

Chemical Analysis Report

WQAP-2023-04-19-02

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

Event Description: **Algal Bloom Response - CEROC**
Request ID: **RQ-2023-04-03-56**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

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Date Certified: 01-MAY-2023 14:43



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: Lake Baldwin - Park Boat Ramp

Collection Date/Time: 04/18/2023 14:45

Field ID: HABCE0188_LakeBaldwin2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2401203	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P428621	
		Cylindrospermopsin	0.10	U	ug/L	P428620	
		Desmethyl microcystin LR	0.25	U	ug/L	P428620	
		Microcystin HILR	0.25	U	ug/L	P428620	
		Microcystin HtyR	0.25	U	ug/L	P428620	
		Microcystin LA	0.40	I	ug/L	P428620	
		Microcystin LF	0.10	U	ug/L	P428620	
		Microcystin LR	0.52	I	ug/L	P428620	
		Microcystin LW	0.25	U	ug/L	P428620	
		Microcystin LY	0.10	U	ug/L	P428620	
		Microcystin RR	0.10	U	ug/L	P428620	
		Microcystin WR	0.50	U	ug/L	P428620	
		Neosaxitoxin	0.50	U	ug/L	P428621	
		Microcystin YR	0.25	U	ug/L	P428620	
		Saxitoxin	0.50	U	ug/L	P428621	
		Nodularin-R	0.10	U	ug/L	P428620	
2401206	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P428967	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.61		mg N/L	P428800	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P429085	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P428739	
2401209	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P428703	

Sample Location: Caywood Pond - SW Dock

Collection Date/Time: 04/18/2023 14:45

Field ID: HABCE0193_CaywoodPond

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2401204	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P428671	
		Cylindrospermopsin	0.10	U	ug/L	P428669	
		Desmethyl microcystin LR	0.25	U	ug/L	P428669	
		Microcystin HILR	0.25	U	ug/L	P428669	
		Microcystin HtyR	0.25	U	ug/L	P428669	
		Microcystin LA	0.10	U	ug/L	P428669	
		Microcystin LF	0.10	UJ	ug/L	P428669	RPD
		Microcystin LR	1.3		ug/L	P428669	
		Microcystin LW	0.25	U	ug/L	P428669	
		Microcystin LY	0.10	U	ug/L	P428669	
		Microcystin RR	0.10	U	ug/L	P428669	
		Microcystin WR	0.50	U	ug/L	P428669	
		Neosaxitoxin	0.50	U	ug/L	P428671	
		Microcystin YR	0.25	U	ug/L	P428669	
		Saxitoxin	2.2		ug/L	P428671	
		Nodularin-R	0.10	U	ug/L	P428669	
2401207	EPA 350.1 Rev. 2.0	Ammonia-N	0.56		mg N/L	P428967	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.0		mg N/L	P428802	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P429085	
	EPA 365.1 Rev. 2.0	Total-P	0.061		mg P/L	P428739	
2401210	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P428703	

Ref. Method and Comment:

EPA 8321B: Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: Tiger Lake - Center

Collection Date/Time: 04/18/2023 12:14

Field ID: HABCE0185_TigerLake2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2401205	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P428671	
		Cylindrospermopsin	0.10	U	ug/L	P428669	
		Desmethyl microcystin LR	0.25	U	ug/L	P428669	
		Microcystin HILR	0.25	U	ug/L	P428669	
		Microcystin HtyR	0.25	U	ug/L	P428669	
		Microcystin LA	0.29	I	ug/L	P428669	
		Microcystin LF	0.22	I	ug/L	P428669	RPD
		Microcystin LR	2.7		ug/L	P428669	
		Microcystin LW	0.25	U	ug/L	P428669	
		Microcystin LY	0.50		ug/L	P428669	
		Microcystin RR	0.50		ug/L	P428669	
		Microcystin WR	0.50	U	ug/L	P428669	
		Neosaxitoxin	0.50	U	ug/L	P428671	
		Microcystin YR	0.25	U	ug/L	P428669	
		Saxitoxin	0.50	U	ug/L	P428671	
		Nodularin-R	0.10	U	ug/L	P428669	
2401208	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P428967	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P428802	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P429085	
	EPA 365.1 Rev. 2.0	Total-P	0.21		mg P/L	P428739	
2401211	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P428703	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P428967

