

Chemical Analysis Report

WQAP-2023-07-20-02

Florida DEP Laboratory
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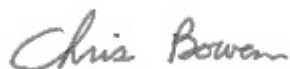
Event Description: **Algal Bloom Response - SWD**
Request ID: **RQ-2023-06-26-51**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

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Certified by: Chris Bowen, Environmental Administrator

Date Certified: 31-JUL-2023 12:24



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 Whistler - at dock

Collection Date/Time: 07/19/2023 12:15

Field ID: FB_07192023

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2425374	DEP SOP: NU-094-1	Color (true)	2.5	U	PCU	P432788	
2425380	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P432866	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P433028	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P432949	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P432885	
2425386	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P432783	
2425394	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P432800	
		Cylindrospermopsin	0.10	U	ug/L	P432738	
		Desmethyl microcystin LR	0.25	U	ug/L	P432738	
		Microcystin HILR	0.25	U	ug/L	P432738	
		Microcystin HtyR	0.25	U	ug/L	P432738	
		Microcystin LA	0.10	U	ug/L	P432738	
		Microcystin LF	0.10	U	ug/L	P432738	
		Microcystin LR	0.25	U	ug/L	P432738	
		Microcystin LW	0.25	U	ug/L	P432738	
		Microcystin LY	0.10	U	ug/L	P432738	
		Microcystin RR	0.10	U	ug/L	P432738	
		Microcystin WR	0.50	U	ug/L	P432738	
		Neosaxitoxin	0.50	U	ug/L	P432800	
		Microcystin YR	0.25	U	ug/L	P432738	
		Saxitoxin	0.50	U	ug/L	P432800	
		Nodularin-R	0.10	U	ug/L	P432738	

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Whistler - at dock

Collection Date/Time: 07/19/2023 12:00

Field ID: HAB-SW-0213

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2425375	DEP SOP: NU-094-1	Color (true)	13		PCU	P432788	
2425381	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P432866	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56	J	mg N/L	P433028	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P432949	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P432885	
2425387	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P432783	
2425395	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P432800	
		Cylindrospermopsin	0.16	I	ug/L	P432738	
		Desmethyl microcystin LR	0.25	U	ug/L	P432738	
		Microcystin HILR	0.25	U	ug/L	P432738	
		Microcystin HtyR	0.25	U	ug/L	P432738	
		Microcystin LA	0.10	U	ug/L	P432738	
		Microcystin LF	0.10	U	ug/L	P432738	
		Microcystin LR	0.25	U	ug/L	P432738	
		Microcystin LW	0.25	U	ug/L	P432738	
		Microcystin LY	0.10	U	ug/L	P432738	
		Microcystin RR	0.10	U	ug/L	P432738	
		Microcystin WR	0.50	U	ug/L	P432738	
		Neosaxitoxin	0.50	U	ug/L	P432800	
		Microcystin YR	0.25	U	ug/L	P432738	
		Saxitoxin	0.50	U	ug/L	P432800	
		Nodularin-R	0.10	U	ug/L	P432738	

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

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

Sample Location: Lake Smart - Hibiscus Dr Dock

Collection Date/Time: 07/19/2023 10:45

Field ID: HAB-SW-0214

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2425376	DEP SOP: NU-094-1	Color (true)	32		PCU	P432788	
2425382	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P432866	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.93		mg N/L	P433028	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P432949	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P432886	
2425388	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P432783	
2425396	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P432800	
		Cylindrospermopsin	0.10	U	ug/L	P432738	
		Desmethyl microcystin LR	0.25	U	ug/L	P432738	
		Microcystin HilR	0.25	U	ug/L	P432738	
		Microcystin HtyR	0.25	U	ug/L	P432738	
		Microcystin LA	0.10	I	ug/L	P432738	
		Microcystin LF	0.10	U	ug/L	P432738	
		Microcystin LR	0.49	I	ug/L	P432738	
		Microcystin LW	0.25	U	ug/L	P432738	
		Microcystin LY	0.10	U	ug/L	P432738	
		Microcystin RR	0.12	I	ug/L	P432738	
		Microcystin WR	0.50	U	ug/L	P432738	
		Neosaxitoxin	0.50	U	ug/L	P432800	
		Microcystin YR	0.25	U	ug/L	P432738	
		Saxitoxin	0.50	U	ug/L	P432800	
		Nodularin-R	0.10	U	ug/L	P432738	

