

Chemical Analysis Report

WQAP-2021-11-02-02

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Algal Bloom Response- NEROC**
Request ID: **RQ-2021-10-18-54**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
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Certified by: Colin Wright, Program Administrator

Date Certified: 23-NOV-2021 09:44

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray 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: Mouth of Goodby's Creek

Collection Date/Time: 11/01/2021 10:05

Field ID: NEHAB0040

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2287171	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P405834	MS
		Cylindrospermopsin	0.10	U	ug/L	P405834	
		Desmethyl microcystin LR	0.25	U	ug/L	P405834	
		Microcystin HilR**	0.25	U	ug/L	P405834	
		Microcystin HtyR**	0.25	U	ug/L	P405834	
		Microcystin LA	0.10	U	ug/L	P405834	
		Microcystin LF	0.10	U	ug/L	P405834	
		Microcystin LR	0.25	U	ug/L	P405834	
		Microcystin LW	0.25	U	ug/L	P405834	
		Microcystin LY	0.10	U	ug/L	P405834	
		Microcystin RR	0.10	U	ug/L	P405834	
		Microcystin WR	0.50	U	ug/L	P405834	
		Microcystin YR	0.25	U	ug/L	P405834	
		Nodularin-R**	0.10	U	ug/L	P405834	
2287177	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P406245	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.84		mg N/L	P406009	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.22		mg N/L	P406051	
	EPA 365.1 Rev. 2.0	Total-P	0.089		mg P/L	P405927	
2287183	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.048		mg P/L	P405872	

Ref. Method and Comment:

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

Sample Location: Mouth of Deep Bottom Creek

Collection Date/Time: 11/01/2021 11:15

Field ID: NEHAB0047

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2287172	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P405834	MS
		Cylindrospermopsin	0.10	U	ug/L	P405834	
		Desmethyl microcystin LR	0.25	U	ug/L	P405834	
		Microcystin HilR**	0.25	U	ug/L	P405834	
		Microcystin HtyR**	0.25	U	ug/L	P405834	
		Microcystin LA	0.10	U	ug/L	P405834	
		Microcystin LF	0.10	U	ug/L	P405834	
		Microcystin LR	0.25	U	ug/L	P405834	
		Microcystin LW	0.25	U	ug/L	P405834	
		Microcystin LY	0.10	U	ug/L	P405834	
		Microcystin RR	0.10	U	ug/L	P405834	
		Microcystin WR	0.50	U	ug/L	P405834	
		Microcystin YR	0.25	U	ug/L	P405834	
		Nodularin-R**	0.10	U	ug/L	P405834	
2287178	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P406245	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P406009	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.19		mg N/L	P406051	
	EPA 365.1 Rev. 2.0	Total-P	0.075		mg P/L	P405927	
2287184	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.042		mg P/L	P405872	

Ref. Method and Comment:

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

Sample Location: Plummer's Cover

Collection Date/Time: 11/01/2021 10:45

Field ID: NEHAB0046

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2287173	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P405834	MS
		Cylindrospermopsin	0.10	U	ug/L	P405834	
		Desmethyl microcystin LR	0.25	U	ug/L	P405834	
		Microcystin HIR**	0.25	U	ug/L	P405834	
		Microcystin HtyR**	0.25	U	ug/L	P405834	
		Microcystin LA	0.10	U	ug/L	P405834	
		Microcystin LF	0.10	U	ug/L	P405834	
		Microcystin LR	0.25	U	ug/L	P405834	
		Microcystin LW	0.25	U	ug/L	P405834	
		Microcystin LY	0.10	U	ug/L	P405834	
		Microcystin RR	0.10	U	ug/L	P405834	
		Microcystin WR	0.50	U	ug/L	P405834	
		Microcystin YR	0.25	U	ug/L	P405834	
		Nodularin-R**	0.10	U	ug/L	P405834	
2287179	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P406245	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P406009	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.24		mg N/L	P406051	
	EPA 365.1 Rev. 2.0	Total-P	0.087		mg P/L	P405927	
2287185	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.054		mg P/L	P405872	

Ref. Method and Comment:

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

Sample Location: LSJR at end of Blake Ave

Collection Date/Time: 11/01/2021 11:50

Field ID: NEHAB0029

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2287174	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P405834	MS
		Cylindrospermopsin	0.10	U	ug/L	P405834	
		Desmethyl microcystin LR	0.25	U	ug/L	P405834	
		Microcystin HilR**	0.25	U	ug/L	P405834	
		Microcystin HtyR**	0.25	U	ug/L	P405834	
		Microcystin LA	0.10	U	ug/L	P405834	
		Microcystin LF	0.10	U	ug/L	P405834	
		Microcystin LR	0.25	U	ug/L	P405834	
		Microcystin LW	0.25	U	ug/L	P405834	
		Microcystin LY	0.10	U	ug/L	P405834	
		Microcystin RR	0.10	U	ug/L	P405834	
		Microcystin WR	0.50	U	ug/L	P405834	
		Microcystin YR	0.25	U	ug/L	P405834	
		Nodularin-R**	0.10	U	ug/L	P405834	
2287180	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P406398	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.77		mg N/L	P406009	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.24		mg N/L	P406051	
	EPA 365.1 Rev. 2.0	Total-P	0.081		mg P/L	P405927	
2287186	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.051		mg P/L	P405872	