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P428800

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P428802

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P429085

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P428739

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P428703

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

Reference Method: EPA 8321B
Batch ID: P428620

Component	Result	Code	Units
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin H1LR	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

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
Batch ID: P428621

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

Reference Method: EPA 8321B
Batch ID: P428669

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: P428671

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: P428967

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P428800

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P428802

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	93.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P429085

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: P428739

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P428703

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

Reference Method: EPA 8321B
Batch ID: P428620

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	92.1		P	40 - 150
Desmethyl microcystin LR	95.4		P	40 - 150
Microcystin H1LR	99.8		P	40 - 150
Microcystin HtyR	99.1		P	40 - 150
Microcystin LA	103		P	40 - 150
Microcystin LF	110		P	40 - 150
Microcystin LR	109		P	40 - 150
Microcystin LW	97.7		P	40 - 150
Microcystin LY	94.5		P	40 - 150
Microcystin RR	99.4		P	40 - 150
Microcystin WR	114		P	40 - 150
Microcystin YR	98.7		P	40 - 150
Nodularin-R	92.2		P	40 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P428621

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	112		P	40 - 150
Neosaxitoxin	116		P	40 - 150
Saxitoxin	106		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P428669

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	90.7		P	40 - 150
Desmethyl microcystin LR	97.9		P	40 - 150
Microcystin HILR	101		P	40 - 150
Microcystin HtyR	98.6		P	40 - 150
Microcystin LA	101		P	40 - 150
Microcystin LF	110		P	40 - 150
Microcystin LR	101		P	40 - 150
Microcystin LW	91.6		P	40 - 150
Microcystin LY	104		P	40 - 150
Microcystin RR	90.1		P	40 - 150
Microcystin WR	109		P	40 - 150
Microcystin YR	104		P	40 - 150
Nodularin-R	89.3		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P428671

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	99.0		P	40 - 150
Neosaxitoxin	98.9		P	40 - 150
Saxitoxin	98.2		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P428967

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2401183	Ammonia-N	93.2	93.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P428800

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2401182	Kjeldahl Nitrogen	92.6	89.4	P/F	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P428802

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2401277	Kjeldahl Nitrogen	90.0	101	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P429085

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2401184	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P428739

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2401161	Total-P	105	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P428703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2401162	O-Phosphate-P	99.3	99.5	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P428620

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2400746	Cylindrospermopsin	91.9	98.8	P/P	40 - 150
2400746	Desmethyl microcystin LR	113	108	P/P	40 - 150
2400746	Microcystin HilR	109	119	P/P	40 - 150
2400746	Microcystin HtyR	120	118	P/P	40 - 150
2400746	Microcystin LA	96.2	105	P/P	40 - 150
2400746	Microcystin LF	105	104	P/P	40 - 150
2400746	Microcystin LR	113	116	P/P	40 - 150
2400746	Microcystin LW	92.5	112	P/P	40 - 150
2400746	Microcystin LY	106	98.5	P/P	40 - 150
2400746	Microcystin RR	97.7	104	P/P	40 - 150
2400746	Microcystin WR	115	116	P/P	40 - 150
2400746	Microcystin YR	115	116	P/P	40 - 150
2400746	Nodularin-R	99.1	104	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P428621

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2400746	Anatoxin-a	109	107	P/P	40 - 150
2400746	Neosaxitoxin	93.7	86.5	P/P	40 - 150
2400746	Saxitoxin	94.0	90.7	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P428669