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Silver

Collection Date/Time: 07/19/2023 11:15

Field ID: HAB-SW-0215

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2425377	DEP SOP: NU-094-1	Color (true)	5.5	I	PCU	P432788	
2425383	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P432866	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P433028	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P432949	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P432886	
2425389	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P432783	
2425397	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P432800	
		Cylindrospermopsin	0.10	U	ug/L	P432738	
		Desmethyl microcystin LR	0.25	U	ug/L	P432738	
		Microcystin HILR	0.25	U	ug/L	P432738	
		Microcystin HtyR	0.25	U	ug/L	P432738	
		Microcystin LA	0.10	U	ug/L	P432738	
		Microcystin LF	0.10	U	ug/L	P432738	
		Microcystin LR	0.25	U	ug/L	P432738	
		Microcystin LW	0.25	U	ug/L	P432738	
		Microcystin LY	0.10	U	ug/L	P432738	
		Microcystin RR	0.10	U	ug/L	P432738	
		Microcystin WR	0.50	U	ug/L	P432738	
		Neosaxitoxin	0.50	U	ug/L	P432800	
		Microcystin YR	0.25	U	ug/L	P432738	
		Saxitoxin	0.50	U	ug/L	P432800	
		Nodularin-R	0.10	U	ug/L	P432738	

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Haines - Boat Ramp

Collection Date/Time: 07/19/2023 09:50

Field ID: HAB-SW-0211

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2425378	DEP SOP: NU-094-1	Color (true)	79		PCU	P432788	
2425384	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P432866	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P432908	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P432949	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P432886	
2425390	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P432784	
2425398	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P432800	
		Cylindrospermopsin	0.10	U	ug/L	P432738	
		Desmethyl microcystin LR	0.25	U	ug/L	P432738	
		Microcystin HILR	0.25	U	ug/L	P432738	
		Microcystin HtyR	0.25	U	ug/L	P432738	
		Microcystin LA	0.12	I	ug/L	P432738	
		Microcystin LF	0.18	I	ug/L	P432738	
		Microcystin LR	0.47	I	ug/L	P432738	
		Microcystin LW	0.25	U	ug/L	P432738	
		Microcystin LY	0.10	U	ug/L	P432738	
		Microcystin RR	0.24	I	ug/L	P432738	
		Microcystin WR	0.50	U	ug/L	P432738	
		Neosaxitoxin	0.50	U	ug/L	P432800	
		Microcystin YR	0.25	U	ug/L	P432738	
		Saxitoxin	0.50	U	ug/L	P432800	
		Nodularin-R	0.10	U	ug/L	P432738	

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Rochelle - Dock

Collection Date/Time: 07/19/2023 10:15

Field ID: HAB-SW-0212

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2425379	DEP SOP: NU-094-1	Color (true)	53		PCU	P432788	
2425385	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P432866	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P433028	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P432949	
	EPA 365.1 Rev. 2.0	Total-P	0.043		mg P/L	P432886	
2425391	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P432784	
2425399	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P432800	
		Cylindrospermopsin	0.10	U	ug/L	P432738	
		Desmethyl microcystin LR	0.25	U	ug/L	P432738	
		Microcystin HiLR	0.25	U	ug/L	P432738	
		Microcystin HtyR	0.25	U	ug/L	P432738	
		Microcystin LA	0.13	I	ug/L	P432738	
		Microcystin LF	0.10	U	ug/L	P432738	
		Microcystin LR	0.68	I	ug/L	P432738	
		Microcystin LW	0.25	U	ug/L	P432738	
		Microcystin LY	0.10	U	ug/L	P432738	
		Microcystin RR	0.15	I	ug/L	P432738	
		Microcystin WR	0.50	U	ug/L	P432738	
		Neosaxitoxin	0.50	U	ug/L	P432800	
		Microcystin YR	0.25	U	ug/L	P432738	
		Saxitoxin	0.50	U	ug/L	P432800	
		Nodularin-R	0.10	U	ug/L	P432738	

