Chemical Analysis Report

WQAP-2022-09-22-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Algae Bloom Response NEROC-as needed**
Request ID: **RQ-2022-09-12-54**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

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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: Orange Lake - McIntosh Bay **Collection Date/Time: 09/21/2022 13:25**

Field ID: NEHAB0065 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2358479	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P419977	
		Cylindrospermopsin	0.10	U	ug/L	P419971	
		Desmethyl microcystin LR	0.25	U	ug/L	P419971	
		Microcystin HilR	0.25	U	ug/L	P419971	
		Microcystin HtyR	0.25	U	ug/L	P419971	
		Microcystin LA	0.10	U	ug/L	P419971	
		Microcystin LF	0.10	U	ug/L	P419971	
		Microcystin LR	0.25	U	ug/L	P419971	
		Microcystin LW	0.25	U	ug/L	P419971	
		Microcystin LY	0.10	U	ug/L	P419971	
		Microcystin RR	0.10	U	ug/L	P419971	
		Microcystin WR	0.50	U	ug/L	P419971	
		Neosaxitoxin	0.50	U	ug/L	P419977	
		Microcystin YR	0.25	U	ug/L	P419971	
		Saxitoxin	0.50	U	ug/L	P419977	
		Nodularin-R	0.10	U	ug/L	P419971	
2358483	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P420419	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P420203	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P420409	
	EPA 365.1 Rev. 2.0	Total-P	0.041		mg P/L	P420134	
2358487	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P420006	

Ref. Method and Comment:
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Sampson River @ SW CR 225 **Collection Date/Time: 09/21/2022 10:10**

Field ID: NEHAB0088 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2358480	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P419977	
		Cylindrospermopsin	0.10	U	ug/L	P419971	
		Desmethyl microcystin LR	0.25	U	ug/L	P419971	
		Microcystin HilR	0.25	U	ug/L	P419971	
		Microcystin HtyR	0.25	U	ug/L	P419971	
		Microcystin LA	0.10	U	ug/L	P419971	
		Microcystin LF	0.10	U	ug/L	P419971	
		Microcystin LR	0.25	U	ug/L	P419971	
		Microcystin LW	0.25	U	ug/L	P419971	
		Microcystin LY	0.10	U	ug/L	P419971	
		Microcystin RR	0.10	U	ug/L	P419971	
		Microcystin WR	0.50	U	ug/L	P419971	
		Neosaxitoxin	0.50	U	ug/L	P419977	
		Microcystin YR	0.25	U	ug/L	P419971	
		Saxitoxin	0.50	U	ug/L	P419977	
		Nodularin-R	0.10	U	ug/L	P419971	
2358484	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P420512	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P420127	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P420409	
	EPA 365.1 Rev. 2.0	Total-P	0.075		mg P/L	P420135	
2358488	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P420006	

Sample Location: McIntosh Bay @ Fish Camp **Collection Date/Time: 09/21/2022 12:40**

Field ID: NEHAB0094 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2358481	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P419977	
		Cylindrospermopsin	0.10	U	ug/L	P419971	
		Desmethyl microcystin LR	0.25	U	ug/L	P419971	
		Microcystin HilR	0.25	U	ug/L	P419971	
		Microcystin HtyR	0.25	U	ug/L	P419971	
		Microcystin LA	0.10	U	ug/L	P419971	
		Microcystin LF	0.10	U	ug/L	P419971	
		Microcystin LR	0.25	U	ug/L	P419971	
		Microcystin LW	0.25	U	ug/L	P419971	
		Microcystin LY	0.10	U	ug/L	P419971	
		Microcystin RR	0.10	U	ug/L	P419971	
		Microcystin WR	0.50	U	ug/L	P419971	
		Neosaxitoxin	0.50	U	ug/L	P419977	
		Microcystin YR	0.25	U	ug/L	P419971	
		Saxitoxin	0.50	U	ug/L	P419977	
		Nodularin-R	0.10	U	ug/L	P419971	
2358485	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P420512	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.95		mg N/L	P420199	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P420409	
	EPA 365.1 Rev. 2.0	Total-P	0.035		mg P/L	P420135	
2358489	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P420006	

Ref. Method and Comment:
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: McIntosh Bay @ HB Boat Ramp **Collection Date/Time: 09/21/2022 13:55**

