

Chemical Analysis Report

WQAP-2022-01-07-02

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

Event Description: **Algal Bloom Response- NEROC**
Request ID: **RQ-2021-10-11-60**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
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Jacksonville, FL 32256
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Date Certified: 25-JAN-2022 13:08



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: Punchbowl Lake at 140 Pearsall Cir

Collection Date/Time: 01/06/2022 15:50

Field ID: NEHAB0062

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2298135	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P408411	
		Cylindrospermopsin	0.10	U	ug/L	P408411	
		Desmethyl microcystin LR	0.25	U	ug/L	P408411	
		Microcystin HIR**	0.25	U	ug/L	P408411	
		Microcystin HtyR**	0.25	U	ug/L	P408411	
		Microcystin LA	0.10	U	ug/L	P408411	
		Microcystin LF	0.10	U	ug/L	P408411	
		Microcystin LR	0.25	U	ug/L	P408411	
		Microcystin LW	0.25	U	ug/L	P408411	
		Microcystin LY	0.10	U	ug/L	P408411	
		Microcystin RR	0.10	U	ug/L	P408411	
		Microcystin WR	0.50	U	ug/L	P408411	
		Microcystin YR	0.25	U	ug/L	P408411	
		Nodularin-R**	0.10	U	ug/L	P408411	
2298136	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P408558	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.94		mg N/L	P408393	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.18		mg N/L	P408419	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P408477	
2298137	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P408246	MS

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P408558

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P408393

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P408419

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P408477

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P408246

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

Reference Method: EPA 8321B
Batch ID: P408411

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin HIR	0.25	U	ug/L
Microcystin HtyR	0.25	U	ug/L
Microcystin LA	0.10	U	ug/L
Microcystin LF	0.10	U	ug/L
Microcystin LR	0.25	U	ug/L
Microcystin LW	0.25	U	ug/L
Microcystin LY	0.10	U	ug/L
Microcystin RR	0.10	U	ug/L
Microcystin WR	0.50	U	ug/L
Microcystin YR	0.25	U	ug/L
Nodularin-R	0.10	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P408558

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P408393

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: P408419

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	95.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P408477

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P408246

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

Reference Method: EPA 8321B
Batch ID: P408411

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	101		P	40 - 150
Cylindrospermopsin	101		P	40 - 150
Desmethyl microcystin LR	88.2		P	40 - 150
Microcystin H1R	87.7		P	40 - 150
Microcystin HtyR	92.3		P	40 - 150
Microcystin LA	88.4		P	40 - 150
Microcystin LF	91.4		P	40 - 150
Microcystin LR	109		P	40 - 150
Microcystin LW	87.6		P	40 - 150
Microcystin LY	92.0		P	40 - 150
Microcystin RR	99.8		P	40 - 150
Microcystin WR	87.3		P	40 - 150
Microcystin YR	99.0		P	40 - 150
Nodularin-R	95.7		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P408558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2298112	Ammonia-N	93.2	93.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P408393

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2298032	Kjeldahl Nitrogen	104	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P408419

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2298069	NO2NO3-N	91.5	91.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P408477

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2298112	Total-P	112	112	F/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P408246

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2298142	O-Phosphate-P	102	104	P/P	90 - 110

Reference Method: EPA 8321B

Batch ID: P408411

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2298051	Anatoxin-a	107	113	P/P	40 - 150
2298051	Cylindrospermopsin	107	116	P/P	40 - 150
2298051	Desmethyl microcystin LR	96.5	98.8	P/P	40 - 150
2298051	Microcystin HiLR	95.6	103	P/P	40 - 150
2298051	Microcystin HtyR	101	109	P/P	40 - 150
2298051	Microcystin LA	94.6	89.9	P/P	40 - 150
2298051	Microcystin LF	79.1	94.6	P/P	40 - 150
2298051	Microcystin LR	120	127	P/P	40 - 150
2298051	Microcystin LW	73.9	87.2	P/P	40 - 150
2298051	Microcystin LY	87.9	95.9	P/P	40 - 150
2298051	Microcystin RR	108	114	P/P	40 - 150
2298051	Microcystin WR	94.9	102	P/P	40 - 150
2298051	Microcystin YR	109	120	P/P	40 - 150
2298051	Nodularin-R	101	108	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P408558

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298112	Ammonia-N	0.145	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P408393

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298032	Kjeldahl Nitrogen	3.75	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P408419

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298069	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P408477

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298112	Total-P	0.0604	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P408246

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298142	O-Phosphate-P	2.42	Spike	P	0 - 20

