

Chemical Analysis Report

WQAP-2022-05-18-01

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

Event Description: **Algal Bloom Response -SOROC- Highlands**
Request ID: **RQ-2022-05-16-49**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 10-JUN-2022 13:47

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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: West Josephine Basin

Collection Date/Time: 05/17/2022 08:30

Field ID: HAB-HC-051722-0830

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2327623	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P414016	
		Cylindrospermopsin	0.10	U	ug/L	P414016	
		Desmethyl microcystin LR	0.25	U	ug/L	P414016	
		Microcystin HIR**	0.25	U	ug/L	P414016	
		Microcystin HtyR**	0.25	U	ug/L	P414016	
		Microcystin LA	0.10	U	ug/L	P414016	
		Microcystin LF	0.10	U	ug/L	P414016	MS
		Microcystin LR	0.25	U	ug/L	P414016	
		Microcystin LW	0.25	U	ug/L	P414016	
		Microcystin LY	0.10	U	ug/L	P414016	
		Microcystin RR	0.10	U	ug/L	P414016	
		Microcystin WR	0.50	U	ug/L	P414016	
		Microcystin YR	0.25	U	ug/L	P414016	
		Nodularin-R**	0.10	U	ug/L	P414016	
2327625	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P414097	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.7		mg N/L	P414240	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P414277	
	EPA 365.1 Rev. 2.0	Total-P	0.098		mg P/L	P414059	
2327627	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P414046	

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.

Sample Location: West Josephine Basin

Collection Date/Time: 05/17/2022 08:50

Field ID: HAB-HC-051722-0850

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2327624	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P414020	
		Cylindrospermopsin	0.10	U	ug/L	P414020	
		Desmethyl microcystin LR	0.25	U	ug/L	P414020	
		Microcystin HIR**	0.25	U	ug/L	P414020	
		Microcystin HtyR**	0.25	U	ug/L	P414020	
		Microcystin LA	0.10	U	ug/L	P414020	
		Microcystin LF	0.10	U	ug/L	P414020	
		Microcystin LR	0.25	U	ug/L	P414020	
		Microcystin LW	0.25	U	ug/L	P414020	
		Microcystin LY	0.10	U	ug/L	P414020	
		Microcystin RR	0.10	U	ug/L	P414020	
		Microcystin WR	0.50	U	ug/L	P414020	
		Microcystin YR	0.25	U	ug/L	P414020	
		Nodularin-R**	0.10	U	ug/L	P414020	
2327626	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P414097	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P414281	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P414277	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P414059	
2327628	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P414046	

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: P414097

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414240

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414281

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414277

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414059

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P414046

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

Reference Method: EPA 8321B
Batch ID: P414016

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 H11R	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

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P414020

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
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: P414097

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414240

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414281

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414277

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	96.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414059

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: P414046

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

Reference Method: EPA 8321B
Batch ID: P414016

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	96.8		P	40 - 150
Cylindrospermopsin	90.2		P	40 - 150
Desmethyl microcystin LR	96.5		P	40 - 150
Microcystin H1IR	96.6		P	40 - 150
Microcystin HtyR	96.5		P	40 - 150
Microcystin LA	96.5		P	40 - 150
Microcystin LF	97.0		P	40 - 150
Microcystin LR	99.4		P	40 - 150
Microcystin LW	119		P	40 - 150
Microcystin LY	115		P	40 - 150
Microcystin RR	93.3		P	40 - 150
Microcystin WR	101		P	40 - 150
Microcystin YR	97.1		P	40 - 150
Nodularin-R	104		P	40 - 150

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P414020

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	103		P	40 - 150
Cylindrospermopsin	92.9		P	40 - 150
Desmethyl microcystin LR	102		P	40 - 150
Microcystin HilR	95.7		P	40 - 150
Microcystin HtyR	99.5		P	40 - 150
Microcystin LA	110		P	40 - 150
Microcystin LF	90.3		P	40 - 150
Microcystin LR	101		P	40 - 150
Microcystin LW	120		P	40 - 150
Microcystin LY	102		P	40 - 150
Microcystin RR	90.1		P	40 - 150
Microcystin WR	108		P	40 - 150
Microcystin YR	104		P	40 - 150
Nodularin-R	108		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P414097

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2327733	Ammonia-N	97.8	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2327117	Kjeldahl Nitrogen	98.6	93.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414281

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2327460	Kjeldahl Nitrogen	99.5	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414277

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2327487	NO2NO3-N	98.5	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P414046

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2327559	O-Phosphate-P	98.4	98.5	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P414016

