Chemical Analysis Report

WQAP-2022-05-13-01

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-2022-04-25-22**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

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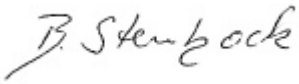
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 08-JUN-2022 17:09



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 Mann - McQueen Park **Collection Date/Time: 05/12/2022 10:40**

Field ID: HABCE0112_LakeMann Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2326727	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P414008	
		Cylindrospermopsin	0.10	U	ug/L	P414008	
		Desmethyl microcystin LR	0.25	U	ug/L	P414008	
		Microcystin HilR**	0.25	U	ug/L	P414008	
		Microcystin HtyR**	0.25	U	ug/L	P414008	
		Microcystin LA	0.10	U	ug/L	P414008	RPD
		Microcystin LF	0.10	U	ug/L	P414008	
		Microcystin LR	0.47	I	ug/L	P414008	
		Microcystin LW	0.25	U	ug/L	P414008	
		Microcystin LY	0.10	U	ug/L	P414008	
		Microcystin RR	0.10	U	ug/L	P414008	
		Microcystin WR	0.50	U	ug/L	P414008	
		Microcystin YR	0.25	U	ug/L	P414008	
		Nodularin-R**	0.10	U	ug/L	P414008	
2326730	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P414331	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.87		mg N/L	P414559	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P413968	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P413997	
2326733	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P413864	

Sample Location: Lake Ivanhoe - Center of Eastern Lobe **Collection Date/Time: 05/12/2022 11:26**

Field ID: HABCE0118_LakeIvanhoe1 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2326728	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P414008	
		Cylindrospermopsin	0.10	U	ug/L	P414008	
		Desmethyl microcystin LR	0.25	U	ug/L	P414008	
		Microcystin HilR**	0.25	U	ug/L	P414008	
		Microcystin HtyR**	0.25	U	ug/L	P414008	
		Microcystin LA	0.10	U	ug/L	P414008	RPD
		Microcystin LF	0.10	U	ug/L	P414008	
		Microcystin LR	0.25	U	ug/L	P414008	
		Microcystin LW	0.25	U	ug/L	P414008	
		Microcystin LY	0.10	U	ug/L	P414008	
		Microcystin RR	0.10	U	ug/L	P414008	
		Microcystin WR	0.50	U	ug/L	P414008	
		Microcystin YR	0.25	U	ug/L	P414008	
		Nodularin-R**	0.10	U	ug/L	P414008	
2326731	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P414330	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P414148	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P413968	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P413997	
2326734	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P413864	

Sample Location: Lake Sue - Lakeshore Dr West Lobe **Collection Date/Time: 05/12/2022 12:24**

Field ID: HABCE0110_LakeSue1 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2326726	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P414008	
		Cylindrospermopsin	0.10	U	ug/L	P414008	
		Desmethyl microcystin LR	0.25	U	ug/L	P414008	
		Microcystin HilR**	0.25	U	ug/L	P414008	
		Microcystin HtyR**	0.25	U	ug/L	P414008	
		Microcystin LA	0.10	UJ	ug/L	P414008	RPD
		Microcystin LF	0.10	U	ug/L	P414008	
		Microcystin LR	0.25	U	ug/L	P414008	
		Microcystin LW	0.25	U	ug/L	P414008	
		Microcystin LY	0.10	U	ug/L	P414008	
		Microcystin RR	0.10	U	ug/L	P414008	
		Microcystin WR	0.50	U	ug/L	P414008	
		Microcystin YR	0.25	U	ug/L	P414008	
		Nodularin-R**	0.10	U	ug/L	P414008	
2326729	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P414331	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56		mg N/L	P414238	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P413968	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P413997	
2326732	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P413864	

Ref. Method and Comment:
EPA 8321B: Refer to the Lab Analysis Report for an explanation of QC Codes.
EPA 351.2 Rev. 2.0: 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: P414330

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P414331

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414148

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414238

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414559

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P413968

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P413997

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P413864

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

Reference Method: EPA 8321B
Batch ID: P414008

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 HilR	0.25	U	ug/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 8321B
Batch ID: P414008

Component	Result	Code	Units
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: P414330

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P414331

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	94.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414148

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414238

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414559

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P413968

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P413997

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P413864

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.7		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P414008

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	106		P	40 - 150
Cylindrospermopsin	85.8		P	40 - 150
Desmethyl microcystin LR	95.8		P	40 - 150
Microcystin HilR	100		P	40 - 150