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2401204	Cylindrospermopsin	88.2	92.9	P/P	40 - 150
2401204	Desmethyl microcystin LR	97.1	106	P/P	40 - 150
2401204	Microcystin H1LR	101	102	P/P	40 - 150
2401204	Microcystin HtyR	99.8	99.7	P/P	40 - 150
2401204	Microcystin LA	109	107	P/P	40 - 150
2401204	Microcystin LF	72.6	114	P/P	40 - 150
2401204	Microcystin LR	94.2	111	P/P	40 - 150
2401204	Microcystin LW	90.4	89.8	P/P	40 - 150
2401204	Microcystin LY	93.8	76.4	P/P	40 - 150
2401204	Microcystin RR	93.4	96.9	P/P	40 - 150
2401204	Microcystin WR	116	117	P/P	40 - 150
2401204	Microcystin YR	98.3	97.1	P/P	40 - 150
2401204	Nodularin-R	91.9	92.6	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P428671

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2401204	Anatoxin-a	102	102	P/P	40 - 150
2401204	Neosaxitoxin	103	99.1	P/P	40 - 150
2401204	Saxitoxin	79.7	76.3	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P428967

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2401183	Ammonia-N	0.563	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P428800

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2401182	Kjeldahl Nitrogen	2.31	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P428802

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2401277	Kjeldahl Nitrogen	7.67	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P429085

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2401184	NO2NO3-N	0.491	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P428739

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2401161	Total-P	1.58	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P428703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2401162	O-Phosphate-P	0.201	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P428620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2400746	Cylindrospermopsin	7.20	Spike	P	0 - 30
2400746	Desmethyl microcystin LR	5.27	Spike	P	0 - 30
2400746	Microcystin HtLR	9.06	Spike	P	0 - 30
2400746	Microcystin HtyR	1.69	Spike	P	0 - 30
2400746	Microcystin LA	8.52	Spike	P	0 - 30
2400746	Microcystin LF	0.573	Spike	P	0 - 30
2400746	Microcystin LR	2.51	Spike	P	0 - 30
2400746	Microcystin LW	18.9	Spike	P	0 - 30
2400746	Microcystin LY	7.59	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
 Batch ID: P428620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2400746	Microcystin RR	6.51	Spike	P	0 - 30
2400746	Microcystin WR	0.456	Spike	P	0 - 30
2400746	Microcystin YR	0.543	Spike	P	0 - 30
2400746	Nodularin-R	4.98	Spike	P	0 - 30

Reference Method: EPA 8321B
 Batch ID: P428621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2400746	Anatoxin-a	2.08	Spike	P	0 - 30
2400746	Neosaxitoxin	8.07	Spike	P	0 - 30
2400746	Saxitoxin	3.50	Spike	P	0 - 30

Reference Method: EPA 8321B
 Batch ID: P428669

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2401204	Cylindrospermopsin	5.11	Spike	P	0 - 30
2401204	Desmethyl microcystin LR	8.96	Spike	P	0 - 30
2401204	Microcystin HIR	1.88	Spike	P	0 - 30
2401204	Microcystin HtyR	0.0895	Spike	P	0 - 30
2401204	Microcystin LA	2.38	Spike	P	0 - 30
2401204	Microcystin LF	44.2	Spike	F	0 - 30
2401204	Microcystin LR	14.4	Spike	P	0 - 30
2401204	Microcystin LW	0.615	Spike	P	0 - 30
2401204	Microcystin LY	20.5	Spike	P	0 - 30
2401204	Microcystin RR	3.65	Spike	P	0 - 30
2401204	Microcystin WR	0.216	Spike	P	0 - 30
2401204	Microcystin YR	1.25	Spike	P	0 - 30
2401204	Nodularin-R	0.738	Spike	P	0 - 30

Reference Method: EPA 8321B
 Batch ID: P428671

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2401204	Anatoxin-a	0.110	Spike	P	0 - 30
2401204	Neosaxitoxin	3.93	Spike	P	0 - 30
2401204	Saxitoxin	3.37	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2401203

Field Sample ID: HABCE0188_LakeBaldwin2

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	89.0	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	95.4	P	30 - 160

Lab Sample ID: 2401204

Field Sample ID: HABCE0193_CaywoodPond

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	98.4	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	66.4	P	30 - 160

