

Chemical Analysis Report

WQAP-2023-03-03-01

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-2023-02-13-15**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

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Certified by: Colin Wright, Program Administrator

Date Certified: 20-MAR-2023 13:32



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: George's Lake @ Boat Ramp

Collection Date/Time: 03/02/2023 11:15

Field ID: NEHAB0099

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2391511	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P426747	
		Cylindrospermopsin	0.10	U	ug/L	P426745	
		Desmethyl microcystin LR	4.5		ug/L	P426745	
		Microcystin HILR	1.8		ug/L	P426745	
		Microcystin HtyR	0.25	U	ug/L	P426745	
		Microcystin LA	0.10	U	ug/L	P426745	
		Microcystin LF	0.10	U	ug/L	P426745	
		Microcystin LR	34		ug/L	P426745	
		Microcystin LW	0.25	U	ug/L	P426745	
		Microcystin LY	0.10	U	ug/L	P426745	
		Microcystin RR	54		ug/L	P426745	
		Microcystin WR	0.50	U	ug/L	P426745	
		Neosaxitoxin	0.50	U	ug/L	P426747	
		Microcystin YR	5.4		ug/L	P426745	
		Saxitoxin	0.50	U	ug/L	P426747	
		Nodularin-R	0.10	U	ug/L	P426745	
2391513	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P426794	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P426909	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P426927	
	EPA 365.1 Rev. 2.0	Total-P	0.20		mg P/L	P426840	
2391515	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P426678	

Sample Location: George's Lake @ Center HAB

Collection Date/Time: 03/02/2023 10:45

Field ID: NEHAB0098

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2391512	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P426747	
		Cylindrospermopsin	0.10	U	ug/L	P426745	
		Desmethyl microcystin LR	0.25	U	ug/L	P426745	
		Microcystin HILR	0.25	U	ug/L	P426745	
		Microcystin HtyR	0.25	U	ug/L	P426745	
		Microcystin LA	0.10	U	ug/L	P426745	
		Microcystin LF	0.10	U	ug/L	P426745	
		Microcystin LR	1.7		ug/L	P426745	
		Microcystin LW	0.25	U	ug/L	P426745	
		Microcystin LY	0.10	U	ug/L	P426745	
		Microcystin RR	3.2		ug/L	P426745	
		Microcystin WR	0.50	U	ug/L	P426745	
		Neosaxitoxin	0.50	U	ug/L	P426747	
		Microcystin YR	0.25	U	ug/L	P426745	
		Saxitoxin	0.50	U	ug/L	P426747	
		Nodularin-R	0.10	U	ug/L	P426745	
2391514	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P426794	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70		mg N/L	P426909	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P426927	
	EPA 365.1 Rev. 2.0	Total-P	0.062		mg P/L	P426840	
2391516	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P426678	

Sample Location: George's Lake @ Center HAB

Collection Date/Time: 03/02/2023 10:50

Field ID: FB03022023

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2391550	EPA 8321B	Anatoxin-a	0.50	U	ug/L	P426747	
		Cylindrospermopsin	0.10	U	ug/L	P426745	
		Desmethyl microcystin LR	0.25	U	ug/L	P426745	
		Microcystin HILR	0.25	U	ug/L	P426745	
		Microcystin HtyR	0.25	U	ug/L	P426745	
		Microcystin LA	0.10	U	ug/L	P426745	
		Microcystin LF	0.10	U	ug/L	P426745	
		Microcystin LR	0.25	U	ug/L	P426745	
		Microcystin LW	0.25	U	ug/L	P426745	
		Microcystin LY	0.10	U	ug/L	P426745	
		Microcystin RR	0.10	U	ug/L	P426745	
		Microcystin WR	0.50	U	ug/L	P426745	
		Neosaxitoxin	1.0	U	ug/L	P426747	
		Microcystin YR	0.25	U	ug/L	P426745	
		Saxitoxin	1.0	U	ug/L	P426747	
		Nodularin-R	0.10	U	ug/L	P426745	
2391551	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P426794	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P426910	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P426927	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P426916	
2391552	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P426678	

Ref. Method and Comment:

EPA 8321B: MDL elevated due to matrix interference.