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P432788

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P432866

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P432908

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433028

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P432949

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P432885

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P432886

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P432783

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P432784

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P432738

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: P432800

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: DEP SOP: NU-094-1
Batch ID: P432788

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P432866

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P432908

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433028

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P432949

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P432885

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P432886

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: P432783

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P432784

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B

Batch ID: P432738

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	101		P	40 - 160
Desmethyl microcystin LR	110		P	40 - 160
Microcystin HilR	114		P	40 - 160
Microcystin HtyR	102		P	40 - 160
Microcystin LA	108		P	40 - 160
Microcystin LF	94.8		P	40 - 160
Microcystin LR	114		P	40 - 160
Microcystin LW	98.0		P	40 - 160
Microcystin LY	121		P	40 - 160
Microcystin RR	97.7		P	40 - 160
Microcystin WR	104		P	40 - 160
Microcystin YR	119		P	40 - 160
Nodularin-R	99.7		P	40 - 160

Reference Method: EPA 8321B

Batch ID: P432800

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	119		P	40 - 150
Neosaxitoxin	103		P	40 - 150
Saxitoxin	92.5		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433028

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425381	Kjeldahl Nitrogen	99.9	112	P/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P432949

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425312	NO2NO3-N	94.6	99.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P432885

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425310	Total-P	106	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P432886

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425382	Total-P	106	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P432783

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425389	O-Phosphate-P	99.9	99.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P432784

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425391	O-Phosphate-P	97.5	99.0	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P432738

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425337	Cylindrospermopsin	104	103	P/P	40 - 160
2425337	Desmethyl microcystin LR	121	126	P/P	40 - 160
2425337	Microcystin HILR	121	121	P/P	40 - 160
2425337	Microcystin HtyR	109	113	P/P	40 - 160
2425337	Microcystin LA	109	118	P/P	40 - 160
2425337	Microcystin LF	110	107	P/P	40 - 160
2425337	Microcystin LR	128	135	P/P	40 - 160
2425337	Microcystin LW	105	106	P/P	40 - 160
2425337	Microcystin LY	125	131	P/P	40 - 160
2425337	Microcystin RR	103	109	P/P	40 - 160
2425337	Microcystin WR	106	114	P/P	40 - 160
2425337	Microcystin YR	128	137	P/P	40 - 160
2425337	Nodularin-R	112	119	P/P	40 - 160

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P432800

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425337	Anatoxin-a	113	106	P/P	40 - 150
2425337	Neosaxitoxin	69.8	62.4	P/P	40 - 150
2425337	Saxitoxin	67.2	66.3	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P432788

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425347	Color (true)	0.360	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P432866

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425349	Ammonia-N	0.469	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P432908

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425384	Kjeldahl Nitrogen	2.17	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425381	Kjeldahl Nitrogen	8.55	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P432949

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425312	NO2NO3-N	3.52	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P432885

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425310	Total-P	0.558	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P432886

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425382	Total-P	1.59	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P432783

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425389	O-Phosphate-P	0.301	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P432784

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425391	O-Phosphate-P	1.53	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P432738

