

Chemical Analysis Report

WQAP-2023-04-05-01

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

Event Description: **Algal Bloom Response - CEROC**
Request ID: **RQ-2023-04-10-05**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

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Certified by: Colin Wright, Program Administrator

Date Certified: 17-APR-2023 08:52

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light pink rectangular background.

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: Sunset Lake - W Shore

Collection Date/Time: 04/04/2023 12:46

Field ID: HABCE0165_SunsetLake

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2398058	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P427990	
		Cylindrospermopsin	0.10	U	ug/L	P427989	
		Desmethyl microcystin LR	0.25	U	ug/L	P427989	
		Microcystin HILR	0.25	U	ug/L	P427989	
		Microcystin HtyR	0.25	U	ug/L	P427989	
		Microcystin LA	0.16	I	ug/L	P427989	
		Microcystin LF	0.10	U	ug/L	P427989	
		Microcystin LR	0.34	I	ug/L	P427989	
		Microcystin LW	0.25	U	ug/L	P427989	
		Microcystin LY	0.10	U	ug/L	P427989	
		Microcystin RR	0.10	U	ug/L	P427989	
		Microcystin WR	0.50	U	ug/L	P427989	
		Neosaxitoxin	0.50	U	ug/L	P427990	
		Microcystin YR	0.25	U	ug/L	P427989	
		Saxitoxin	0.50	U	ug/L	P427990	
		Nodularin-R	0.10	U	ug/L	P427989	
2398063	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P428120	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P428289	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P428133	
	EPA 365.1 Rev. 2.0	Total-P	0.044		mg P/L	P428150	
2398068	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P428079	

Sample Location: Lake Copeland - SE Corner

Collection Date/Time: 04/04/2023 12:07

Field ID: HABCE0093_LakeCopeland1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2398057	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P427990	
		Cylindrospermopsin	0.10	U	ug/L	P427989	
		Desmethyl microcystin LR	0.25	U	ug/L	P427989	
		Microcystin HILR	0.25	U	ug/L	P427989	
		Microcystin HtyR	0.25	U	ug/L	P427989	
		Microcystin LA	0.10	U	ug/L	P427989	
		Microcystin LF	0.10	U	ug/L	P427989	
		Microcystin LR	0.25	U	ug/L	P427989	
		Microcystin LW	0.25	U	ug/L	P427989	
		Microcystin LY	0.10	U	ug/L	P427989	
		Microcystin RR	0.10	U	ug/L	P427989	
		Microcystin WR	0.50	U	ug/L	P427989	
		Neosaxitoxin	0.50	U	ug/L	P427990	
		Microcystin YR	0.25	U	ug/L	P427989	
		Saxitoxin	0.50	U	ug/L	P427990	
		Nodularin-R	0.10	U	ug/L	P427989	
2398062	EPA 350.1 Rev. 2.0	Ammonia-N	0.067		mg N/L	P428119	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P428289	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P428133	
	EPA 365.1 Rev. 2.0	Total-P	0.052		mg P/L	P428150	
2398067	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P428079	

Sample Location: Lake Sue - Fawsett Ramp

Collection Date/Time: 04/04/2023 13:46

Field ID: HABCE0128_LakeSue2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2398059	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P427990	
		Cylindrospermopsin	0.10	U	ug/L	P427989	
		Desmethyl microcystin LR	0.25	U	ug/L	P427989	
		Microcystin HILR	0.25	U	ug/L	P427989	
		Microcystin HtyR	0.25	U	ug/L	P427989	
		Microcystin LA	0.13	I	ug/L	P427989	
		Microcystin LF	0.10	U	ug/L	P427989	
		Microcystin LR	0.27	I	ug/L	P427989	
		Microcystin LW	0.25	U	ug/L	P427989	
		Microcystin LY	0.10	U	ug/L	P427989	
		Microcystin RR	0.10	U	ug/L	P427989	
		Microcystin WR	0.50	U	ug/L	P427989	
		Neosaxitoxin	0.50	U	ug/L	P427990	
		Microcystin YR	0.25	U	ug/L	P427989	
		Saxitoxin	0.50	U	ug/L	P427990	
		Nodularin-R	0.10	U	ug/L	P427989	
2398064	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P428120	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.42		mg N/L	P428289	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P428133	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P428150	
2398069	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P428080	