Lab Sample ID: 2401205

Field Sample ID: HABCE0185_TigerLake2

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	111	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	78.0	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A118662

Included Lab Sample IDs: 2401209, 2401210, 2401211

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	99.1	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A118670

Included Lab Sample IDs: 2401203, 2401204, 2401205

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	89.2	89.0	P/P	50 - 160
Cylindrospermopsin	91.6	87.6	P/P	50 - 160
Desmethyl microcystin LR	100	103	P/P	50 - 160
Desmethyl microcystin LR	95.0	105	P/P	50 - 160
Microcystin HiLR	102	107	P/P	50 - 160
Microcystin HiLR	93.4	102	P/P	50 - 160
Microcystin HtyR	101	104	P/P	50 - 160
Microcystin HtyR	108	106	P/P	50 - 160
Microcystin LA	90.4	86.6	P/P	50 - 160
Microcystin LA	92.1	105	P/P	50 - 160
Microcystin LF	82.4	94.4	P/P	50 - 160
Microcystin LF	91.4	107	P/P	50 - 160
Microcystin LR	109	107	P/P	50 - 160
Microcystin LR	99.6	108	P/P	50 - 160
Microcystin LW	90.7	109	P/P	50 - 160
Microcystin LW	99.3	102	P/P	50 - 160
Microcystin LY	74.1	108	P/P	50 - 160
Microcystin LY	82.7	69.5	P/P	50 - 160
Microcystin RR	90.8	90.7	P/P	50 - 160
Microcystin RR	97.6	93.2	P/P	50 - 160
Microcystin WR	104	116	P/P	50 - 160
Microcystin WR	108	117	P/P	50 - 160
Microcystin YR	99.6	99.0	P/P	50 - 160
Microcystin YR	99.6	98.5	P/P	50 - 160
Nodularin-R	87.6	90.8	P/P	50 - 160
Nodularin-R	94.1	97.9	P/P	50 - 160

Reference Method: EPA 8321B

Run ID: A118671

Included Lab Sample IDs: 2401203, 2401204, 2401205

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	104	105	P/P	50 - 160
Anatoxin-a	107	106	P/P	50 - 160
Anatoxin-a	112	107	P/P	50 - 160
Neosaxitoxin	104	103	P/P	50 - 160
Neosaxitoxin	110	104	P/P	50 - 160
Neosaxitoxin	112	114	P/P	50 - 160
Saxitoxin	101	103	P/P	50 - 160
Saxitoxin	104	99.7	P/P	50 - 160
Saxitoxin	105	101	P/P	50 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A118700

Included Lab Sample IDs: 2401207, 2401208

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A118721

Included Lab Sample IDs: 2401206

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A118765

Included Lab Sample IDs: 2401206, 2401207, 2401208

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.1	94.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A118767

Included Lab Sample IDs: 2401206, 2401207, 2401208

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.6	P/P	90 - 110
Ammonia-N	99.6	99.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A118783

