Chemical Analysis Report

WQAP-2022-10-27-01

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-2022-09-26-35**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
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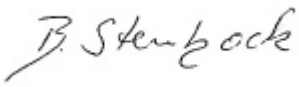
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 14-NOV-2022 17:04



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: Lochloosa lake Ne in veg **Collection Date/Time: 10/26/2022 10:10**

Field ID: NEHAB0083 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2365655	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P421493	
		Cylindrospermopsin	0.10	U	ug/L	P421492	
		Desmethyl microcystin LR	0.25	U	ug/L	P421492	
		Microcystin HilR	0.25	U	ug/L	P421492	
		Microcystin HtyR	0.25	U	ug/L	P421492	
		Microcystin LA	0.10	U	ug/L	P421492	
		Microcystin LF	0.10	U	ug/L	P421492	
		Microcystin LR	0.25	I	ug/L	P421492	
		Microcystin LW	0.25	U	ug/L	P421492	
		Microcystin LY	0.10	U	ug/L	P421492	
		Microcystin RR	0.10	U	ug/L	P421492	
		Microcystin WR	0.50	U	ug/L	P421492	
		Neosaxitoxin	0.50	U	ug/L	P421493	
		Microcystin YR	0.25	U	ug/L	P421492	
		Saxitoxin	0.50	U	ug/L	P421493	
		Nodularin-R	0.10	U	ug/L	P421492	
2365660	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P421959	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P421701	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P421836	
	EPA 365.1 Rev. 2.0	Total-P	0.047		mg P/L	P421772	
2365665	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P421585	

Sample Location: Lochloosa lake entrance to cross creek **Collection Date/Time: 10/26/2022 10:40**

Field ID: NEHAB0079 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2365653	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P421493	
		Cylindrospermopsin	0.10	U	ug/L	P421492	
		Desmethyl microcystin LR	0.25	U	ug/L	P421492	
		Microcystin HilR	0.25	U	ug/L	P421492	
		Microcystin HtyR	0.25	U	ug/L	P421492	
		Microcystin LA	0.10	U	ug/L	P421492	
		Microcystin LF	0.10	U	ug/L	P421492	
		Microcystin LR	0.25	U	ug/L	P421492	
		Microcystin LW	0.25	U	ug/L	P421492	
		Microcystin LY	0.10	U	ug/L	P421492	
		Microcystin RR	0.10	U	ug/L	P421492	
		Microcystin WR	0.50	U	ug/L	P421492	
		Neosaxitoxin	0.50	U	ug/L	P421493	
		Microcystin YR	0.25	U	ug/L	P421492	
		Saxitoxin	0.50	U	ug/L	P421493	
		Nodularin-R	0.10	U	ug/L	P421492	
2365658	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P421959	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P421701	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P421836	
	EPA 365.1 Rev. 2.0	Total-P	0.061		mg P/L	P421772	
2365663	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P421585	

Sample Location: 183rd ave canal off cross creek **Collection Date/Time: 10/26/2022 11:15**

Field ID: NEHAB0076 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2365652	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P421493	
		Cylindrospermopsin	0.10	U	ug/L	P421492	
		Desmethyl microcystin LR	0.25	U	ug/L	P421492	
		Microcystin HilR	0.25	U	ug/L	P421492	
		Microcystin HtyR	0.25	U	ug/L	P421492	
		Microcystin LA	0.10	U	ug/L	P421492	
		Microcystin LF	0.10	U	ug/L	P421492	
		Microcystin LR	0.25	U	ug/L	P421492	
		Microcystin LW	0.25	U	ug/L	P421492	
		Microcystin LY	0.10	U	ug/L	P421492	
		Microcystin RR	0.10	U	ug/L	P421492	
		Microcystin WR	0.50	U	ug/L	P421492	
		Neosaxitoxin	0.50	U	ug/L	P421493	
		Microcystin YR	0.25	U	ug/L	P421492	
		Saxitoxin	0.50	U	ug/L	P421493	
		Nodularin-R	0.10	U	ug/L	P421492	
2365657	EPA 350.1 Rev. 2.0	Ammonia-N	0.14		mg N/L	P421958	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P421701	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.071		mg N/L	P421836	
	EPA 365.1 Rev. 2.0	Total-P	0.094		mg P/L	P421772	
2365662	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.035		mg P/L	P421585	