Sample Location: Big Sand Lake from Dock

Collection Date/Time: 04/04/2023 10:43

Field ID: HABCE0155_BigSandLake

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2398056	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P427990	
		Cylindrospermopsin	0.10	U	ug/L	P427989	
		Desmethyl microcystin LR	0.25	U	ug/L	P427989	
		Microcystin HILR	0.25	U	ug/L	P427989	
		Microcystin HtyR	0.25	U	ug/L	P427989	
		Microcystin LA	0.10	U	ug/L	P427989	
		Microcystin LF	0.10	U	ug/L	P427989	
		Microcystin LR	0.25	U	ug/L	P427989	
		Microcystin LW	0.25	U	ug/L	P427989	
		Microcystin LY	0.10	U	ug/L	P427989	
		Microcystin RR	0.10	U	ug/L	P427989	
		Microcystin WR	0.50	U	ug/L	P427989	
		Neosaxitoxin	0.50	U	ug/L	P427990	
		Microcystin YR	0.25	U	ug/L	P427989	
		Saxitoxin	0.50	U	ug/L	P427990	
		Nodularin-R	0.10	U	ug/L	P427989	
2398061	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P428119	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37		mg N/L	P428289	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P428133	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P428150	
2398066	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P428079	

Sample Location: Lake Baldwin - Park Boat Ramp

Collection Date/Time: 04/04/2023 14:15

Field ID: HABCE0188_LakeBaldwin2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2398060	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P427990	
		Cylindrospermopsin	0.10	U	ug/L	P427989	
		Desmethyl microcystin LR	0.25	U	ug/L	P427989	
		Microcystin HILR	0.25	U	ug/L	P427989	
		Microcystin HtyR	0.25	U	ug/L	P427989	
		Microcystin LA	0.35	I	ug/L	P427989	
		Microcystin LF	0.10	U	ug/L	P427989	
		Microcystin LR	0.30	I	ug/L	P427989	
		Microcystin LW	0.25	U	ug/L	P427989	
		Microcystin LY	0.10	U	ug/L	P427989	
		Microcystin RR	0.10	U	ug/L	P427989	
		Microcystin WR	0.50	U	ug/L	P427989	
		Neosaxitoxin	0.50	U	ug/L	P427990	
		Microcystin YR	0.25	U	ug/L	P427989	
		Saxitoxin	0.50	U	ug/L	P427990	
		Nodularin-R	0.10	U	ug/L	P427989	
2398065	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P428120	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P428289	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P428133	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P428150	
2398070	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P428080	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P428119

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P428120

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P428289

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P428133

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P428150

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P428079

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P428080

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

Reference Method: EPA 8321B
Batch ID: P427989

Component	Result	Code	Units
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin HtIR	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: P427989

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: P427990

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: P428119

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P428120

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P428289

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: P428133

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: P428150

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: P428079

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P428080

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

Reference Method: EPA 8321B
Batch ID: P427989

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	91.0		P	40 - 150
Desmethyl microcystin LR	105		P	40 - 150
Microcystin HIR	109		P	40 - 150
Microcystin HtyR	107		P	40 - 150
Microcystin LA	119		P	40 - 150
Microcystin LF	116		P	40 - 150
Microcystin LR	104		P	40 - 150
Microcystin LW	120		P	40 - 150
Microcystin LY	120		P	40 - 150
Microcystin RR	102		P	40 - 150

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P427989

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Microcystin WR	96.8		P	40 - 150
Microcystin YR	116		P	40 - 150
Nodularin-R	100		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P427990

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	70.8		P	40 - 150
Neosaxitoxin	95.4		P	40 - 150
Saxitoxin	77.2		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P428119

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2398061	Ammonia-N	98.0	96.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P428120

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2398063	Ammonia-N	97.0	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P428289

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2398065	Kjeldahl Nitrogen	100	96.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P428133

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2397949	NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P428150

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2398064	Total-P	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P428079