Field ID: NEHAB0095 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2358482	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P419977	
		Cylindrospermopsin	0.10	U	ug/L	P419971	
		Desmethyl microcystin LR	0.25	U	ug/L	P419971	
		Microcystin HilR	0.25	U	ug/L	P419971	
		Microcystin HtyR	0.25	U	ug/L	P419971	
		Microcystin LA	0.14	I	ug/L	P419971	
		Microcystin LF	0.10	U	ug/L	P419971	
		Microcystin LR	0.25	U	ug/L	P419971	
		Microcystin LW	0.25	U	ug/L	P419971	
		Microcystin LY	0.10	U	ug/L	P419971	
		Microcystin RR	0.10	U	ug/L	P419971	
		Microcystin WR	0.50	U	ug/L	P419971	
		Neosaxitoxin	0.50	U	ug/L	P419977	
		Microcystin YR	0.25	U	ug/L	P419971	
		Saxitoxin	0.50	U	ug/L	P419977	
		Nodularin-R	0.10	U	ug/L	P419971	
2358486	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P420514	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P420203	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P420339	
	EPA 365.1 Rev. 2.0	Total-P	0.21		mg P/L	P420135	
2358490	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P420006	

Ref. Method and Comment:
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: P420419

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420512

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420514

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420127

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420199

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420203

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420339

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420409

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420134

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420135

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P420006

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

Reference Method: EPA 8321B
Batch ID: P419971

Component	Result	Code	Units
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

Reference Method: EPA 8321B
Batch ID: P419977

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Neosaxitoxin	0.50	U	ug/L
Saxitoxin	0.50	U	ug/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420419

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420512

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420514

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	92.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420127

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420199

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420203

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420339

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	93.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420409

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420134

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420135

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P420006

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

Reference Method: EPA 8321B
Batch ID: P419971

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	102		P	40 - 150
Desmethyl microcystin LR	99.8		P	40 - 150
Microcystin HilR	96.6		P	40 - 150
Microcystin HtyR	99.7		P	40 - 150
Microcystin LA	104		P	40 - 150
Microcystin LF	99.7		P	40 - 150
Microcystin LR	102		P	40 - 150
Microcystin LW	97.6		P	40 - 150
Microcystin LY	96.6		P	40 - 150
Microcystin RR	99.0		P	40 - 150
Microcystin WR	92.9		P	40 - 150
Microcystin YR	97.9		P	40 - 150
Nodularin-R	97.1		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P419977

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	91.1		P	40 - 150
Neosaxitoxin	96.5		P	40 - 150
Saxitoxin	91.5		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420419

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2358324	Ammonia-N	97.0	96.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420512

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2358485	Ammonia-N	98.4	99.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420514

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2358486	Ammonia-N	108	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420127

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2357996	Kjeldahl Nitrogen	95.4	95.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420339

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2358486	NO2NO3-N	94.0	93.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420409

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2356808	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420134

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2358232	Total-P	106	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420135

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2358581	Total-P	106	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P420006

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2358750	O-Phosphate-P	99.5	101	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P419971

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2358544	Cylindrospermopsin	106	94.9	P/P	40 - 150
2358544	Desmethyl microcystin LR	109	95.0	P/P	40 - 150
2358544	Microcystin HilR	100	90.1	P/P	40 - 150
2358544	Microcystin HtyR	102	94.4	P/P	40 - 150
2358544	Microcystin LA	101	93.6	P/P	40 - 150
2358544	Microcystin LF	94.3	82.1	P/P	40 - 150
2358544	Microcystin LR	115	102	P/P	40 - 150
2358544	Microcystin LW	95.5	80.2	P/P	40 - 150
2358544	Microcystin LY	93.6	86.0	P/P	40 - 150
2358544	Microcystin RR	104	97.6	P/P	40 - 150
2358544	Microcystin WR	101	86.5	P/P	40 - 150
2358544	Microcystin YR	99.5	92.1	P/P	40 - 150
2358544	Nodularin-R	103	91.9	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P419977

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2358544	Anatoxin-a	77.4	85.1	P/P	40 - 150
2358544	Neosaxitoxin	53.2	61.6	P/P	40 - 150
2358544	Saxitoxin	50.9	56.5	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420419

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2358324	Ammonia-N	0.527	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420512

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2358485	Ammonia-N	1.01	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420514

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2358486	Ammonia-N	7.57	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420127

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2357996	Kjeldahl Nitrogen	0.0106	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420199

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2359611	Kjeldahl Nitrogen	0.562	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420203

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2359128	Kjeldahl Nitrogen	1.26	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420339

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2358486	NO2NO3-N	0.533	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420409

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2356808	NO2NO3-N	0.951	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420134

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2358232	Total-P	1.06	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2358581	Total-P	0.774	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P420006