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425337	Cylindrospermopsin	0.900	Spike	P	0 - 30
2425337	Desmethyl microcystin LR	4.04	Spike	P	0 - 30
2425337	Microcystin HILR	0.189	Spike	P	0 - 30
2425337	Microcystin HtyR	2.78	Spike	P	0 - 30
2425337	Microcystin LA	8.30	Spike	P	0 - 30
2425337	Microcystin LF	2.38	Spike	P	0 - 30
2425337	Microcystin LR	4.50	Spike	P	0 - 30
2425337	Microcystin LW	0.655	Spike	P	0 - 30
2425337	Microcystin LY	4.59	Spike	P	0 - 30
2425337	Microcystin RR	5.28	Spike	P	0 - 30
2425337	Microcystin WR	7.13	Spike	P	0 - 30
2425337	Microcystin YR	6.74	Spike	P	0 - 30
2425337	Nodularin-R	6.73	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P432800

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425337	Anatoxin-a	6.76	Spike	P	0 - 30
2425337	Neosaxitoxin	11.2	Spike	P	0 - 30
2425337	Saxitoxin	1.39	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2425394
Field Sample ID: FB_07192023

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	93.4	P	30 - 160
EPA 8321B	Anatoxin-a 13C4	93.4	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	77.5	P	30 - 160

Lab Sample ID: 2425395
Field Sample ID: HAB-SW-0213

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	100	P	30 - 160
EPA 8321B	Anatoxin-a 13C4	100	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	75.7	P	30 - 160

Lab Sample ID: 2425396
Field Sample ID: HAB-SW-0214

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	97.6	P	30 - 160
EPA 8321B	Anatoxin-a 13C4	97.6	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	80.0	P	30 - 160

Lab Sample ID: 2425397
Field Sample ID: HAB-SW-0215

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	101	P	30 - 160
EPA 8321B	Anatoxin-a 13C4	101	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	72.0	P	30 - 160

Lab Sample ID: 2425398
Field Sample ID: HAB-SW-0211

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	97.2	P	30 - 160
EPA 8321B	Anatoxin-a 13C4	97.2	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	83.7	P	30 - 160

Lab Sample ID: 2425399
Field Sample ID: HAB-SW-0212

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	101	P	30 - 160
EPA 8321B	Anatoxin-a 13C4	101	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	79.7	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A120514

Included Lab Sample IDs: 2425394, 2425395, 2425396, 2425397, 2425398, 2425399

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	111	105	P/P	50 - 160
Neosaxitoxin	94.4	92.4	P/P	50 - 160
Saxitoxin	87.3	83.0	P/P	50 - 160

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A120524

Included Lab Sample IDs: 2425386, 2425387, 2425388, 2425389, 2425390, 2425391

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.8	97.5	P/P	90 - 110
O-Phosphate-P	97.1	96.8	P/P	90 - 110
O-Phosphate-P	97.5	94.3	P/P	90 - 110

Reference Method: DEP SOP: NU-094-1

Run ID: A120528

Included Lab Sample IDs: 2425374, 2425375, 2425376, 2425377, 2425378, 2425379

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.4	98.2	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A120534

Included Lab Sample IDs: 2425394, 2425395, 2425396, 2425397, 2425398, 2425399

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	99.8	97.9	P/P	60 - 160
Desmethyl microcystin LR	107	109	P/P	50 - 160
Microcystin H1R	110	104	P/P	60 - 160
Microcystin HtyR	97.8	95.6	P/P	60 - 160
Microcystin LA	110	110	P/P	50 - 160
Microcystin LF	99.7	97.1	P/P	60 - 160
Microcystin LR	120	112	P/P	60 - 160
Microcystin LW	93.0	88.3	P/P	60 - 160
Microcystin LY	120	115	P/P	60 - 160
Microcystin RR	96.1	94.1	P/P	60 - 160
Microcystin WR	99.3	99.4	P/P	60 - 160
Microcystin YR	120	114	P/P	60 - 160
Nodularin-R	106	99.7	P/P	60 - 160

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A120559

Included Lab Sample IDs: 2425380, 2425381, 2425382, 2425383, 2425384, 2425385

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.9	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A120590