Sample Location: Lochloosa lake @ park **Collection Date/Time: 10/26/2022 11:50**

Field ID: NEHAB0082 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2365654	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P421493	
		Cylindrospermopsin	0.10	U	ug/L	P421492	
		Desmethyl microcystin LR	0.25	U	ug/L	P421492	
		Microcystin HilR	0.25	U	ug/L	P421492	
		Microcystin HtyR	0.25	U	ug/L	P421492	
		Microcystin LA	0.10	U	ug/L	P421492	
		Microcystin LF	0.10	U	ug/L	P421492	
		Microcystin LR	0.25	I	ug/L	P421492	
		Microcystin LW	0.25	U	ug/L	P421492	
		Microcystin LY	0.10	U	ug/L	P421492	
		Microcystin RR	0.10	U	ug/L	P421492	
		Microcystin WR	0.50	U	ug/L	P421492	
		Neosaxitoxin	0.50	U	ug/L	P421493	
		Microcystin YR	0.25	U	ug/L	P421492	
		Saxitoxin	0.50	U	ug/L	P421493	
		Nodularin-R	0.10	U	ug/L	P421492	
2365659	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P421959	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P421701	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P421836	
	EPA 365.1 Rev. 2.0	Total-P	0.052		mg P/L	P421772	
2365664	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P421585	

Sample Location: Violet lake @ 130 violet circle **Collection Date/Time: 10/26/2022 12:45**

Field ID: NEHAB0087 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2365656	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P421493	
		Cylindrospermopsin	0.27	I	ug/L	P421492	
		Desmethyl microcystin LR	0.25	U	ug/L	P421492	
		Microcystin HilR	0.25	U	ug/L	P421492	
		Microcystin HtyR	0.25	U	ug/L	P421492	
		Microcystin LA	0.10	U	ug/L	P421492	
		Microcystin LF	0.10	U	ug/L	P421492	
		Microcystin LR	0.25	U	ug/L	P421492	
		Microcystin LW	0.25	U	ug/L	P421492	
		Microcystin LY	0.10	U	ug/L	P421492	
		Microcystin RR	0.10	U	ug/L	P421492	
		Microcystin WR	0.50	U	ug/L	P421492	
		Neosaxitoxin	0.50	U	ug/L	P421493	
		Microcystin YR	0.25	U	ug/L	P421492	
		Saxitoxin	0.50	U	ug/L	P421493	
		Nodularin-R	0.10	U	ug/L	P421492	
2365661	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P421959	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P421747	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P421837	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P421774	
2365666	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P421586	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421958

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421959

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421701

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421747

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421836

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421837

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421772

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421774

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P421585

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P421586

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

Reference Method: EPA 8321B
Batch ID: P421492

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: P421493

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: P421958

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421959

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421701

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421747

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421836

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421837

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: P421772

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421774

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: P421585

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P421586

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

Reference Method: EPA 8321B
Batch ID: P421492

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	118		P	40 - 150
Desmethyl microcystin LR	110		P	40 - 150
Microcystin HilR	103		P	40 - 150
Microcystin HtyR	108		P	40 - 150
Microcystin LA	113		P	40 - 150
Microcystin LF	108		P	40 - 150
Microcystin LR	103		P	40 - 150
Microcystin LW	102		P	40 - 150
Microcystin LY	96.8		P	40 - 150
Microcystin RR	100		P	40 - 150
Microcystin WR	99.5		P	40 - 150
Microcystin YR	102		P	40 - 150
Nodularin-R	102		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P421493

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	80.0		P	40 - 150
Neosaxitoxin	85.1		P	40 - 150
Saxitoxin	87.3		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421958

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2365496	Ammonia-N	97.8	98.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421959

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2365661	Ammonia-N	96.4	97.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421701

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2365657	Kjeldahl Nitrogen	94.7	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421747

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2365498	Kjeldahl Nitrogen	97.8	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421836