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2397910	O-Phosphate-P	98.0	97.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P428080

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2398069	O-Phosphate-P	98.7	99.4	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P427989

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2397482	Cylindrospermopsin	95.1	96.1	P/P	40 - 150
2397482	Desmethyl microcystin LR	100	103	P/P	40 - 150
2397482	Microcystin HiLR	98.3	116	P/P	40 - 150
2397482	Microcystin HtyR	110	116	P/P	40 - 150
2397482	Microcystin LA	127	134	P/P	40 - 150
2397482	Microcystin LF	114	120	P/P	40 - 150
2397482	Microcystin LR	107	112	P/P	40 - 150
2397482	Microcystin LW	123	135	P/P	40 - 150
2397482	Microcystin LY	91.2	109	P/P	40 - 150
2397482	Microcystin RR	100	103	P/P	40 - 150

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P427989

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2397482	Microcystin WR	109	119	P/P	40 - 150
2397482	Microcystin YR	109	118	P/P	40 - 150
2397482	Nodularin-R	105	107	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P427990

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2397482	Anatoxin-a	66.1	67.0	P/P	40 - 150
2397482	Neosaxitoxin	73.3	70.4	P/P	40 - 150
2397482	Saxitoxin	62.3	60.6	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P428119

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2398061	Ammonia-N	1.55	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P428120

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2398063	Ammonia-N	0.671	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P428289

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2398065	Kjeldahl Nitrogen	2.79	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P428133

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2397949	NO2NO3-N	0.477	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P428150

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2398064	Total-P	1.11	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P428079

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2397910	O-Phosphate-P	0.0945	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P428080

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2398069	O-Phosphate-P	0.707	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P427989

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2397482	Cylindrospermopsin	1.03	Spike	P	0 - 30
2397482	Desmethyl microcystin LR	2.11	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P427989

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2397482	Microcystin HllR	16.7	Spike	P	0 - 30
2397482	Microcystin HtyR	5.87	Spike	P	0 - 30
2397482	Microcystin LA	5.56	Spike	P	0 - 30
2397482	Microcystin LF	5.30	Spike	P	0 - 30
2397482	Microcystin LR	4.52	Spike	P	0 - 30
2397482	Microcystin LW	9.71	Spike	P	0 - 30
2397482	Microcystin LY	17.4	Spike	P	0 - 30
2397482	Microcystin RR	3.12	Spike	P	0 - 30
2397482	Microcystin WR	8.74	Spike	P	0 - 30
2397482	Microcystin YR	8.27	Spike	P	0 - 30
2397482	Nodularin-R	2.04	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P427990

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2397482	Anatoxin-a	1.33	Spike	P	0 - 30
2397482	Neosaxitoxin	3.94	Spike	P	0 - 30
2397482	Saxitoxin	2.76	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2398056

Field Sample ID: HABCE0155_BigSandLake

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	81.8	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	77.9	P	30 - 160

Lab Sample ID: 2398057

Field Sample ID: HABCE0093_LakeCopeland1

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	99.3	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	68.4	P	30 - 160

Lab Sample ID: 2398058

Field Sample ID: HABCE0165_SunsetLake

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	84.1	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	74.1	P	30 - 160

Lab Sample ID: 2398059

Field Sample ID: HABCE0128_LakeSue2

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	75.0	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	74.1	P	30 - 160

Lab Sample ID: 2398060

Field Sample ID: HABCE0188_LakeBaldwin2

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	87.3	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	70.9	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A118393

Included Lab Sample IDs: 2398066, 2398067, 2398068, 2398069, 2398070

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	99.8	P/P	90 - 110
O-Phosphate-P	99.8	99.5	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A118397

