

Chemical Analysis Report

WQAP-2020-11-03-02

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

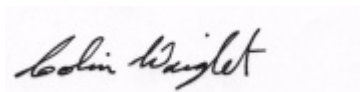
Event Description: **Algal Bloom Response - CEROC**
Request ID: **RQ-2020-10-05-60**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

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

Date Certified: 24-NOV-2020 15:47

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: Yalaha Canal @ Lakeshore Dr

Collection Date/Time: 11/02/2020 15:00

Field ID: HABCE0050_YalahaCanal

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2205866	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P389748	
		Cylindrospermopsin**	0.25	U	ug/L	P389748	
		Desmethyl microcystin LR**	0.25	U	ug/L	P389748	
		Microcystin LA**	0.25	U	ug/L	P389748	
		Microcystin LF**	0.25	U	ug/L	P389748	
		Microcystin LR**	0.32	I	ug/L	P389748	
		Microcystin LW**	0.25	U	ug/L	P389748	
		Microcystin LY**	0.25	U	ug/L	P389748	
		Microcystin RR**	0.25	U	ug/L	P389748	
		Microcystin WR**	0.50	U	ug/L	P389748	
		Microcystin YR**	0.25	U	ug/L	P389748	
2205867	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P389896	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20	I	mg N/L	P389829	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.6		mg N/L	P389739	
	EPA 365.1 Rev. 2.0	Total-P	0.055		mg P/L	P389742	
2205868	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.031		mg P/L	P389698	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389896

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389829

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389739

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389742

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389698

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

Reference Method: EPA 8321B
Batch ID: P389748

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: P389896

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389829

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389739

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389742

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: P389698

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.1		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P389748

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	105		P	40 - 150
Cylindrospermopsin	102		P	40 - 150
Desmethyl microcystin LR	104		P	40 - 150
Microcystin LA	120		P	40 - 150
Microcystin LF	114		P	40 - 150
Microcystin LR	109		P	40 - 150
Microcystin LW	91.1		P	40 - 150
Microcystin LY	108		P	40 - 150
Microcystin RR	105		P	40 - 150
Microcystin WR	99.4		P	40 - 150
Microcystin YR	84.5		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389896

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205767	Ammonia-N	103	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389829

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205836	Kjeldahl Nitrogen	103	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389739

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205691	NO2NO3-N	97.4	97.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389742

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205855	Total-P	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389698

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205837	O-Phosphate-P	97.6	98.7	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P389748

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205555	Anatoxin-a	82.4	78.7	P/P	40 - 150
2205555	Cylindrospermopsin	81.3	82.1	P/P	40 - 150
2205555	Desmethyl microcystin LR	103	95.7	P/P	40 - 150
2205555	Microcystin LA	103	103	P/P	40 - 150
2205555	Microcystin LF	90.5	87.8	P/P	40 - 150
2205555	Microcystin LR	87.9	82.9	P/P	40 - 150
2205555	Microcystin LW	71.1	71.0	P/P	40 - 150
2205555	Microcystin LY	92.1	91.8	P/P	40 - 150
2205555	Microcystin RR	94.8	94.3	P/P	40 - 150
2205555	Microcystin WR	83.7	83.0	P/P	40 - 150
2205555	Microcystin YR	75.9	73.6	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389896

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205767	Ammonia-N	0.313	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389829

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205836	Kjeldahl Nitrogen	2.04	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389739

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205691	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389742

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205855	Total-P	1.39	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389698

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205837	O-Phosphate-P	0.885	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P389748

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205555	Anatoxin-a	4.60	Spike	P	0 - 30
2205555	Cylindrospermopsin	1.02	Spike	P	0 - 30
2205555	Desmethyl microcystin LR	7.03	Spike	P	0 - 30
2205555	Microcystin LA	0.287	Spike	P	0 - 30
2205555	Microcystin LF	3.06	Spike	P	0 - 30
2205555	Microcystin LR	5.59	Spike	P	0 - 30
2205555	Microcystin LW	0.188	Spike	P	0 - 30
2205555	Microcystin LY	0.420	Spike	P	0 - 30
2205555	Microcystin RR	0.483	Spike	P	0 - 30
2205555	Microcystin WR	0.788	Spike	P	0 - 30
2205555	Microcystin YR	3.04	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2205866

Field Sample ID: HABCE0050_YalahaCanal

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	77.9	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	42.6	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A101937

Included Lab Sample IDs: 2205868

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A101952

Included Lab Sample IDs: 2205867

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

Reference Method: EPA 8321B

Run ID: A101973

Included Lab Sample IDs: 2205866

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	96.2	96.2	P/P	50 - 160
Cylindrospermopsin	103	103	P/P	60 - 160
Desmethyl microcystin LR	106	115	P/P	60 - 160
Microcystin LA	114	121	P/P	50 - 160
Microcystin LF	92.4	80.2	P/P	50 - 160
Microcystin LR	109	94.2	P/P	60 - 160
Microcystin LW	78.7	86.9	P/P	60 - 160
Microcystin LY	98.3	100	P/P	60 - 160
Microcystin RR	101	102	P/P	60 - 160
Microcystin WR	97.0	92.8	P/P	60 - 160
Microcystin YR	72.3	63.5	P/P	60 - 160

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A102027

Included Lab Sample IDs: 2205867

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A102028

Included Lab Sample IDs: 2205867

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A102059

Included Lab Sample IDs: 2205867

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	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		Precision LCS	SMP	MS
EPA 350.1 Rev. 2.0	Ammonia-N	102	103	103			0.313
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	103	98.8			2.04
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	97.4	97.4			0.0
EPA 365.1 Rev. 2.0	Total-P	107	100	102			1.39
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.1	97.6	98.7			0.885
EPA 8321B	Anatoxin-a	105	82.4	78.7			4.60
	Cylindrospermopsin	102	81.3	82.1			1.02
	Desmethyl microcystin LR	104	103	95.7			7.03
	Microcystin LA	120	103	103			0.287
	Microcystin LF	114	90.5	87.8			3.06
	Microcystin LR	109	87.9	82.9			5.59
	Microcystin LW	91.1	71.1	71.0			0.188
	Microcystin LY	108	92.1	91.8			0.420
	Microcystin RR	105	94.8	94.3			0.483
	Microcystin WR	99.4	83.7	83.0			0.788
	Microcystin YR	84.5	75.9	73.6			3.04

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2205867
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2205867
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2205867
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2205867
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2205868
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2205866

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	11/03/2020			11/07/2020 14:19	Ping Hua	2205867
EPA 351.2 Rev. 2.0	11/03/2020	11/05/2020 14:25	David Boose	11/07/2020 13:45	Elliott Rodriguez	2205867
EPA 353.2 Rev. 2.0	11/03/2020			11/04/2020 12:18	Beverly Y. Sanders	2205867
EPA 365.1 Rev. 2.0	11/03/2020	11/04/2020 12:04	Yen Ta	11/09/2020 12:49	Shengyu Wang	2205867
EPA 365.1 Rev. 2.0 dissolved	11/03/2020			11/03/2020 15:35	Blanca Fach	2205868
EPA 8321B	11/03/2020	11/05/2020 06:30	Juyoung Kim	11/05/2020 09:48	Pramila Ghimire	2205866