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2358750	O-Phosphate-P	1.40	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P419971

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2358544	Cylindrospermopsin	11.2	Spike	P	0 - 30
2358544	Desmethyl microcystin LR	13.9	Spike	P	0 - 30
2358544	Microcystin HilR	10.9	Spike	P	0 - 30
2358544	Microcystin HtyR	7.86	Spike	P	0 - 30
2358544	Microcystin LA	7.23	Spike	P	0 - 30
2358544	Microcystin LF	13.8	Spike	P	0 - 30
2358544	Microcystin LR	11.9	Spike	P	0 - 30
2358544	Microcystin LW	17.4	Spike	P	0 - 30
2358544	Microcystin LY	8.40	Spike	P	0 - 30
2358544	Microcystin RR	6.74	Spike	P	0 - 30
2358544	Microcystin WR	15.1	Spike	P	0 - 30
2358544	Microcystin YR	7.76	Spike	P	0 - 30
2358544	Nodularin-R	11.6	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P419977

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2358544	Anatoxin-a	9.52	Spike	P	0 - 30
2358544	Neosaxitoxin	14.7	Spike	P	0 - 30
2358544	Saxitoxin	10.5	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2358479
Field Sample ID: NEHAB0065

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	68.1	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	67.0	P	30 - 160

Lab Sample ID: 2358480
Field Sample ID: NEHAB0088

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	70.1	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	53.0	P	30 - 160

Lab Sample ID: 2358481
Field Sample ID: NEHAB0094

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	65.4	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	71.3	P	30 - 160

Lab Sample ID: 2358482
Field Sample ID: NEHAB0095

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	69.8	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	65.6	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A114896
Included Lab Sample IDs: 2358487, 2358488, 2358489, 2358490

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: A114900
Included Lab Sample IDs: 2358479, 2358480, 2358481, 2358482

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	101	101	P/P	60 - 160
Desmethyl microcystin LR	97.2	96.8	P/P	60 - 160
Microcystin HilR	90.2	92.4	P/P	60 - 160
Microcystin HtyR	91.8	96.1	P/P	60 - 160
Microcystin LA	99.3	103	P/P	50 - 160
Microcystin LF	85.4	87.4	P/P	60 - 160
Microcystin LR	95.1	97.8	P/P	60 - 160
Microcystin LW	88.0	87.3	P/P	60 - 160
Microcystin LY	90.5	92.5	P/P	60 - 160
Microcystin RR	91.3	93.6	P/P	60 - 160
Microcystin WR	87.1	91.4	P/P	60 - 160
Microcystin YR	89.5	95.7	P/P	60 - 160
Nodularin-R	91.0	91.2	P/P	60 - 160

Reference Method: EPA 8321B
Run ID: A114901
Included Lab Sample IDs: 2358479, 2358480, 2358481, 2358482

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	96.3	90.7	P/P	50 - 160
Neosaxitoxin	99.3	91.6	P/P	50 - 160
Saxitoxin	89.3	87.7	P/P	50 - 160

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A114984
Included Lab Sample IDs: 2358484, 2358486

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A114995
Included Lab Sample IDs: 2358483, 2358485

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A115009
Included Lab Sample IDs: 2358484

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A115049
Included Lab Sample IDs: 2358486

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	94.0	92.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A115092
Included Lab Sample IDs: 2358485

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	99.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A115093
Included Lab Sample IDs: 2358483, 2358484, 2358485

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A115096
Included Lab Sample IDs: 2358483

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.8	98.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A115115
Included Lab Sample IDs: 2358483, 2358486

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A115139
Included Lab Sample IDs: 2358484, 2358485, 2358486

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.7	98.7	P/P	90 - 110
Ammonia-N	99.2	98.4	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	96.6	97.0	96.4			0.527
	Ammonia-N	99.8	98.4	99.6			1.01
	Ammonia-N	92.8	108	99.0			7.57
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	95.4	95.4			0.0106
	Kjeldahl Nitrogen	99.6					0.562
	Kjeldahl Nitrogen	100					1.26
EPA 353.2 Rev. 2.0	NO2NO3-N	93.5	94.0	93.5			0.533
	NO2NO3-N	103	101	102			0.951
EPA 365.1 Rev. 2.0	Total-P	103	106	105			1.06
	Total-P	104	106	105			0.774
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.4	99.5	101			1.40
EPA 8321B	Anatoxin-a	91.1	77.4	85.1			9.52
	Cylindrospermopsin	102	106	94.9			11.2
	Desmethyl microcystin LR	99.8	109	95.0			13.9
	Microcystin HilR	96.6	100	90.1			10.9
	Microcystin HtyR	99.7	102	94.4			7.86
	Microcystin LA	104	101	93.6			7.23
	Microcystin LF	99.7	94.3	82.1			13.8
	Microcystin LR	102	115	102			11.9
	Microcystin LW	97.6	95.5	80.2			17.4
	Microcystin LY	96.6	93.6	86.0			8.40
	Microcystin RR	99.0	104	97.6			6.74
	Microcystin WR	92.9	101	86.5			15.1
	Microcystin YR	97.9	99.5	92.1			7.76
	Neosaxitoxin	96.5	53.2	61.6			14.7
	Nodularin-R	97.1	103	91.9			11.6
	Saxitoxin	91.5	50.9	56.5			10.5