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2365574	NO2NO3-N	95.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421837

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2365661	NO2NO3-N	98.5	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421772

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2365657	Total-P	108	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421774

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2365697	Total-P	104	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P421585

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2365503	O-Phosphate-P	101	100	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P421586

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2365825	O-Phosphate-P	102	102	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P421492

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2364914	Cylindrospermopsin	98.2	104	P/P	40 - 150
2364914	Desmethyl microcystin LR	102	92.0	P/P	40 - 150
2364914	Microcystin HilR	95.2	96.6	P/P	40 - 150
2364914	Microcystin HtyR	104	99.3	P/P	40 - 150
2364914	Microcystin LA	97.1	100	P/P	40 - 150
2364914	Microcystin LF	90.7	94.8	P/P	40 - 150
2364914	Microcystin LR	94.5	97.9	P/P	40 - 150
2364914	Microcystin LW	91.2	88.0	P/P	40 - 150
2364914	Microcystin LY	89.8	89.9	P/P	40 - 150
2364914	Microcystin RR	93.2	93.1	P/P	40 - 150
2364914	Microcystin WR	92.5	98.7	P/P	40 - 150
2364914	Microcystin YR	96.8	93.5	P/P	40 - 150
2364914	Nodularin-R	91.5	95.5	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P421493

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2364914	Anatoxin-a	82.2	85.4	P/P	40 - 150
2364914	Neosaxitoxin	65.7	67.7	P/P	40 - 150
2364914	Saxitoxin	63.1	66.0	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421958

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365496	Ammonia-N	0.408	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421959

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365661	Ammonia-N	0.734	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421701

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365657	Kjeldahl Nitrogen	4.38	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421747

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365498	Kjeldahl Nitrogen	6.49	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421836

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365574	NO2NO3-N	0.483	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365661	NO2NO3-N	0.509	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421772

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365657	Total-P	2.46	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421774

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365697	Total-P	2.02	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P421585

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365503	O-Phosphate-P	0.172	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P421586

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2365825	O-Phosphate-P	0.391	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P421492

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2364914	Cylindrospermopsin	6.08	Spike	P	0 - 30
2364914	Desmethyl microcystin LR	10.3	Spike	P	0 - 30
2364914	Microcystin HilR	1.46	Spike	P	0 - 30
2364914	Microcystin HtyR	4.44	Spike	P	0 - 30
2364914	Microcystin LA	3.37	Spike	P	0 - 30
2364914	Microcystin LF	4.37	Spike	P	0 - 30
2364914	Microcystin LR	3.53	Spike	P	0 - 30
2364914	Microcystin LW	3.63	Spike	P	0 - 30
2364914	Microcystin LY	0.0814	Spike	P	0 - 30
2364914	Microcystin RR	0.145	Spike	P	0 - 30
2364914	Microcystin WR	6.50	Spike	P	0 - 30
2364914	Microcystin YR	3.40	Spike	P	0 - 30
2364914	Nodularin-R	4.30	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P421493

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2364914	Anatoxin-a	3.74	Spike	P	0 - 30
2364914	Neosaxitoxin	2.95	Spike	P	0 - 30
2364914	Saxitoxin	4.50	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2365652
Field Sample ID: NEHAB0076

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	75.5	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	60.6	P	30 - 160

Lab Sample ID: 2365653
Field Sample ID: NEHAB0079

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	87.2	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	57.7	P	30 - 160

Lab Sample ID: 2365654
Field Sample ID: NEHAB0082

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	92.6	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	55.9	P	30 - 160

Lab Sample ID: 2365655
Field Sample ID: NEHAB0083

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	82.3	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	57.7	P	30 - 160

Lab Sample ID: 2365656
Field Sample ID: NEHAB0087

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	75.0	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	69.7	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 8321B
Run ID: A115566
Included Lab Sample IDs: 2365652, 2365653, 2365654, 2365655, 2365656

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	79.8	75.6	P/P	50 - 160
Neosaxitoxin	80.9	78.5	P/P	50 - 160
Saxitoxin	77.7	79.0	P/P	50 - 160