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P426794

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P426909

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P426910

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P426927

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P426840

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P426916

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P426678

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

Reference Method: EPA 8321B
Batch ID: P426745

Component	Result	Code	Units
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin HIR	0.25	U	ug/L
Microcystin HtyR	0.25	U	ug/L
Microcystin LA	0.10	U	ug/L
Microcystin LF	0.10	U	ug/L
Microcystin LR	0.25	U	ug/L
Microcystin LW	0.25	U	ug/L
Microcystin LY	0.10	U	ug/L
Microcystin RR	0.10	U	ug/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P426745

Component	Result	Code	Units
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: P426747

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: P426794

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: P426909

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P426910

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P426927

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P426840

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P426916

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P426678

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

Reference Method: EPA 8321B
Batch ID: P426745

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	83.1		P	40 - 150
Desmethyl microcystin LR	69.5		P	40 - 150
Microcystin HIR	80.3		P	40 - 150
Microcystin HtyR	78.6		P	40 - 150
Microcystin LA	74.1		P	40 - 150
Microcystin LF	71.8		P	40 - 150
Microcystin LR	65.9		P	40 - 150
Microcystin LW	106		P	40 - 150
Microcystin LY	89.2		P	40 - 150
Microcystin RR	82.0		P	40 - 150

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P426745

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Microcystin WR	74.2		P	40 - 150
Microcystin YR	83.9		P	40 - 150
Nodularin-R	79.8		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P426747

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	70.7		P	40 - 150
Neosaxitoxin	91.3		P	40 - 150
Saxitoxin	75.4		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P426794

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2391513	Ammonia-N	96.6	97.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P426909

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2391527	Kjeldahl Nitrogen	95.5	93.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P426910

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2391580	Kjeldahl Nitrogen	105	98.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P426927

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2391513	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P426840

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2391458	Total-P	104	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P426916

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2391528	Total-P	98.4	97.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P426678

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2391515	O-Phosphate-P	100	100	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P426745

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2391488	Cylindrospermopsin	102	98.3	P/P	40 - 150
2391488	Desmethyl microcystin LR	95.5	98.0	P/P	40 - 150
2391488	Microcystin HiLR	106	107	P/P	40 - 150
2391488	Microcystin HtyR	107	107	P/P	40 - 150
2391488	Microcystin LA	99.4	95.1	P/P	40 - 150
2391488	Microcystin LF	87.8	102	P/P	40 - 150
2391488	Microcystin LR	96.6	96.3	P/P	40 - 150
2391488	Microcystin LW	118	118	P/P	40 - 150
2391488	Microcystin LY	106	98.6	P/P	40 - 150
2391488	Microcystin RR	105	104	P/P	40 - 150

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P426745

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2391488	Microcystin WR	108	102	P/P	40 - 150
2391488	Microcystin YR	120	115	P/P	40 - 150
2391488	Nodularin-R	118	120	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P426747

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2391488	Anatoxin-a	68.8	68.3	P/P	40 - 150
2391488	Neosaxitoxin	80.2	75.6	P/P	40 - 150
2391488	Saxitoxin	66.3	66.7	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P426794

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2391513	Ammonia-N	0.968	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P426909

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2391527	Kjeldahl Nitrogen	1.55	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P426910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2391580	Kjeldahl Nitrogen	3.27	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P426927

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2391513	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P426840

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2391458	Total-P	1.11	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P426916

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2391528	Total-P	0.719	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P426678

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2391515	O-Phosphate-P	0.0997	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P426745

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2391488	Cylindrospermopsin	3.24	Spike	P	0 - 30
2391488	Desmethyl microcystin LR	2.55	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P426745

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2391488	Microcystin HII R	0.984	Spike	P	0 - 30
2391488	Microcystin Hty R	0.118	Spike	P	0 - 30
2391488	Microcystin LA	4.38	Spike	P	0 - 30
2391488	Microcystin LF	14.9	Spike	P	0 - 30
2391488	Microcystin LR	0.253	Spike	P	0 - 30
2391488	Microcystin LW	0.596	Spike	P	0 - 30
2391488	Microcystin LY	7.43	Spike	P	0 - 30
2391488	Microcystin RR	0.334	Spike	P	0 - 30
2391488	Microcystin WR	5.40	Spike	P	0 - 30
2391488	Microcystin YR	3.83	Spike	P	0 - 30
2391488	Nodularin-R	2.01	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P426747