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2358483, 2358484, 2358485, 2358486
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2358483, 2358484, 2358485, 2358486
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2358483, 2358484, 2358485, 2358486
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2358483, 2358484, 2358485, 2358486
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2358487, 2358488, 2358489, 2358490
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2358479, 2358480, 2358481, 2358482
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2358479, 2358480, 2358481, 2358482

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	09/22/2022			10/03/2022 14:19	Ping Hua	2358483
	09/22/2022			10/05/2022 11:03	Ping Hua	2358485
	09/22/2022			10/05/2022 11:13	Ping Hua	2358484
	09/22/2022			10/05/2022 11:56	Ping Hua	2358486
EPA 351.2 Rev. 2.0	09/22/2022	09/27/2022 14:11	Samantha L Bates	09/28/2022 14:45	Samantha L Bates	2358484
	09/22/2022	09/28/2022 12:10	Alexandra J Mattheus	10/03/2022 14:19	Samantha L Bates	2358485
	09/22/2022	09/28/2022 12:10	Alexandra J Mattheus	10/04/2022 09:33	Samantha L Bates	2358483
	09/22/2022	09/28/2022 12:10	Alexandra J Mattheus	10/04/2022 09:35	Samantha L Bates	2358486
EPA 353.2 Rev. 2.0	09/22/2022			09/30/2022 11:22	Beverly Y. Sanders	2358486
	09/22/2022			10/03/2022 11:37	Beverly Y. Sanders	2358483
	09/22/2022			10/03/2022 11:38	Beverly Y. Sanders	2358484
	09/22/2022			10/03/2022 11:39	Beverly Y. Sanders	2358485
EPA 365.1 Rev. 2.0	09/22/2022	09/27/2022 14:20	Simonne.V. Calhoun	09/28/2022 10:42	James L Waggerby	2358484
	09/22/2022	09/27/2022 14:20	Simonne.V. Calhoun	09/28/2022 10:47	James L Waggerby	2358486
	09/22/2022	09/27/2022 14:20	Simonne.V. Calhoun	09/28/2022 13:28	James L Waggerby	2358483
	09/22/2022	09/27/2022 14:20	Simonne.V. Calhoun	09/28/2022 13:32	James L Waggerby	2358485
EPA 365.1 Rev. 2.0 dissolved	09/22/2022			09/22/2022 14:23	Elise M. Gillis	2358487
	09/22/2022			09/22/2022 14:24	Elise M. Gillis	2358488
	09/22/2022			09/22/2022 14:25	Elise M. Gillis	2358489
	09/22/2022			09/22/2022 14:26	Elise M. Gillis	2358490
EPA 8321B	09/22/2022	09/22/2022 12:00	Umesh Chiluwal	09/22/2022 23:54	Umesh Chiluwal	2358479
	09/22/2022	09/22/2022 12:00	Umesh Chiluwal	09/23/2022 00:11	Umesh Chiluwal	2358480
	09/22/2022	09/22/2022 12:00	Umesh Chiluwal	09/23/2022 00:28	Umesh Chiluwal	2358481
	09/22/2022	09/22/2022 12:00	Umesh Chiluwal	09/23/2022 00:44	Umesh Chiluwal	2358482
	09/22/2022	09/22/2022 14:00	Umesh Chiluwal	09/23/2022 00:08	Manjita Shrestha	2358479
	09/22/2022	09/22/2022 14:00	Umesh Chiluwal	09/23/2022 00:22	Manjita Shrestha	2358480
	09/22/2022	09/22/2022 14:00	Umesh Chiluwal	09/23/2022 00:36	Manjita Shrestha	2358481
	09/22/2022	09/22/2022 14:00	Umesh Chiluwal	09/23/2022 00:50	Manjita Shrestha	2358482