Included Lab Sample IDs: 2425384

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A120590

Included Lab Sample IDs: 2425384

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A120592

Included Lab Sample IDs: 2425380, 2425381, 2425382, 2425383, 2425385

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A120608

Included Lab Sample IDs: 2425380, 2425381, 2425382, 2425383, 2425384, 2425385

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A120652

Included Lab Sample IDs: 2425384

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.1	97.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A120677

Included Lab Sample IDs: 2425380, 2425381, 2425382, 2425383, 2425385

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.0	97.3	P/P	90 - 110
Kjeldahl Nitrogen	96.8	96.0	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	
DEP SOP: NU-094-1	Color (true)	98.6				0.360	
EPA 350.1 Rev. 2.0	Ammonia-N	95.0					0.469
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102					2.17
	Kjeldahl Nitrogen	101	99.9	112			8.55
EPA 353.2 Rev. 2.0	NO2NO3-N	100	94.6	99.6			3.52
EPA 365.1 Rev. 2.0	Total-P	99.1	106	107			0.558
	Total-P	102	106	104			1.59
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.9	99.9	99.6			0.301
	O-Phosphate-P	100	97.5	99.0			1.53
EPA 8321B	Anatoxin-a	119	113	106			6.76
	Cylindrospermopsin	101	104	103			0.900
	Desmethyl microcystin LR	110	121	126			4.04
	Microcystin HiLR	114	121	121			0.189
	Microcystin HtyR	102	109	113			2.78
	Microcystin LA	108	109	118			8.30
	Microcystin LF	94.8	110	107			2.38
	Microcystin LR	114	128	135			4.50
	Microcystin LW	98.0	105	106			0.655
	Microcystin LY	121	125	131			4.59
	Microcystin RR	97.7	103	109			5.28
	Microcystin WR	104	106	114			7.13
	Microcystin YR	119	128	137			6.74
	Neosaxitoxin	103	69.8	62.4			11.2
	Nodularin-R	99.7	112	119			6.73
	Saxitoxin	92.5	67.2	66.3			1.39

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2425374, 2425375, 2425376, 2425377, 2425378, 2425379
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2425380, 2425381, 2425382, 2425383, 2425384, 2425385
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2425380, 2425381, 2425382, 2425383, 2425384, 2425385
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2425380, 2425381, 2425382, 2425383, 2425384, 2425385
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2425380, 2425381, 2425382, 2425383, 2425384, 2425385
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2425386, 2425387, 2425388, 2425389, 2425390, 2425391
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2425394, 2425395, 2425396, 2425397, 2425398, 2425399
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2425394, 2425395, 2425396, 2425397, 2425398, 2425399