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2391488	Anatoxin-a	0.767	Spike	P	0 - 30
2391488	Neosaxitoxin	6.00	Spike	P	0 - 30
2391488	Saxitoxin	0.638	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2391511
Field Sample ID: NEHAB0099

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	144	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	60.3	P	30 - 160

Lab Sample ID: 2391512
Field Sample ID: NEHAB0098

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	81.7	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	69.2	P	30 - 160

Lab Sample ID: 2391550
Field Sample ID: FB03022023

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	57.9	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	134	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A117790

Included Lab Sample IDs: 2391515, 2391516, 2391552

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.3	99.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A117845

Included Lab Sample IDs: 2391513, 2391514, 2391551

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.5	99.1	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A117891

Included Lab Sample IDs: 2391511, 2391512, 2391550

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	89.6	92.3	P/P	50 - 160
Cylindrospermopsin	92.3	89.7	P/P	50 - 160
Desmethyl microcystin LR	71.1	76.7	P/P	50 - 160
Desmethyl microcystin LR	72.7	71.1	P/P	50 - 160
Microcystin HllR	76.8	80.4	P/P	50 - 160
Microcystin HllR	84.9	76.8	P/P	50 - 160
Microcystin HtyR	85.6	85.6	P/P	50 - 160
Microcystin HtyR	85.6	87.4	P/P	50 - 160
Microcystin LA	81.6	88.2	P/P	50 - 160
Microcystin LA	97.7	81.6	P/P	50 - 160
Microcystin LF	70.9	82.4	P/P	50 - 160
Microcystin LF	95.1	70.9	P/P	50 - 160
Microcystin LR	65.2	70.6	P/P	50 - 160
Microcystin LR	69.5	65.2	P/P	50 - 160
Microcystin LW	80.6	83.4	P/P	50 - 160
Microcystin LW	97.9	80.6	P/P	50 - 160
Microcystin LY	83.9	77.7	P/P	50 - 160
Microcystin LY	87.4	83.9	P/P	50 - 160
Microcystin RR	85.4	81.8	P/P	50 - 160
Microcystin RR	86.1	85.4	P/P	50 - 160
Microcystin RR	90.5	90.3	P/P	50 - 160
Microcystin WR	82.2	83.5	P/P	50 - 160
Microcystin WR	82.6	82.2	P/P	50 - 160
Microcystin YR	85.1	87.7	P/P	50 - 160
Microcystin YR	94.1	85.1	P/P	50 - 160
Nodularin-R	83.5	87.5	P/P	50 - 160
Nodularin-R	85.6	83.5	P/P	50 - 160

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A117892

Included Lab Sample IDs: 2391513, 2391514

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.0	98.4	P/P	90 - 110
Total-P	98.4	97.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A117894

Included Lab Sample IDs: 2391511, 2391512, 2391550

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	66.5	65.8	P/P	50 - 160
Anatoxin-a	67.5	66.5	P/P	50 - 160
Anatoxin-a	71.2	67.5	P/P	50 - 160
Neosaxitoxin	85.7	88.1	P/P	50 - 160
Neosaxitoxin	88.1	81.1	P/P	50 - 160
Neosaxitoxin	93.6	85.7	P/P	50 - 160
Saxitoxin	72.5	72.3	P/P	50 - 160
Saxitoxin	74.4	72.5	P/P	50 - 160
Saxitoxin	78.3	74.4	P/P	50 - 160

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A117895

Included Lab Sample IDs: 2391513, 2391514, 2391551

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A117978

Included Lab Sample IDs: 2391513, 2391514, 2391551

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	96.5	P/P	90 - 110
Kjeldahl Nitrogen	99.6	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A117983

