Chemical Analysis Report

WQAP-2021-01-28-01

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-2021-01-25-21**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

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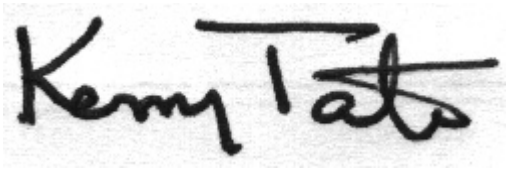
Date Certified: 18-FEB-2021 14:57



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: Cypress Lake Boat Ramp at NW Shore **Collection Date/Time: 01/27/2021 11:25**

Field ID: HABCE0031_Cypress1 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2222013	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P393081	
		Cylindrospermopsin	0.25	U	ug/L	P393081	
		Desmethyl microcystin LR	0.25	U	ug/L	P393081	
		Microcystin HilR**	0.25	U	ug/L	P393081	
		Microcystin HtyR**	0.25	U	ug/L	P393081	
		Microcystin LA	0.25	U	ug/L	P393081	
		Microcystin LF	0.25	U	ug/L	P393081	
		Microcystin LR	0.25	U	ug/L	P393081	
		Microcystin LW	0.25	U	ug/L	P393081	
		Microcystin LY	0.25	U	ug/L	P393081	
		Microcystin RR	0.25	U	ug/L	P393081	
		Microcystin WR	0.50	U	ug/L	P393081	
		Microcystin YR	0.25	U	ug/L	P393081	
2222014	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P393467	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.63		mg N/L	P393125	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P393194	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P393325	
2222015	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P393087	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393467

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393125

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P393194

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P393325

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P393087

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

Reference Method: EPA 8321B
Batch ID: P393081

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 HilR	0.25	U	ug/L
Microcystin HtyR	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: P393467

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393125

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: P393194

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: P393325

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: P393087

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.2		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P393081

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	146		P	40 - 150
Cylindrospermopsin	126		P	40 - 150
Desmethyl microcystin LR	132		P	40 - 150
Microcystin HilR	123		P	40 - 150
Microcystin HtyR	117		P	40 - 150
Microcystin LA	130		P	40 - 150
Microcystin LF	117		P	40 - 150
Microcystin LR	94.9		P	40 - 150
Microcystin LW	120		P	40 - 150
Microcystin LY	108		P	40 - 150
Microcystin RR	131		P	40 - 150
Microcystin WR	124		P	40 - 150
Microcystin YR	78.2		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393467

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2221964	Ammonia-N	98.9	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393125

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219973	Kjeldahl Nitrogen	105	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P393194

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2221989	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P393325

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2222018	Total-P	104	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P393087

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2222129	O-Phosphate-P	101	100	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P393081

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2222070	Anatoxin-a	131	142	P/P	40 - 150
2222070	Cylindrospermopsin	106	116	P/P	40 - 150
2222070	Desmethyl microcystin LR	125	140	P/P	40 - 150
2222070	Microcystin HilR	112	123	P/P	40 - 150
2222070	Microcystin HtyR	105	123	P/P	40 - 150
2222070	Microcystin LA	123	129	P/P	40 - 150
2222070	Microcystin LF	109	118	P/P	40 - 150
2222070	Microcystin LR	97.4	108	P/P	40 - 150
2222070	Microcystin LW	105	116	P/P	40 - 150
2222070	Microcystin LY	102	109	P/P	40 - 150
2222070	Microcystin RR	127	137	P/P	40 - 150
2222070	Microcystin WR	110	120	P/P	40 - 150
2222070	Microcystin YR	75.1	78.6	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393467

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2221964	Ammonia-N	1.32	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393125

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219973	Kjeldahl Nitrogen	0.468	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P393194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2221989	NO2NO3-N	0.976	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P393325

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2222018	Total-P	2.49	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P393087

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2222129	O-Phosphate-P	0.426	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P393081