Included Lab Sample IDs: 2401206, 2401207, 2401208

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	102	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	98.6	93.2	93.8			0.563
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.2	92.6	89.4			2.31
	Kjeldahl Nitrogen	93.7	90.0	101			7.67
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	102	102			0.491
EPA 365.1 Rev. 2.0	Total-P	102	105	107			1.58
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.5	99.3	99.5			0.201
EPA 8321B	Anatoxin-a	112	109	107			2.08
	Anatoxin-a	99.0	102	102			0.110
	Cylindrospermopsin	92.1	98.8	91.9			7.20
	Cylindrospermopsin	90.7	92.9	88.2			5.11
	Desmethyl microcystin LR	95.4	108	113			5.27
	Desmethyl microcystin LR	97.9	106	97.1			8.96
	Microcystin HiLR	99.8	119	109			9.06
	Microcystin HiLR	101	102	101			1.88
	Microcystin HtyR	99.1	118	120			1.69
	Microcystin HtyR	98.6	99.7	99.8			0.0895
	Microcystin LA	103	105	96.2			8.52
	Microcystin LA	101	107	109			2.38
	Microcystin LF	110	105	104			0.573
	Microcystin LF	110	72.6	114			44.2
	Microcystin LR	109	116	113			2.51
	Microcystin LR	101	111	94.2			14.4
	Microcystin LW	97.7	92.5	112			18.9
	Microcystin LW	91.6	90.4	89.8			0.615
	Microcystin LY	94.5	106	98.5			7.59
	Microcystin LY	104	93.8	76.4			20.5
	Microcystin RR	99.4	104	97.7			6.51
	Microcystin RR	90.1	96.9	93.4			3.65
	Microcystin WR	114	116	115			0.456
	Microcystin WR	109	117	116			0.216
	Microcystin YR	98.7	116	115			0.543
	Microcystin YR	104	97.1	98.3			1.25
	Neosaxitoxin	116	93.7	86.5			8.07
	Neosaxitoxin	98.9	103	99.1			3.93
	Nodularin-R	92.2	104	99.1			4.98
	Nodularin-R	89.3	92.6	91.9			0.738
	Saxitoxin	106	94.0	90.7			3.50
	Saxitoxin	98.2	79.7	76.3			3.37

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2401206, 2401207, 2401208
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2401206, 2401207, 2401208
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2401206, 2401207, 2401208
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2401206, 2401207, 2401208
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2401209, 2401210, 2401211
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2401203, 2401204, 2401205
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2401203, 2401204, 2401205

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	04/19/2023			04/25/2023 14:06	Ping Hua	2401206
	04/19/2023			04/25/2023 14:07	Ping Hua	2401208
	04/19/2023			04/25/2023 14:58	Ping Hua	2401207
EPA 351.2 Rev. 2.0	04/19/2023	04/21/2023 11:01	Simonne.V. Calhoun	04/25/2023 14:59	Samantha L Bates	2401206
	04/19/2023	04/21/2023 11:01	Simonne.V. Calhoun	04/25/2023 15:04	Samantha L Bates	2401207
	04/19/2023	04/21/2023 11:01	Simonne.V. Calhoun	04/25/2023 15:06	Samantha L Bates	2401208
EPA 353.2 Rev. 2.0	04/19/2023			04/26/2023 10:40	Beverly Y. Sanders	2401206
	04/19/2023			04/26/2023 10:41	Beverly Y. Sanders	2401207
	04/19/2023			04/26/2023 10:42	Beverly Y. Sanders	2401208
EPA 365.1 Rev. 2.0	04/19/2023	04/20/2023 13:15	Alexis Price	04/21/2023 10:20	James L Waggeberby	2401207
	04/19/2023	04/20/2023 13:15	Alexis Price	04/21/2023 10:21	James L Waggeberby	2401208
	04/19/2023	04/20/2023 13:15	Alexis Price	04/22/2023 13:57	James L Waggeberby	2401206
EPA 365.1 Rev. 2.0 dissolved	04/19/2023			04/19/2023 14:02	Elise M. Gillis	2401209
	04/19/2023			04/19/2023 14:03	Elise M. Gillis	2401210, 2401211
EPA 8321B	04/19/2023	04/19/2023 11:00	Manjita Shrestha	04/19/2023 17:36	Manjita Shrestha	2401203
	04/19/2023	04/19/2023 11:00	Manjita Shrestha	04/20/2023 01:55	Manjita Shrestha	2401203
	04/19/2023	04/20/2023 04:00	Manjita Shrestha	04/20/2023 05:43	Manjita Shrestha	2401204
	04/19/2023	04/20/2023 04:00	Manjita Shrestha	04/20/2023 06:00	Manjita Shrestha	2401205
	04/19/2023	04/20/2023 11:00	Manjita Shrestha	04/20/2023 12:16	Manjita Shrestha	2401204
	04/19/2023	04/20/2023 11:00	Manjita Shrestha	04/20/2023 12:43	Manjita Shrestha	2401205