Reference Method: EPA 8321B
Run ID: A115580
Included Lab Sample IDs: 2365652, 2365653, 2365654, 2365655, 2365656

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	119	113	P/P	60 - 160
Desmethyl microcystin LR	101	106	P/P	60 - 160
Microcystin HilR	104	105	P/P	60 - 160
Microcystin HtyR	103	104	P/P	60 - 160
Microcystin LA	107	106	P/P	60 - 160
Microcystin LF	95.2	91.2	P/P	60 - 160
Microcystin LR	95.9	98.9	P/P	60 - 160
Microcystin LW	102	104	P/P	60 - 160
Microcystin LY	96.4	97.3	P/P	60 - 160
Microcystin RR	97.0	99.6	P/P	60 - 160
Microcystin WR	101	101	P/P	60 - 160
Microcystin YR	101	103	P/P	60 - 160
Nodularin-R	98.4	100	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A115594
Included Lab Sample IDs: 2365662, 2365663, 2365664, 2365665, 2365666

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	101	P/P	90 - 110
O-Phosphate-P	101	102	P/P	90 - 110
O-Phosphate-P	99.9	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A115713
Included Lab Sample IDs: 2365657, 2365658, 2365659, 2365660, 2365661

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.5	95.0	P/P	90 - 110
NO2NO3-N	97.5	96.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A115715
Included Lab Sample IDs: 2365657, 2365658

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.4	96.4	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A115721
Included Lab Sample IDs: 2365659, 2365660, 2365661

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	99.0	P/P	90 - 110
Total-P	99.5	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A115722
Included Lab Sample IDs: 2365657, 2365658, 2365659, 2365660

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.7	91.9	P/P	90 - 110
Kjeldahl Nitrogen	98.7	96.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A115748
Included Lab Sample IDs: 2365657, 2365658, 2365659, 2365660, 2365661

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.8	99.3	P/P	90 - 110
Ammonia-N	99.3	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A115762
Included Lab Sample IDs: 2365661

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.2	96.8	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	96.0	97.8	98.2			0.408
	Ammonia-N	96.2	96.4	97.2			0.734
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	94.7	102			4.38
	Kjeldahl Nitrogen	99.8	97.8	104			6.49
EPA 353.2 Rev. 2.0	NO2NO3-N	97.5	95.5				0.483
	NO2NO3-N	96.5	98.5	98.0			0.509
EPA 365.1 Rev. 2.0	Total-P	104	108	105			2.46
	Total-P	104	104	106			2.02
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	101	100			0.172
	O-Phosphate-P	102	102	102			0.391
EPA 8321B	Anatoxin-a	80.0	82.2	85.4			3.74
	Cylindrospermopsin	118	98.2	104			6.08
	Desmethyl microcystin LR	110	102	92.0			10.3
	Microcystin HilR	103	95.2	96.6			1.46
	Microcystin HtyR	108	104	99.3			4.44
	Microcystin LA	113	97.1	100			3.37
	Microcystin LF	108	90.7	94.8			4.37
	Microcystin LR	103	94.5	97.9			3.53
	Microcystin LW	102	91.2	88.0			3.63
	Microcystin LY	96.8	89.8	89.9			0.0814
	Microcystin RR	100	93.2	93.1			0.145
	Microcystin WR	99.5	92.5	98.7			6.50
	Microcystin YR	102	96.8	93.5			3.40
	Neosaxitoxin	85.1	65.7	67.7			2.95
	Nodularin-R	102	91.5	95.5			4.30
	Saxitoxin	87.3	63.1	66.0			4.50

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2365657, 2365658, 2365659, 2365660, 2365661
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2365657, 2365658, 2365659, 2365660, 2365661
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2365657, 2365658, 2365659, 2365660, 2365661
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2365657, 2365658, 2365659, 2365660, 2365661
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2365662, 2365663, 2365664, 2365665, 2365666
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2365652, 2365653, 2365654, 2365655, 2365656
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2365652, 2365653, 2365654, 2365655, 2365656