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P414008

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Microcystin HtyR	104		P	40 - 150
Microcystin LA	103		P	40 - 150
Microcystin LF	88.6		P	40 - 150
Microcystin LR	99.9		P	40 - 150
Microcystin LW	97.0		P	40 - 150
Microcystin LY	113		P	40 - 150
Microcystin RR	102		P	40 - 150
Microcystin WR	95.2		P	40 - 150
Microcystin YR	108		P	40 - 150
Nodularin-R	102		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P414330

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2326731	Ammonia-N	94.4	93.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P414331

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2326840	Ammonia-N	94.6	94.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414148

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2326731	Kjeldahl Nitrogen	98.1	92.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414559

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2328400	Kjeldahl Nitrogen	104	99.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P413968

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2325411	NO2NO3-N	95.5	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P413997

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2326775	Total-P	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P413864

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2326980	O-Phosphate-P	97.2	97.2	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P414008

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2326726	Anatoxin-a	127	116	P/P	40 - 150
2326726	Cylindrospermopsin	89.3	84.5	P/P	40 - 150
2326726	Desmethyl microcystin LR	100	89.7	P/P	40 - 150
2326726	Microcystin HilR	95.6	91.5	P/P	40 - 150
2326726	Microcystin HtyR	97.8	87.6	P/P	40 - 150
2326726	Microcystin LA	121	85.6	P/P	40 - 150
2326726	Microcystin LF	108	88.6	P/P	40 - 150
2326726	Microcystin LR	99.4	91.6	P/P	40 - 150
2326726	Microcystin LW	116	90.9	P/P	40 - 150
2326726	Microcystin LY	102	99.4	P/P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P414008

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2326726	Microcystin RR	94.5	86.9	P/P	40 - 150
2326726	Microcystin WR	105	87.6	P/P	40 - 150
2326726	Microcystin YR	100	90.4	P/P	40 - 150
2326726	Nodularin-R	99.2	86.7	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P414330

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2326731	Ammonia-N	0.709	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P414331

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2326840	Ammonia-N	0.371	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414148

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2326731	Kjeldahl Nitrogen	3.03	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414238

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2326979	Kjeldahl Nitrogen	5.71	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414559

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2328400	Kjeldahl Nitrogen	4.35	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P413968

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2325411	NO2NO3-N	0.289	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P413997

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2326775	Total-P	0.186	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P413864

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2326980	O-Phosphate-P	0.0	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P414008

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2326726	Anatoxin-a	9.06	Spike	P	0 - 30
2326726	Cylindrospermopsin	5.50	Spike	P	0 - 30
2326726	Desmethyl microcystin LR	11.3	Spike	P	0 - 30
2326726	Microcystin HilR	4.33	Spike	P	0 - 30
2326726	Microcystin HtyR	11.0	Spike	P	0 - 30
2326726	Microcystin LA	34.0	Spike	F	0 - 30
2326726	Microcystin LF	19.8	Spike	P	0 - 30
2326726	Microcystin LR	8.14	Spike	P	0 - 30
2326726	Microcystin LW	24.3	Spike	P	0 - 30
2326726	Microcystin LY	2.24	Spike	P	0 - 30
2326726	Microcystin RR	8.39	Spike	P	0 - 30
2326726	Microcystin WR	18.0	Spike	P	0 - 30
2326726	Microcystin YR	10.5	Spike	P	0 - 30
2326726	Nodularin-R	13.5	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2326726
Field Sample ID: HABCE0110_LakeSue1

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	84.1	P	30 - 160

Lab Sample ID: 2326727
Field Sample ID: HABCE0112_LakeMann

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	89.4	P	30 - 160

Lab Sample ID: 2326728
Field Sample ID: HABCE0118_LakeIvanhoe1

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	91.0	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A112163
Included Lab Sample IDs: 2326732, 2326733, 2326734

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A112205
Included Lab Sample IDs: 2326729, 2326730, 2326731

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	97.5	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A112273
Included Lab Sample IDs: 2326726, 2326727, 2326728

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	106	108	P/P	50 - 160
Cylindrospermopsin	90.6	97.0	P/P	50 - 160
Desmethyl microcystin LR	95.5	100	P/P	50 - 160
Microcystin HilR	101	97.5	P/P	50 - 160
Microcystin HtyR	97.4	105	P/P	50 - 160
Microcystin LA	100	102	P/P	50 - 160
Microcystin LF	94.0	116	P/P	50 - 160
Microcystin LR	94.3	97.9	P/P	50 - 160
Microcystin LW	85.8	119	P/P	50 - 160
Microcystin LY	96.0	96.2	P/P	50 - 160
Microcystin RR	107	96.0	P/P	50 - 160
Microcystin WR	101	106	P/P	50 - 160
Microcystin YR	95.4	105	P/P	50 - 160
Nodularin-R	98.9	108	P/P	50 - 160