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2222070	Anatoxin-a	8.33	Spike	P	0 - 30
2222070	Cylindrospermopsin	8.32	Spike	P	0 - 30
2222070	Desmethyl microcystin LR	11.2	Spike	P	0 - 30
2222070	Microcystin HilR	9.02	Spike	P	0 - 30
2222070	Microcystin HtyR	15.3	Spike	P	0 - 30
2222070	Microcystin LA	4.68	Spike	P	0 - 30
2222070	Microcystin LF	7.96	Spike	P	0 - 30
2222070	Microcystin LR	10.2	Spike	P	0 - 30
2222070	Microcystin LW	9.77	Spike	P	0 - 30
2222070	Microcystin LY	6.85	Spike	P	0 - 30
2222070	Microcystin RR	7.52	Spike	P	0 - 30
2222070	Microcystin WR	8.46	Spike	P	0 - 30
2222070	Microcystin YR	4.59	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2222013
Field Sample ID: HABCE0031_Cypress1

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	89.1	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	79.3	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A103293
Included Lab Sample IDs: 2222015

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.3	99.3	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A103295
Included Lab Sample IDs: 2222013

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	152	154	P/P	50 - 160
Cylindrospermopsin	121	120	P/P	60 - 160
Desmethyl microcystin LR	140	135	P/P	60 - 160
Microcystin HilR	128	127	P/P	60 - 160
Microcystin HtyR	116	120	P/P	60 - 160
Microcystin LA	138	136	P/P	50 - 160
Microcystin LF	131	131	P/P	50 - 160
Microcystin LR	94.0	99.9	P/P	60 - 160
Microcystin LW	127	117	P/P	60 - 160
Microcystin LY	116	116	P/P	60 - 160
Microcystin RR	138	142	P/P	60 - 160
Microcystin WR	120	123	P/P	60 - 160
Microcystin YR	80.3	72.5	P/P	60 - 160

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A103338
Included Lab Sample IDs: 2222014

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: A103347
Included Lab Sample IDs: 2222014

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A103445
Included Lab Sample IDs: 2222014

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	97.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A103455
Included Lab Sample IDs: 2222014

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.2	97.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

* 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	99.5	98.9	101			1.32
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	105	105			0.468
EPA 353.2 Rev. 2.0	NO2NO3-N	102	103	102			0.976
EPA 365.1 Rev. 2.0	Total-P	105	104	107			2.49
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.2	101	100			0.426
EPA 8321B	Anatoxin-a	146	131	142			8.33
	Cylindrospermopsin	126	106	116			8.32
	Desmethyl microcystin LR	132	125	140			11.2
	Microcystin HilR	123	112	123			9.02
	Microcystin HtyR	117	105	123			15.3
	Microcystin LA	130	123	129			4.68
	Microcystin LF	117	109	118			7.96
	Microcystin LR	94.9	97.4	108			10.2
	Microcystin LW	120	105	116			9.77
	Microcystin LY	108	102	109			6.85
	Microcystin RR	131	127	137			7.52
	Microcystin WR	124	110	120			8.46
	Microcystin YR	78.2	75.1	78.6			4.59

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2222014
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2222014
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2222014
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2222014
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2222015
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2222013

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	01/28/2021			02/07/2021 14:14	Ping Hua	2222014
EPA 351.2 Rev. 2.0	01/28/2021	01/29/2021 12:30	Yen Ta	02/01/2021 15:31	Julia Storbeck	2222014
EPA 353.2 Rev. 2.0	01/28/2021			02/01/2021 10:54	Beverly Y. Sanders	2222014
EPA 365.1 Rev. 2.0	01/28/2021	02/03/2021 16:16	Madeline Gruver	02/05/2021 14:35	Shengyu Wang	2222014
EPA 365.1 Rev. 2.0 dissolved	01/28/2021			01/28/2021 15:16	Blanca Fach	2222015
EPA 8321B	01/28/2021	01/28/2021 12:30	Pramila Ghimire	01/28/2021 16:49	Pramila Ghimire	2222013