Included Lab Sample IDs: 2391551

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.2	99.2	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	96.6	97.6			0.968
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.4	95.5	93.6			1.55
	Kjeldahl Nitrogen	94.7	105	98.9			3.27
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102			0.0
EPA 365.1 Rev. 2.0	Total-P	98.6	104	102			1.11
	Total-P	96.5	98.4	97.2			0.719
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.5	100	100			0.0997
EPA 8321B	Anatoxin-a	70.7	68.8	68.3			0.767
	Cylindrospermopsin	83.1	102	98.3			3.24
	Desmethyl microcystin LR	69.5	95.5	98.0			2.55
	Microcystin HiLR	80.3	106	107			0.984
	Microcystin HtyR	78.6	107	107			0.118
	Microcystin LA	74.1	99.4	95.1			4.38
	Microcystin LF	71.8	87.8	102			14.9
	Microcystin LR	65.9	96.6	96.3			0.253
	Microcystin LW	106	118	118			0.596
	Microcystin LY	89.2	106	98.6			7.43
	Microcystin RR	82.0	105	104			0.334
	Microcystin WR	74.2	108	102			5.40
	Microcystin YR	83.9	120	115			3.83
	Neosaxitoxin	91.3	80.2	75.6			6.00
	Nodularin-R	79.8	118	120			2.01
	Saxitoxin	75.4	66.3	66.7			0.638

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2391513, 2391514, 2391551
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2391513, 2391514, 2391551
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2391513, 2391514, 2391551
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2391513, 2391514, 2391551
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2391515, 2391516, 2391552
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2391511, 2391512, 2391550
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2391511, 2391512, 2391550

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	03/03/2023			03/07/2023 10:50	Khloe J Berg	2391513
	03/03/2023			03/07/2023 10:54	Khloe J Berg	2391514
	03/03/2023			03/07/2023 11:02	Khloe J Berg	2391551
EPA 351.2 Rev. 2.0	03/03/2023	03/09/2023 14:00	Simonne.V. Calhoun	03/14/2023 12:42	Samantha L Bates	2391513
	03/03/2023	03/09/2023 14:00	Simonne.V. Calhoun	03/14/2023 12:44	Samantha L Bates	2391514
	03/03/2023	03/09/2023 14:00	Simonne.V. Calhoun	03/14/2023 13:04	Samantha L Bates	2391551
EPA 353.2 Rev. 2.0	03/03/2023			03/09/2023 10:02	Beverly Y. Sanders	2391513
	03/03/2023			03/09/2023 10:10	Beverly Y. Sanders	2391514
	03/03/2023			03/09/2023 10:17	Beverly Y. Sanders	2391551
EPA 365.1 Rev. 2.0	03/03/2023	03/08/2023 02:00	Alexis Price	03/09/2023 10:53	James L Waggeberby	2391513
	03/03/2023	03/08/2023 02:00	Alexis Price	03/09/2023 10:56	James L Waggeberby	2391514
	03/03/2023	03/09/2023 13:42	Adam P Silver	03/14/2023 13:05	James L Waggeberby	2391551
EPA 365.1 Rev. 2.0 dissolved	03/03/2023			03/03/2023 14:26	James L Waggeberby	2391515
	03/03/2023			03/03/2023 14:29	James L Waggeberby	2391516
	03/03/2023			03/03/2023 14:30	James L Waggeberby	2391552
EPA 8321B	03/03/2023	03/08/2023 13:00	Manjita Shrestha	03/08/2023 17:53	Manjita Shrestha	2391511
	03/03/2023	03/08/2023 13:00	Manjita Shrestha	03/08/2023 19:01	Manjita Shrestha	2391512
	03/03/2023	03/08/2023 13:00	Manjita Shrestha	03/08/2023 20:08	Manjita Shrestha	2391550
	03/03/2023	03/08/2023 13:00	Manjita Shrestha	03/09/2023 05:29	Manjita Shrestha	2391511
	03/03/2023	03/08/2023 13:00	Manjita Shrestha	03/09/2023 06:39	Manjita Shrestha	2391512
	03/03/2023	03/08/2023 13:00	Manjita Shrestha	03/09/2023 11:31	Manjita Shrestha	2391550
	03/03/2023	03/08/2023 13:00	Manjita Shrestha	03/09/2023 17:54	Manjita Shrestha	2391511