Chemical Analysis Report

WQAP-2023-02-28-02

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

Event Description: **Algal Bloom Response - CEROC**
Request ID: **RQ-2023-02-20-39**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
FL Dept. of Environmental Protection
3319 Maguire Blvd. Suite 232
Orlando, FL 32803
Attn: Jessie Atchison

For additional information please contact
Colin Wright, Ph.D.
Chris Bowen, B.S.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 27-MAR-2023 12:05

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: Starke Lake - Boat Ramp **Collection Date/Time: 02/27/2023 13:15**

Field ID: HABCE0143_StarkeLake Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2390474	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P426352	
		Cylindrospermopsin	0.10	U	ug/L	P426351	
		Desmethyl microcystin LR	0.25	U	ug/L	P426351	
		Microcystin HilR	0.25	U	ug/L	P426351	MS
		Microcystin HtyR	0.25	U	ug/L	P426351	MS
		Microcystin LA	0.10	U	ug/L	P426351	
		Microcystin LF	0.10	U	ug/L	P426351	
		Microcystin LR	0.25	U	ug/L	P426351	MS
		Microcystin LW	0.25	U	ug/L	P426351	
		Microcystin LY	0.10	U	ug/L	P426351	
		Microcystin RR	0.10	U	ug/L	P426351	
		Microcystin WR	0.50	U	ug/L	P426351	
		Neosaxitoxin	0.50	U	ug/L	P426352	
		Microcystin YR	0.25	U	ug/L	P426351	MS
		Saxitoxin	0.50	U	ug/L	P426352	
		Nodularin-R	0.10	U	ug/L	P426351	MS
2390476	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P426616	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2	J	mg N/L	P427154	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.021		mg N/L	P426787	
	EPA 365.1 Rev. 2.0	Total-P	0.039		mg P/L	P426629	
2390477	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P426488	

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

Sample Location: Starke Lake -Boat Ramp **Collection Date/Time: 02/27/2023 13:20**

Field ID: FB_02272023 Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2390475	EPA 8321B	Anatoxin-a	0.50	U	ug/L	P426352	
		Cylindrospermopsin	0.10	U	ug/L	P426351	
		Desmethyl microcystin LR	0.25	U	ug/L	P426351	
		Microcystin HilR	0.25	U	ug/L	P426351	MS
		Microcystin HtyR	0.25	U	ug/L	P426351	MS
		Microcystin LA	0.10	U	ug/L	P426351	
		Microcystin LF	0.10	U	ug/L	P426351	
		Microcystin LR	0.25	U	ug/L	P426351	MS
		Microcystin LW	0.25	U	ug/L	P426351	
		Microcystin LY	0.10	U	ug/L	P426351	
		Microcystin RR	0.10	U	ug/L	P426351	
		Microcystin WR	0.50	U	ug/L	P426351	
		Neosaxitoxin	1.0	U	ug/L	P426352	
		Microcystin YR	0.25	U	ug/L	P426351	MS
		Saxitoxin	1.0	U	ug/L	P426352	
		Nodularin-R	0.10	U	ug/L	P426351	MS
2390478	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P426728	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P427377	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P426787	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P426629	
2390479	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P426488	

Ref. Method and Comment:
EPA 8321B: MDLs are elevated due to matrix interference.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P426616

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P426728

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P427154

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P427377

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P426787

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P426629

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P426488

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

Reference Method: EPA 8321B
Batch ID: P426351

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 8321B
Batch ID: P426351

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: P426352

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: P426616

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P426728

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P427154

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P427377

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.3		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P426787

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: P426629

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P426488

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.3		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P426351

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	89.3		P	40 - 150
Desmethyl microcystin LR	78.0		P	40 - 150
Microcystin HilR	84.2		P	40 - 150
Microcystin HtyR	88.4		P	40 - 150
Microcystin LA	88.1		P	40 - 150
Microcystin LF	84.2		P	40 - 150
Microcystin LR	77.1		P	40 - 150
Microcystin LW	81.5		P	40 - 150
Microcystin LY	98.2		P	40 - 150
Microcystin RR	86.2		P	40 - 150

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P426351

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Microcystin WR	87.8		P	40 - 150
Microcystin YR	89.0		P	40 - 150
Nodularin-R	75.2		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P426352