Included Lab Sample IDs: 2398056, 2398057, 2398058, 2398059, 2398060

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	84.6	89.5	P/P	50 - 160
Cylindrospermopsin	89.5	84.6	P/P	50 - 160
Desmethyl microcystin LR	96.1	102	P/P	50 - 160
Desmethyl microcystin LR	96.1	96.1	P/P	50 - 160
Microcystin HiLR	98.6	99.2	P/P	50 - 160
Microcystin HiLR	99.2	98.6	P/P	50 - 160
Microcystin HtyR	102	107	P/P	50 - 160
Microcystin HtyR	104	102	P/P	50 - 160
Microcystin LA	122	125	P/P	50 - 160
Microcystin LA	126	122	P/P	50 - 160
Microcystin LF	112	114	P/P	50 - 160
Microcystin LF	114	105	P/P	50 - 160
Microcystin LR	100	102	P/P	50 - 160
Microcystin LR	102	102	P/P	50 - 160
Microcystin LW	101	106	P/P	50 - 160
Microcystin LW	106	112	P/P	50 - 160
Microcystin LY	94.0	95.4	P/P	50 - 160
Microcystin LY	95.4	96.8	P/P	50 - 160
Microcystin RR	93.0	99.1	P/P	50 - 160
Microcystin RR	96.4	93.0	P/P	50 - 160
Microcystin WR	101	99.7	P/P	50 - 160
Microcystin WR	99.7	104	P/P	50 - 160
Microcystin YR	100	103	P/P	50 - 160
Microcystin YR	98.6	100	P/P	50 - 160
Nodularin-R	96.6	103	P/P	50 - 160
Nodularin-R	98.4	96.6	P/P	50 - 160

Reference Method: EPA 8321B

Run ID: A118399

Included Lab Sample IDs: 2398056, 2398057, 2398058, 2398059, 2398060

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	60.7	61.9	P/P	50 - 160
Anatoxin-a	65.8	60.7	P/P	50 - 160
Neosaxitoxin	78.8	80.6	P/P	50 - 160
Neosaxitoxin	83.1	78.8	P/P	50 - 160
Saxitoxin	65.1	67.7	P/P	50 - 160
Saxitoxin	68.3	65.1	P/P	50 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A118409

Included Lab Sample IDs: 2398061, 2398062, 2398063, 2398064, 2398065

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.2	98.1	P/P	90 - 110
Ammonia-N	99.2	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A118411

Included Lab Sample IDs: 2398061, 2398062, 2398063, 2398064, 2398065

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A118452

Included Lab Sample IDs: 2398061, 2398062, 2398064, 2398065

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A118481

Included Lab Sample IDs: 2398063

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A118533

Included Lab Sample IDs: 2398061, 2398062, 2398063, 2398064, 2398065

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	105	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	98.2	98.0	96.4			1.55
	Ammonia-N	100	97.0	97.8			0.671
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	100	96.2			2.79
EPA 353.2 Rev. 2.0	NO2NO3-N	103	102	103			0.477
EPA 365.1 Rev. 2.0	Total-P	101	101	102			1.11
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.9	98.0	97.9			0.0945
	O-Phosphate-P	99.2	98.7	99.4			0.707
EPA 8321B	Anatoxin-a	70.8	66.1	67.0			1.33
	Cylindrospermopsin	91.0	95.1	96.1			1.03
	Desmethyl microcystin LR	105	100	103			2.11
	Microcystin HiIR	109	98.3	116			16.7
	Microcystin HtyR	107	110	116			5.87
	Microcystin LA	119	127	134			5.56
	Microcystin LF	116	114	120			5.30
	Microcystin LR	104	107	112			4.52
	Microcystin LW	120	123	135			9.71
	Microcystin LY	120	91.2	109			17.4
	Microcystin RR	102	100	103			3.12
	Microcystin WR	96.8	109	119			8.74
	Microcystin YR	116	109	118			8.27
	Neosaxitoxin	95.4	73.3	70.4			3.94
	Nodularin-R	100	105	107			2.04
	Saxitoxin	77.2	62.3	60.6			2.76

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2398061, 2398062, 2398063, 2398064, 2398065
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2398061, 2398062, 2398063, 2398064, 2398065
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2398061, 2398062, 2398063, 2398064, 2398065
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2398061, 2398062, 2398063, 2398064, 2398065
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2398066, 2398067, 2398068, 2398069, 2398070
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2398056, 2398057, 2398058, 2398059, 2398060
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2398056, 2398057, 2398058, 2398059, 2398060