Reference Method: EPA 8321B

Batch ID: P408411

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298051	Anatoxin-a	4.95	Spike	P	0 - 30
2298051	Cylindrospermopsin	8.35	Spike	P	0 - 30
2298051	Desmethyl microcystin LR	2.34	Spike	P	0 - 30
2298051	Microcystin H1LR	7.35	Spike	P	0 - 30
2298051	Microcystin HtyR	7.40	Spike	P	0 - 30
2298051	Microcystin LA	5.09	Spike	P	0 - 30
2298051	Microcystin LF	17.8	Spike	P	0 - 30
2298051	Microcystin LR	5.08	Spike	P	0 - 30
2298051	Microcystin LW	16.6	Spike	P	0 - 30
2298051	Microcystin LY	8.71	Spike	P	0 - 30
2298051	Microcystin RR	5.88	Spike	P	0 - 30
2298051	Microcystin WR	7.12	Spike	P	0 - 30
2298051	Microcystin YR	8.91	Spike	P	0 - 30
2298051	Nodularin-R	7.25	Spike	P	0 - 30

Quality Assurance Report Precision

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

Quality Assurance Report Surrogates

Lab Sample ID: 2298135

Field Sample ID: NEHAB0062

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	107	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	87.2	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A109743

Included Lab Sample IDs: 2298137

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A109817

Included Lab Sample IDs: 2298136

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.0	97.0	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A109840

Included Lab Sample IDs: 2298135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	96.8	97.9	P/P	50 - 160
Cylindrospermopsin	102	107	P/P	50 - 160
Desmethyl microcystin LR	82.1	87.0	P/P	50 - 160
Microcystin HILR	86.8	90.2	P/P	50 - 160
Microcystin HtyR	87.9	96.0	P/P	50 - 160
Microcystin LA	92.5	94.8	P/P	50 - 160
Microcystin LF	88.3	93.3	P/P	50 - 160
Microcystin LR	104	108	P/P	50 - 160
Microcystin LW	80.8	88.3	P/P	50 - 160
Microcystin LY	88.1	94.5	P/P	50 - 160
Microcystin RR	100	104	P/P	50 - 160
Microcystin WR	91.1	91.2	P/P	50 - 160
Microcystin YR	94.7	105	P/P	50 - 160
Nodularin-R	97.3	98.7	P/P	50 - 160

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A109887

Included Lab Sample IDs: 2298136

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.9	94.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A109900

Included Lab Sample IDs: 2298136

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A109958

Included Lab Sample IDs: 2298136

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.0	97.0	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	97.2	93.2	93.0			0.145
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	104	99.0			3.75
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	95.5	91.5	91.5			0.0
EPA 365.1 Rev. 2.0	Total-P	110	112	112			0.0604
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	102	104			2.42
EPA 8321B	Anatoxin-a	101	107	113			4.95
	Cylindrospermopsin	101	107	116			8.35
	Desmethyl microcystin LR	88.2	96.5	98.8			2.34
	Microcystin HiLR	87.7	95.6	103			7.35
	Microcystin HtyR	92.3	101	109			7.40
	Microcystin LA	88.4	94.6	89.9			5.09
	Microcystin LF	91.4	79.1	94.6			17.8
	Microcystin LR	109	120	127			5.08
	Microcystin LW	87.6	73.9	87.2			16.6
	Microcystin LY	92.0	87.9	95.9			8.71
	Microcystin RR	99.8	108	114			5.88
	Microcystin WR	87.3	94.9	102			7.12
	Microcystin YR	99.0	109	120			8.91
	Nodularin-R	95.7	101	108			7.25

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2298136
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2298136
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2298136
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2298136
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2298137
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2298135

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	01/07/2022			01/14/2022 15:55	Roberta Tatti	2298136
EPA 351.2 Rev. 2.0	01/07/2022	01/14/2022 10:30	Alexandra J Mattheus	01/14/2022 16:39	Alexandra J Mattheus	2298136
EPA 353.2 Rev. 2.0	01/07/2022			01/12/2022 09:42	Beverly Y. Sanders	2298136
EPA 365.1 Rev. 2.0	01/07/2022	01/14/2022 16:50	Simonne.V. Calhoun	01/19/2022 15:32	Shengyu Ding	2298136
EPA 365.1 Rev. 2.0 dissolved	01/07/2022			01/07/2022 15:15	James L Waggerby	2298137
EPA 8321B	01/07/2022	01/12/2022 14:00	Manjita Shrestha	01/12/2022 18:14	Manjita Shrestha	2298135