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2327504	Anatoxin-a	140	136	P/P	40 - 150
2327504	Cylindrospermopsin	97.8	102	P/P	40 - 150
2327504	Desmethyl microcystin LR	116	115	P/P	40 - 150
2327504	Microcystin HiLR	110	109	P/P	40 - 150
2327504	Microcystin HtyR	105	105	P/P	40 - 150
2327504	Microcystin LA	109	108	P/P	40 - 150
2327504	Microcystin LF	153	151	F/F	40 - 150
2327504	Microcystin LR	111	106	P/P	40 - 150
2327504	Microcystin LW	117	128	P/P	40 - 150
2327504	Microcystin LY	122	129	P/P	40 - 150
2327504	Microcystin RR	94.0	92.2	P/P	40 - 150
2327504	Microcystin WR	108	111	P/P	40 - 150
2327504	Microcystin YR	118	114	P/P	40 - 150
2327504	Nodularin-R	103	107	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P414020

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2327720	Anatoxin-a	135	137	P/P	40 - 150
2327720	Cylindrospermopsin	97.9	103	P/P	40 - 150
2327720	Desmethyl microcystin LR	121	132	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P414020

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2327720	Microcystin HilR	105	113	P/P	40 - 150
2327720	Microcystin HtyR	110	108	P/P	40 - 150
2327720	Microcystin LA	102	111	P/P	40 - 150
2327720	Microcystin LF	129	130	P/P	40 - 150
2327720	Microcystin LR	116	115	P/P	40 - 150
2327720	Microcystin LW	131	135	P/P	40 - 150
2327720	Microcystin LY	96.4	117	P/P	40 - 150
2327720	Microcystin RR	93.4	95.3	P/P	40 - 150
2327720	Microcystin WR	116	118	P/P	40 - 150
2327720	Microcystin YR	123	121	P/P	40 - 150
2327720	Nodularin-R	113	117	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P414097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2327733	Ammonia-N	1.21	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2327117	Kjeldahl Nitrogen	4.20	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P414281

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2327460	Kjeldahl Nitrogen	1.67	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P414277

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2327487	NO2NO3-N	0.509	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P414059

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2327583	Total-P	2.07	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P414046

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2327559	O-Phosphate-P	0.0919	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P414016

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2327504	Anatoxin-a	2.61	Spike	P	0 - 30
2327504	Cylindrospermopsin	3.89	Spike	P	0 - 30
2327504	Desmethyl microcystin LR	0.810	Spike	P	0 - 30
2327504	Microcystin HtLR	1.04	Spike	P	0 - 30
2327504	Microcystin HtyR	0.552	Spike	P	0 - 30
2327504	Microcystin LA	0.952	Spike	P	0 - 30
2327504	Microcystin LF	1.06	Spike	P	0 - 30
2327504	Microcystin LR	4.08	Spike	P	0 - 30
2327504	Microcystin LW	9.51	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
 Batch ID: P414016

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2327504	Microcystin LY	5.49	Spike	P	0 - 30
2327504	Microcystin RR	1.89	Spike	P	0 - 30
2327504	Microcystin WR	2.53	Spike	P	0 - 30
2327504	Microcystin YR	3.74	Spike	P	0 - 30
2327504	Nodularin-R	4.31	Spike	P	0 - 30

Reference Method: EPA 8321B
 Batch ID: P414020

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2327720	Anatoxin-a	1.87	Spike	P	0 - 30
2327720	Cylindrospermopsin	5.49	Spike	P	0 - 30
2327720	Desmethyl microcystin LR	8.23	Spike	P	0 - 30
2327720	Microcystin HllR	7.33	Spike	P	0 - 30
2327720	Microcystin HtyR	1.39	Spike	P	0 - 30
2327720	Microcystin LA	8.94	Spike	P	0 - 30
2327720	Microcystin LF	0.597	Spike	P	0 - 30
2327720	Microcystin LR	0.951	Spike	P	0 - 30
2327720	Microcystin LW	2.63	Spike	P	0 - 30
2327720	Microcystin LY	19.6	Spike	P	0 - 30
2327720	Microcystin RR	2.06	Spike	P	0 - 30
2327720	Microcystin WR	1.73	Spike	P	0 - 30
2327720	Microcystin YR	1.51	Spike	P	0 - 30
2327720	Nodularin-R	3.54	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2327623
Field Sample ID: HAB-HC-051722-0830

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	91.7	P	30 - 160

Lab Sample ID: 2327624
Field Sample ID: HAB-HC-051722-0850

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	102	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A112231

Included Lab Sample IDs: 2327627, 2327628

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	99.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A112261

Included Lab Sample IDs: 2327625, 2327626

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.5	97.7	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A112273