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A112297
Included Lab Sample IDs: 2326729, 2326730, 2326731

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A112360
Included Lab Sample IDs: 2326729, 2326730, 2326731

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	95.9	96.0	P/P	90 - 110
Ammonia-N	99.8	95.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A112417
Included Lab Sample IDs: 2326729

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A112419
Included Lab Sample IDs: 2326731

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.7	104	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	96.4	94.4	93.6			0.709
	Ammonia-N	94.2	94.6	94.2			0.371
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.5	98.1	92.6			3.03
	Kjeldahl Nitrogen	102					5.71
	Kjeldahl Nitrogen	99.7	104	99.1			4.35
EPA 353.2 Rev. 2.0	NO2NO3-N	98.0	95.5	96.0			0.289
EPA 365.1 Rev. 2.0	Total-P	102	104	104			0.186
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.7	97.2	97.2			0.0
EPA 8321B	Anatoxin-a	106	127	116			9.06
	Cylindrospermopsin	85.8	89.3	84.5			5.50
	Desmethyl microcystin LR	95.8	100	89.7			11.3
	Microcystin HilR	100	95.6	91.5			4.33
	Microcystin HtyR	104	97.8	87.6			11.0
	Microcystin LA	103	121	85.6			34.0
	Microcystin LF	88.6	108	88.6			19.8
	Microcystin LR	99.9	99.4	91.6			8.14
	Microcystin LW	97.0	116	90.9			24.3
	Microcystin LY	113	102	99.4			2.24
	Microcystin RR	102	94.5	86.9			8.39
	Microcystin WR	95.2	105	87.6			18.0
	Microcystin YR	108	100	90.4			10.5
	Nodularin-R	102	99.2	86.7			13.5

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2326729, 2326730, 2326731
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2326729, 2326730, 2326731
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2326729, 2326730, 2326731
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2326729, 2326730, 2326731
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2326732, 2326733, 2326734
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2326726, 2326727, 2326728

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	05/13/2022			05/24/2022 13:22	Ping Hua	2326731
	05/13/2022			05/24/2022 13:53	Ping Hua	2326730
	05/13/2022			05/24/2022 14:02	Ping Hua	2326729
EPA 351.2 Rev. 2.0	05/13/2022	05/24/2022 09:04	Samantha L Bates	05/25/2022 11:58	Alexandra J Mattheus	2326731
	05/13/2022	05/24/2022 15:12	Samantha L Bates	05/25/2022 18:19	Alexandra J Mattheus	2326729
	05/13/2022	06/02/2022 15:43	Samantha L Bates	06/03/2022 12:37	Alexandra J Mattheus	2326730
EPA 353.2 Rev. 2.0	05/13/2022			05/17/2022 13:47	Nathaniel J Jones	2326729
	05/13/2022			05/17/2022 13:48	Nathaniel J Jones	2326730
	05/13/2022			05/17/2022 13:49	Nathaniel J Jones	2326731
EPA 365.1 Rev. 2.0	05/13/2022	05/19/2022 14:04	Simonne.V. Calhoun	05/20/2022 14:56	James L Waggerby	2326729
	05/13/2022	05/19/2022 14:04	Simonne.V. Calhoun	05/20/2022 14:57	James L Waggerby	2326730
	05/13/2022	05/19/2022 14:04	Simonne.V. Calhoun	05/20/2022 14:58	James L Waggerby	2326731
EPA 365.1 Rev. 2.0 dissolved	05/13/2022			05/13/2022 13:51	Nathaniel J Jones	2326732
	05/13/2022			05/13/2022 13:56	Nathaniel J Jones	2326733
	05/13/2022			05/13/2022 13:57	Nathaniel J Jones	2326734
EPA 8321B	05/13/2022	05/18/2022 09:30	Manjita Shrestha	05/18/2022 15:27	Manjita Shrestha	2326726
	05/13/2022	05/18/2022 09:30	Manjita Shrestha	05/18/2022 15:44	Manjita Shrestha	2326727
	05/13/2022	05/18/2022 09:30	Manjita Shrestha	05/18/2022 16:01	Manjita Shrestha	2326728