Batch ID: P392510

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219446	Anatoxin-a	106	101	P/P	40 - 150
2219446	Cylindrospermopsin	83.1	77.8	P/P	40 - 150
2219446	Desmethyl microcystin LR	82.3	88.5	P/P	40 - 150
2219446	Microcystin LA	82.1	99.9	P/P	40 - 150
2219446	Microcystin LF	76.2	71.7	P/P	40 - 150
2219446	Microcystin LR	56.3	65.9	P/P	40 - 150
2219446	Microcystin LW	73.8	77.6	P/P	40 - 150
2219446	Microcystin LY	65.5	67.5	P/P	40 - 150
2219446	Microcystin RR	99.4	105	P/P	40 - 150
2219446	Microcystin WR	74.7	73.3	P/P	40 - 150
2219446	Microcystin YR	72.4	82.3	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P393204

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219552	Ammonia-N	1.21	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P392958

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2218657	Kjeldahl Nitrogen	7.79	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P392959

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220038	NO2NO3-N	0.499	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P392785

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220126	Total-P	0.0855	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P392636

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220129	O-Phosphate-P	0.875	Spike	P	0 - 20

Reference Method: EPA 8321B

Batch ID: P392510

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219446	Anatoxin-a	4.86	Spike	P	0 - 30
2219446	Cylindrospermopsin	6.66	Spike	P	0 - 30
2219446	Desmethyl microcystin LR	7.24	Spike	P	0 - 30
2219446	Microcystin LA	19.6	Spike	P	0 - 30
2219446	Microcystin LF	6.09	Spike	P	0 - 30
2219446	Microcystin LR	15.7	Spike	P	0 - 30
2219446	Microcystin LW	5.01	Spike	P	0 - 30
2219446	Microcystin LY	3.00	Spike	P	0 - 30
2219446	Microcystin RR	5.25	Spike	P	0 - 30
2219446	Microcystin WR	1.90	Spike	P	0 - 30
2219446	Microcystin YR	12.7	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2220142

Field Sample ID: HABCE0061_Unnamed Canal

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	77.7	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	46.3	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A103142

Included Lab Sample IDs: 2220144

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.6	99.4	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A103149

Included Lab Sample IDs: 2220142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	132	143	P/P	50 - 160
Cylindrospermopsin	114	121	P/P	60 - 160
Desmethyl microcystin LR	95.4	96.5	P/P	60 - 160
Microcystin LA	117	108	P/P	50 - 160
Microcystin LF	83.4	76.4	P/P	50 - 160
Microcystin LR	62.9	60.3	P/P	60 - 160
Microcystin LW	84.6	73.6	P/P	60 - 160
Microcystin LY	74.3	61.9	P/P	60 - 160
Microcystin RR	122	134	P/P	60 - 160
Microcystin WR	81.3	73.7	P/P	60 - 160
Microcystin YR	67.7	60.6	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A103224

Included Lab Sample IDs: 2220143

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A103259

Included Lab Sample IDs: 2220143

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A103298

Included Lab Sample IDs: 2220143

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	91.1	97.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A103348

Included Lab Sample IDs: 2220143

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	95.8	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 SMP	MS
EPA 350.1 Rev. 2.0	Ammonia-N	100	107	105			1.21
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	108	98.8			7.79
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	100	100			0.499
EPA 365.1 Rev. 2.0	Total-P	103					0.0855
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	97.7	96.8			0.875
EPA 8321B	Anatoxin-a	140	106	101			4.86
	Cylindrospermopsin	115	83.1	77.8			6.66
	Desmethyl microcystin LR	92.0	82.3	88.5			7.24
	Microcystin LA	106	82.1	99.9			19.6
	Microcystin LF	93.9	76.2	71.7			6.09
	Microcystin LR	70.5	56.3	65.9			15.7
	Microcystin LW	98.2	73.8	77.6			5.01
	Microcystin LY	78.8	65.5	67.5			3.00
	Microcystin RR	114	99.4	105			5.25
	Microcystin WR	78.1	74.7	73.3			1.90
	Microcystin YR	91.2	72.4	82.3			12.7

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2220143
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2220143
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2220143
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2220143
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2220144
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2220142

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	01/20/2021			02/01/2021 19:26	Ping Hua	2220143
EPA 351.2 Rev. 2.0	01/20/2021	01/27/2021 13:10	Yen Ta	01/28/2021 18:11	Julia Storbeck	2220143
EPA 353.2 Rev. 2.0	01/20/2021			01/27/2021 09:48	Beverly Y. Sanders	2220143
EPA 365.1 Rev. 2.0	01/20/2021	01/22/2021 17:15	Shengyu Wang	01/25/2021 16:11	Lipi Saha	2220143
EPA 365.1 Rev. 2.0 dissolved	01/20/2021			01/20/2021 15:24	Blanca Fach	2220144
EPA 8321B	01/20/2021	01/20/2021 11:00	Pramila Ghimire	01/20/2021 17:28	Pramila Ghimire	2220142