Included Lab Sample IDs: 2327623, 2327624

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	108	90.9	P/P	50 - 160
Anatoxin-a	108	110	P/P	50 - 160
Cylindrospermopsin	103	80.7	P/P	50 - 160
Cylindrospermopsin	96.3	103	P/P	50 - 160
Desmethyl microcystin LR	109	113	P/P	50 - 160
Desmethyl microcystin LR	98.3	86.2	P/P	50 - 160
Microcystin HILR	101	106	P/P	50 - 160
Microcystin HILR	95.5	79.3	P/P	50 - 160
Microcystin HtyR	104	108	P/P	50 - 160
Microcystin HtyR	96.5	87.2	P/P	50 - 160
Microcystin LA	106	110	P/P	50 - 160
Microcystin LA	110	82.8	P/P	50 - 160
Microcystin LF	110	102	P/P	50 - 160
Microcystin LF	114	113	P/P	50 - 160
Microcystin LR	102	106	P/P	50 - 160
Microcystin LR	93.0	84.8	P/P	50 - 160
Microcystin LW	121	113	P/P	50 - 160
Microcystin LW	99.3	99.7	P/P	50 - 160
Microcystin LY	102	113	P/P	50 - 160
Microcystin LY	103	74.2	P/P	50 - 160
Microcystin RR	101	104	P/P	50 - 160
Microcystin RR	91.9	81.0	P/P	50 - 160
Microcystin WR	109	91.7	P/P	50 - 160
Microcystin WR	110	115	P/P	50 - 160
Microcystin YR	109	119	P/P	50 - 160
Microcystin YR	96.6	84.8	P/P	50 - 160
Nodularin-R	106	88.9	P/P	50 - 160
Nodularin-R	115	116	P/P	50 - 160

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A112335

Included Lab Sample IDs: 2327625, 2327626

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A112355

Included Lab Sample IDs: 2327625, 2327626

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.0	96.5	P/P	90 - 110
NO2NO3-N	97.5	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A112447

Included Lab Sample IDs: 2327625

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.2	94.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A112525

Included Lab Sample IDs: 2327626

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	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		LCS	Precision	MS
						SMP	
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	97.8	100			1.21
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.9	98.6	93.0			4.20
	Kjeldahl Nitrogen	108	99.5	101			1.67
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	96.5	98.5	98.0			0.509
EPA 365.1 Rev. 2.0	Total-P	103					2.07
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.4	98.5			0.0919
EPA 8321B	Anatoxin-a	96.8	140	136			2.61
	Anatoxin-a	103	135	137			1.87
	Cylindrospermopsin	90.2	97.8	102			3.89
	Cylindrospermopsin	92.9	97.9	103			5.49
	Desmethyl microcystin LR	96.5	116	115			0.810
	Desmethyl microcystin LR	102	121	132			8.23
	Microcystin HiLR	96.6	110	109			1.04
	Microcystin HiLR	95.7	105	113			7.33
	Microcystin HtyR	96.5	105	105			0.552
	Microcystin HtyR	99.5	110	108			1.39
	Microcystin LA	96.5	109	108			0.952
	Microcystin LA	110	102	111			8.94
	Microcystin LF	97.0	153	151			1.06
	Microcystin LF	90.3	129	130			0.597
	Microcystin LR	99.4	111	106			4.08
	Microcystin LR	101	116	115			0.951
	Microcystin LW	119	117	128			9.51
	Microcystin LW	120	131	135			2.63
	Microcystin LY	115	122	129			5.49
	Microcystin LY	102	96.4	117			19.6
	Microcystin RR	93.3	94.0	92.2			1.89
	Microcystin RR	90.1	93.4	95.3			2.06
	Microcystin WR	101	108	111			2.53
	Microcystin WR	108	116	118			1.73
	Microcystin YR	97.1	118	114			3.74
	Microcystin YR	104	123	121			1.51
	Nodularin-R	104	103	107			4.31
	Nodularin-R	108	113	117			3.54

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2327625, 2327626
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2327625, 2327626
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2327625, 2327626
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2327625, 2327626
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2327627, 2327628
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2327623, 2327624

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	05/18/2022			05/19/2022 12:25	Ping Hua	2327625
	05/18/2022			05/19/2022 12:26	Ping Hua	2327626
EPA 351.2 Rev. 2.0	05/18/2022	05/24/2022 15:13	Samantha L Bates	05/26/2022 15:55	Alexandra J Mattheus	2327625
	05/18/2022	05/25/2022 12:34	Samantha L Bates	05/31/2022 14:59	Alexandra J Mattheus	2327626
EPA 353.2 Rev. 2.0	05/18/2022			05/24/2022 10:16	Beverly Y. Sanders	2327626
	05/18/2022			05/24/2022 11:10	Beverly Y. Sanders	2327625
EPA 365.1 Rev. 2.0	05/18/2022	05/20/2022 15:00	Simonne.V. Calhoun	05/23/2022 12:36	Sarah A Nixon	2327625
	05/18/2022	05/20/2022 15:00	Simonne.V. Calhoun	05/23/2022 12:37	Sarah A Nixon	2327626
EPA 365.1 Rev. 2.0 dissolved	05/18/2022			05/18/2022 16:41	Nathaniel J Jones	2327627
	05/18/2022			05/18/2022 16:42	Nathaniel J Jones	2327628
EPA 8321B	05/18/2022	05/18/2022 13:00	Manjita Shrestha	05/19/2022 04:24	Manjita Shrestha	2327623
	05/18/2022	05/19/2022 09:00	Manjita Shrestha	05/19/2022 14:16	Manjita Shrestha	2327624