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	07/20/2023			07/20/2023 14:25	Alexis Price	2425374, 2425375
	07/20/2023			07/20/2023 14:26	Alexis Price	2425376
	07/20/2023			07/20/2023 14:27	Alexis Price	2425377, 2425378
	07/20/2023			07/20/2023 14:28	Alexis Price	2425379
EPA 350.1 Rev. 2.0	07/20/2023			07/21/2023 14:15	Khloe J Berg	2425380
	07/20/2023			07/21/2023 14:16	Khloe J Berg	2425381
	07/20/2023			07/21/2023 14:17	Khloe J Berg	2425382
	07/20/2023			07/21/2023 14:19	Khloe J Berg	2425383
	07/20/2023			07/21/2023 14:20	Khloe J Berg	2425384
EPA 351.2 Rev. 2.0	07/20/2023			07/21/2023 14:21	Khloe J Berg	2425385
	07/20/2023	07/25/2023 08:58	Dana G. Hughes	07/26/2023 12:30	Ping Hua	2425384
	07/20/2023	07/25/2023 15:32	Dana G. Hughes	07/27/2023 10:03	Samantha L Bates	2425380
	07/20/2023	07/25/2023 15:32	Dana G. Hughes	07/27/2023 10:04	Samantha L Bates	2425381
	07/20/2023	07/25/2023 15:32	Dana G. Hughes	07/27/2023 10:12	Samantha L Bates	2425382
	07/20/2023	07/25/2023 15:32	Dana G. Hughes	07/27/2023 10:14	Samantha L Bates	2425383
EPA 353.2 Rev. 2.0	07/20/2023	07/25/2023 15:32	Dana G. Hughes	07/27/2023 10:15	Samantha L Bates	2425385
	07/20/2023			07/24/2023 12:57	Judith K. Clark	2425380
	07/20/2023			07/24/2023 12:58	Judith K. Clark	2425381
	07/20/2023			07/24/2023 13:00	Judith K. Clark	2425382
	07/20/2023			07/24/2023 13:01	Judith K. Clark	2425383
	07/20/2023			07/24/2023 13:02	Judith K. Clark	2425384
EPA 365.1 Rev. 2.0	07/20/2023			07/24/2023 13:03	Judith K. Clark	2425385
	07/20/2023	07/24/2023 11:56	Alexis Price	07/24/2023 14:42	Simonne.V. Calhoun	2425384
	07/20/2023	07/24/2023 11:56	Alexis Price	07/24/2023 15:42	Simonne.V. Calhoun	2425380
	07/20/2023	07/24/2023 11:56	Alexis Price	07/24/2023 15:49	Simonne.V. Calhoun	2425381
	07/20/2023	07/24/2023 11:56	Alexis Price	07/24/2023 15:58	Simonne.V. Calhoun	2425382
	07/20/2023	07/24/2023 11:56	Alexis Price	07/24/2023 15:59	Simonne.V. Calhoun	2425383
EPA 365.1 Rev. 2.0 dissolved	07/20/2023	07/24/2023 11:56	Alexis Price	07/24/2023 16:00	Simonne.V. Calhoun	2425385
	07/20/2023			07/20/2023 12:50	James L Waggeberby	2425389
	07/20/2023			07/20/2023 13:02	James L Waggeberby	2425386
	07/20/2023			07/20/2023 13:03	James L Waggeberby	2425387
	07/20/2023			07/20/2023 13:09	James L Waggeberby	2425388
	07/20/2023			07/20/2023 13:13	James L Waggeberby	2425391
EPA 8321B	07/20/2023			07/20/2023 13:15	James L Waggeberby	2425390
	07/20/2023	07/20/2023 12:00	Tae K Lee	07/20/2023 17:27	Juyoung Kim	2425394
	07/20/2023	07/20/2023 12:00	Tae K Lee	07/20/2023 17:44	Juyoung Kim	2425395
	07/20/2023	07/20/2023 12:00	Tae K Lee	07/20/2023 17:54	Hana Lee	2425394
	07/20/2023	07/20/2023 12:00	Tae K Lee	07/20/2023 18:01	Juyoung Kim	2425396
	07/20/2023	07/20/2023 12:00	Tae K Lee	07/20/2023 18:08	Hana Lee	2425395
	07/20/2023	07/20/2023 12:00	Tae K Lee	07/20/2023 18:17	Juyoung Kim	2425397

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	07/20/2023	07/20/2023 12:00	Tae K Lee	07/20/2023 18:22	Hana Lee	2425396
	07/20/2023	07/20/2023 12:00	Tae K Lee	07/20/2023 18:34	Juyoung Kim	2425398
	07/20/2023	07/20/2023 12:00	Tae K Lee	07/20/2023 18:36	Hana Lee	2425397
	07/20/2023	07/20/2023 12:00	Tae K Lee	07/20/2023 18:50	Hana Lee	2425398
	07/20/2023	07/20/2023 12:00	Tae K Lee	07/20/2023 18:51	Juyoung Kim	2425399
	07/20/2023	07/20/2023 12:00	Tae K Lee	07/20/2023 19:04	Hana Lee	2425399