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	04/05/2023			04/06/2023 10:41	Ping Hua	2398061
	04/05/2023			04/06/2023 10:55	Ping Hua	2398062
	04/05/2023			04/06/2023 11:07	Ping Hua	2398063
	04/05/2023			04/06/2023 11:11	Ping Hua	2398064
	04/05/2023			04/06/2023 11:13	Ping Hua	2398065
EPA 351.2 Rev. 2.0	04/05/2023	04/11/2023 12:42	Dana G. Hughes	04/12/2023 13:42	Samantha L Bates	2398061
	04/05/2023	04/11/2023 12:42	Dana G. Hughes	04/12/2023 13:44	Samantha L Bates	2398062
	04/05/2023	04/11/2023 12:42	Dana G. Hughes	04/12/2023 13:45	Samantha L Bates	2398063
	04/05/2023	04/11/2023 12:42	Dana G. Hughes	04/12/2023 13:47	Samantha L Bates	2398064
	04/05/2023	04/11/2023 12:42	Dana G. Hughes	04/12/2023 13:49	Samantha L Bates	2398065
EPA 353.2 Rev. 2.0	04/05/2023			04/06/2023 10:49	Beverly Y. Sanders	2398061
	04/05/2023			04/06/2023 10:50	Beverly Y. Sanders	2398062
	04/05/2023			04/06/2023 10:51	Beverly Y. Sanders	2398063
	04/05/2023			04/06/2023 10:52	Beverly Y. Sanders	2398064
	04/05/2023			04/06/2023 10:53	Beverly Y. Sanders	2398065
EPA 365.1 Rev. 2.0	04/05/2023	04/06/2023 15:24	Adam P Silver	04/07/2023 14:59	James L Waggeberby	2398064
	04/05/2023	04/06/2023 15:24	Adam P Silver	04/07/2023 15:00	James L Waggeberby	2398061
	04/05/2023	04/06/2023 15:24	Adam P Silver	04/07/2023 15:01	James L Waggeberby	2398062
	04/05/2023	04/06/2023 15:24	Adam P Silver	04/07/2023 15:02	James L Waggeberby	2398065
	04/05/2023	04/06/2023 15:24	Adam P Silver	04/10/2023 16:09	James L Waggeberby	2398063
EPA 365.1 Rev. 2.0 dissolved	04/05/2023			04/05/2023 15:11	Elise M. Gillis	2398066
	04/05/2023			04/05/2023 15:12	Elise M. Gillis	2398067
	04/05/2023			04/05/2023 15:13	Elise M. Gillis	2398068
	04/05/2023			04/05/2023 15:19	Elise M. Gillis	2398069
	04/05/2023			04/05/2023 15:22	Elise M. Gillis	2398070
EPA 8321B	04/05/2023	04/05/2023 11:59	Manjita Shrestha	04/05/2023 18:57	Manjita Shrestha	2398056
	04/05/2023	04/05/2023 11:59	Manjita Shrestha	04/05/2023 19:31	Manjita Shrestha	2398057
	04/05/2023	04/05/2023 11:59	Manjita Shrestha	04/05/2023 19:48	Manjita Shrestha	2398058
	04/05/2023	04/05/2023 11:59	Manjita Shrestha	04/05/2023 20:05	Manjita Shrestha	2398059
	04/05/2023	04/05/2023 11:59	Manjita Shrestha	04/05/2023 20:21	Manjita Shrestha	2398060
	04/05/2023	04/05/2023 11:59	Manjita Shrestha	04/06/2023 02:29	Manjita Shrestha	2398056
	04/05/2023	04/05/2023 11:59	Manjita Shrestha	04/06/2023 02:57	Manjita Shrestha	2398057
	04/05/2023	04/05/2023 11:59	Manjita Shrestha	04/06/2023 03:11	Manjita Shrestha	2398058
	04/05/2023	04/05/2023 11:59	Manjita Shrestha	04/06/2023 03:25	Manjita Shrestha	2398059
	04/05/2023	04/05/2023 11:59	Manjita Shrestha	04/06/2023 03:39	Manjita Shrestha	2398060