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	68.7		P	40 - 150
Neosaxitoxin	85.4		P	40 - 150
Saxitoxin	72.3		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P426616

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2390309	Ammonia-N	99.4	98.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P426728

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2390558	Ammonia-N	97.4	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P427154

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2390476	Kjeldahl Nitrogen	104	88.3	P/F	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P427377

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2390540	Kjeldahl Nitrogen	97.8	95.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P426787

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2390424	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P426629

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2390510	Total-P	98.6	97.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P426488

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2390244	O-Phosphate-P	96.7	97.2	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P426351

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2389910	Cylindrospermopsin	88.3	94.3	P/P	40 - 150
2389910	Desmethyl microcystin LR	134	137	P/P	40 - 150
2389910	Microcystin HilR	159	172	F/F	40 - 150
2389910	Microcystin HtyR	158	160	F/F	40 - 150
2389910	Microcystin LA	99.9	101	P/P	40 - 150
2389910	Microcystin LF	88.7	108	P/P	40 - 150
2389910	Microcystin LR	151	154	F/F	40 - 150
2389910	Microcystin LW	78.5	79.0	P/P	40 - 150
2389910	Microcystin LY	92.8	102	P/P	40 - 150
2389910	Microcystin RR	89.8	90.1	P/P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P426351

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2389910	Microcystin WR	140	142	P/P	40 - 150
2389910	Microcystin YR	158	171	F/F	40 - 150
2389910	Nodularin-R	150	156	F/F	40 - 150

Reference Method: EPA 8321B
Batch ID: P426352

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2389910	Anatoxin-a	65.1	65.7	P/P	40 - 150
2389910	Neosaxitoxin	62.1	61.6	P/P	40 - 150
2389910	Saxitoxin	55.0	53.4	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P426616

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2390309	Ammonia-N	0.873	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P426728

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2390558	Ammonia-N	1.33	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P427154

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2390476	Kjeldahl Nitrogen	9.67	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P427377

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2390540	Kjeldahl Nitrogen	1.76	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P426787

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2390424	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P426629

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2390510	Total-P	0.890	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P426488

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2390244	O-Phosphate-P	0.382	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P426351

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2389910	Cylindrospermopsin	6.56	Spike	P	0 - 30
2389910	Desmethyl microcystin LR	2.02	Spike	P	0 - 30

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P426351

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2389910	Microcystin HilR	7.79	Spike	P	0 - 30
2389910	Microcystin HtyR	0.880	Spike	P	0 - 30
2389910	Microcystin LA	1.40	Spike	P	0 - 30
2389910	Microcystin LF	19.3	Spike	P	0 - 30
2389910	Microcystin LR	1.50	Spike	P	0 - 30
2389910	Microcystin LW	0.552	Spike	P	0 - 30
2389910	Microcystin LY	9.62	Spike	P	0 - 30
2389910	Microcystin RR	0.303	Spike	P	0 - 30
2389910	Microcystin WR	1.15	Spike	P	0 - 30
2389910	Microcystin YR	7.65	Spike	P	0 - 30
2389910	Nodularin-R	3.94	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P426352

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2389910	Anatoxin-a	0.847	Spike	P	0 - 30
2389910	Neosaxitoxin	0.871	Spike	P	0 - 30
2389910	Saxitoxin	3.11	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2390474
Field Sample ID: HABCE0143_StarkeLake

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	90.3	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	61.3	P	30 - 160

Lab Sample ID: 2390475
Field Sample ID: FB_02272023

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	60.0	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	71.7	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A117710
Included Lab Sample IDs: 2390477, 2390479

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.4	98.6	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A117745
Included Lab Sample IDs: 2390474, 2390475

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	101	95.8	P/P	50 - 160
Desmethyl microcystin LR	83.3	83.6	P/P	50 - 160
Microcystin HilR	89.0	93.7	P/P	50 - 160
Microcystin HtyR	92.9	92.5	P/P	50 - 160
Microcystin LA	95.5	98.6	P/P	50 - 160
Microcystin LF	84.3	79.4	P/P	50 - 160
Microcystin LR	79.5	82.3	P/P	50 - 160
Microcystin LW	90.2	92.9	P/P	50 - 160
Microcystin LY	89.2	103	P/P	50 - 160
Microcystin RR	88.6	88.6	P/P	50 - 160
Microcystin WR	91.6	90.2	P/P	50 - 160
Microcystin YR	93.7	94.1	P/P	50 - 160
Nodularin-R	82.4	81.1	P/P	50 - 160