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	10/27/2022			11/04/2022 15:33	Ping Hua	2365657
	10/27/2022			11/04/2022 15:45	Ping Hua	2365661
	10/27/2022			11/04/2022 15:49	Ping Hua	2365658
	10/27/2022			11/04/2022 15:50	Ping Hua	2365659
	10/27/2022			11/04/2022 15:52	Ping Hua	2365660
EPA 351.2 Rev. 2.0	10/27/2022	11/01/2022 12:07	Alexandra J Mattheus	11/03/2022 13:18	Samantha L Bates	2365657
	10/27/2022	11/01/2022 12:07	Alexandra J Mattheus	11/03/2022 13:23	Samantha L Bates	2365658
	10/27/2022	11/01/2022 12:07	Alexandra J Mattheus	11/03/2022 13:24	Samantha L Bates	2365659
	10/27/2022	11/01/2022 12:07	Alexandra J Mattheus	11/03/2022 13:29	Samantha L Bates	2365660
	10/27/2022	11/02/2022 11:45	Alexandra J Mattheus	11/04/2022 15:08	Alexandra J Mattheus	2365661
EPA 353.2 Rev. 2.0	10/27/2022			11/03/2022 10:02	Beverly Y. Sanders	2365657
	10/27/2022			11/03/2022 10:03	Beverly Y. Sanders	2365658
	10/27/2022			11/03/2022 10:04	Beverly Y. Sanders	2365659
	10/27/2022			11/03/2022 10:05	Beverly Y. Sanders	2365660
	10/27/2022			11/03/2022 10:12	Beverly Y. Sanders	2365661
EPA 365.1 Rev. 2.0	10/27/2022	11/02/2022 17:10	Adam P Silver	11/03/2022 11:32	James L Waggerby	2365657
	10/27/2022	11/02/2022 17:10	Adam P Silver	11/03/2022 11:41	James L Waggerby	2365658
	10/27/2022	11/02/2022 17:10	Adam P Silver	11/03/2022 13:02	Simonne.V. Calhoun	2365659
	10/27/2022	11/02/2022 17:10	Adam P Silver	11/03/2022 13:03	Simonne.V. Calhoun	2365660
	10/27/2022	11/02/2022 17:10	Adam P Silver	11/03/2022 13:30	Simonne.V. Calhoun	2365661
EPA 365.1 Rev. 2.0 dissolved	10/27/2022			10/28/2022 09:59	Elise M. Gillis	2365665
	10/27/2022			10/28/2022 10:00	Elise M. Gillis	2365663
	10/27/2022			10/28/2022 10:06	Elise M. Gillis	2365662
	10/27/2022			10/28/2022 10:07	Elise M. Gillis	2365664
	10/27/2022			10/28/2022 10:21	Elise M. Gillis	2365666
EPA 8321B	10/27/2022	10/27/2022 12:00	Manjita Shrestha	10/27/2022 14:12	Manjita Shrestha	2365652
	10/27/2022	10/27/2022 12:00	Manjita Shrestha	10/27/2022 14:26	Manjita Shrestha	2365653
	10/27/2022	10/27/2022 12:00	Manjita Shrestha	10/27/2022 14:39	Manjita Shrestha	2365654
	10/27/2022	10/27/2022 12:00	Manjita Shrestha	10/27/2022 14:53	Manjita Shrestha	2365655
	10/27/2022	10/27/2022 12:00	Manjita Shrestha	10/27/2022 15:07	Manjita Shrestha	2365656
	10/27/2022	10/27/2022 12:00	Umesh Chiluwal	10/28/2022 02:04	Umesh Chiluwal	2365652
	10/27/2022	10/27/2022 12:00	Umesh Chiluwal	10/28/2022 02:21	Umesh Chiluwal	2365653
	10/27/2022	10/27/2022 12:00	Umesh Chiluwal	10/28/2022 02:38	Umesh Chiluwal	2365654
	10/27/2022	10/27/2022 12:00	Umesh Chiluwal	10/28/2022 02:55	Umesh Chiluwal	2365655
	10/27/2022	10/27/2022 12:00	Umesh Chiluwal	10/28/2022 03:12	Umesh Chiluwal	2365656