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A117761
Included Lab Sample IDs: 2390476

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.9	99.0	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A117764
Included Lab Sample IDs: 2390474, 2390475

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	64.4	64.6	P/P	50 - 160
Anatoxin-a	64.6	63.3	P/P	50 - 160
Neosaxitoxin	73.7	75.6	P/P	50 - 160
Neosaxitoxin	75.6	75.3	P/P	50 - 160
Saxitoxin	67.0	67.3	P/P	50 - 160
Saxitoxin	68.1	67.0	P/P	50 - 160

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A117820
Included Lab Sample IDs: 2390476, 2390478

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A117821
Included Lab Sample IDs: 2390478

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A117829
Included Lab Sample IDs: 2390476, 2390478

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A118067
Included Lab Sample IDs: 2390476

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.7	95.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A118158
Included Lab Sample IDs: 2390478

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.5	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		Precision		
					LCS	SMP	MS
EPA 350.1 Rev. 2.0	Ammonia-N	99.2	99.4	98.4			0.873
	Ammonia-N	98.8	97.4	98.8			1.33
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.8	104	88.3			9.67
	Kjeldahl Nitrogen	99.3	97.8	95.6			1.76
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102			0.0
EPA 365.1 Rev. 2.0	Total-P	101	98.6	97.6			0.890
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.3	96.7	97.2			0.382
EPA 8321B	Anatoxin-a	68.7	65.1	65.7			0.847
	Cylindrospermopsin	89.3	88.3	94.3			6.56
	Desmethyl microcystin LR	78.0	134	137			2.02
	Microcystin HilR	84.2	159	172			7.79
	Microcystin HtyR	88.4	158	160			0.880
	Microcystin LA	88.1	99.9	101			1.40
	Microcystin LF	84.2	88.7	108			19.3
	Microcystin LR	77.1	151	154			1.50
	Microcystin LW	81.5	78.5	79.0			0.552
	Microcystin LY	98.2	92.8	102			9.62
	Microcystin RR	86.2	89.8	90.1			0.303
	Microcystin WR	87.8	140	142			1.15
	Microcystin YR	89.0	158	171			7.65
	Neosaxitoxin	85.4	62.1	61.6			0.871
	Nodularin-R	75.2	150	156			3.94
	Saxitoxin	72.3	55.0	53.4			3.11

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2390476, 2390478
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2390476, 2390478
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2390476, 2390478
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2390476, 2390478
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2390477, 2390479
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2390474, 2390475
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2390474, 2390475

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	02/28/2023			03/02/2023 13:35	Ping Hua	2390476
	02/28/2023			03/06/2023 10:39	Khloe J Berg	2390478
EPA 351.2 Rev. 2.0	02/28/2023	03/15/2023 13:00	Simonne.V. Calhoun	03/17/2023 18:06	Judith K. Clark	2390476
	02/28/2023	03/21/2023 13:00	Simonne.V. Calhoun	03/23/2023 09:33	Judith K. Clark	2390478
EPA 353.2 Rev. 2.0	02/28/2023			03/06/2023 10:17	Beverly Y. Sanders	2390476
	02/28/2023			03/06/2023 10:18	Beverly Y. Sanders	2390478
EPA 365.1 Rev. 2.0	02/28/2023	03/02/2023 15:47	Adam P Silver	03/06/2023 15:51	James L Waggerby	2390478
	02/28/2023	03/02/2023 15:47	Adam P Silver	03/06/2023 15:53	James L Waggerby	2390476
EPA 365.1 Rev. 2.0 dissolved	02/28/2023			02/28/2023 15:10	Elise M. Gillis	2390477, 2390479
EPA 8321B	02/28/2023	03/01/2023 11:00	Manjita Shrestha	03/02/2023 00:41	Manjita Shrestha	2390474
	02/28/2023	03/01/2023 11:00	Manjita Shrestha	03/02/2023 00:58	Manjita Shrestha	2390475
	02/28/2023	03/01/2023 11:00	Manjita Shrestha	03/02/2023 09:21	Manjita Shrestha	2390474
	02/28/2023	03/01/2023 11:00	Manjita Shrestha	03/02/2023 11:54	Manjita Shrestha	2390475