Ref. Method and Comment:

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

Sample Location: Yacht Basin

Collection Date/Time: 11/01/2021 12:35

Field ID: NEHAB0042

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2287175	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P405834	MS
		Cylindrospermopsin	0.10	U	ug/L	P405834	
		Desmethyl microcystin LR	0.25	U	ug/L	P405834	
		Microcystin HIR**	0.25	U	ug/L	P405834	
		Microcystin HtyR**	0.25	U	ug/L	P405834	
		Microcystin LA	0.10	U	ug/L	P405834	
		Microcystin LF	0.10	U	ug/L	P405834	
		Microcystin LR	0.25	U	ug/L	P405834	
		Microcystin LW	0.25	U	ug/L	P405834	
		Microcystin LY	0.10	U	ug/L	P405834	
		Microcystin RR	0.10	U	ug/L	P405834	
		Microcystin WR	0.50	U	ug/L	P405834	
		Microcystin YR	0.25	U	ug/L	P405834	
		Nodularin-R**	0.10	U	ug/L	P405834	
2287181	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P406530	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.83		mg N/L	P406009	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.28		mg N/L	P406051	
	EPA 365.1 Rev. 2.0	Total-P	0.092		mg P/L	P405927	
2287187	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.053		mg P/L	P405872	

Ref. Method and Comment:

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

Sample Location: Christopher Creek below San Jose Blvd

Collection Date/Time: 11/01/2021 13:05

Field ID: NEHAB0024

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2287176	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P405834	MS
		Cylindrospermopsin	0.10	U	ug/L	P405834	
		Desmethyl microcystin LR	0.25	U	ug/L	P405834	
		Microcystin HilR**	0.25	U	ug/L	P405834	
		Microcystin HtyR**	0.25	U	ug/L	P405834	
		Microcystin LA	0.10	U	ug/L	P405834	
		Microcystin LF	0.10	U	ug/L	P405834	
		Microcystin LR	0.25	U	ug/L	P405834	
		Microcystin LW	0.25	U	ug/L	P405834	
		Microcystin LY	0.10	U	ug/L	P405834	
		Microcystin RR	0.10	U	ug/L	P405834	
		Microcystin WR	0.50	U	ug/L	P405834	
		Microcystin YR	0.25	U	ug/L	P405834	
		Nodularin-R**	0.10	U	ug/L	P405834	
2287182	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P406398	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P406009	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.22		mg N/L	P406051	
	EPA 365.1 Rev. 2.0	Total-P	0.083		mg P/L	P405927	
2287188	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.045		mg P/L	P405872	

Ref. Method and Comment:

EPA 351.2 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: EPA 350.1 Rev. 2.0
Batch ID: P406245

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406398

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406530

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406009

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406051

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405927

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405872

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

Reference Method: EPA 8321B
Batch ID: P405834

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin HtR	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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P405834

Component	Result	Code	Units
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

Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406245

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406398

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	94.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406530

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406009

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406051

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405927

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405872

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

Reference Method: EPA 8321B
Batch ID: P405834

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	144		P	40 - 150
Cylindrospermopsin	125		P	40 - 150
Desmethyl microcystin LR	125		P	40 - 150
Microcystin HIR	130		P	40 - 150
Microcystin HtyR	125		P	40 - 150
Microcystin LA	132		P	40 - 150
Microcystin LF	144		P	40 - 150
Microcystin LR	120		P	40 - 150
Microcystin LW	140		P	40 - 150
Microcystin LY	137		P	40 - 150

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P405834

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Microcystin RR	127		P	40 - 150
Microcystin WR	130		P	40 - 150
Microcystin YR	131		P	40 - 150
Nodularin-R	132		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2287090	Ammonia-N	98.0	99.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406398

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2287180	Ammonia-N	96.8	98.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406530

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2287181	Ammonia-N	98.6	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406051

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2287352	NO2NO3-N	100	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405927

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2287177	Total-P	109	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405872

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2287103	O-Phosphate-P	93.7	92.2	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P405834

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2287123	Anatoxin-a	148	156	P/F	40 - 150
2287123	Cylindrospermopsin	136	139	P/P	40 - 150
2287123	Desmethyl microcystin LR	131	137	P/P	40 - 150
2287123	Microcystin H1R	128	142	P/P	40 - 150
2287123	Microcystin HtyR	132	130	P/P	40 - 150
2287123	Microcystin LA	132	140	P/P	40 - 150
2287123	Microcystin LF	136	129	P/P	40 - 150
2287123	Microcystin LR	123	122	P/P	40 - 150
2287123	Microcystin LW	119	140	P/P	40 - 150
2287123	Microcystin LY	130	134	P/P	40 - 150
2287123	Microcystin RR	133	135	P/P	40 - 150
2287123	Microcystin WR	126	132	P/P	40 - 150
2287123	Microcystin YR	126	130	P/P	40 - 150
2287123	Nodularin-R	139	140	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2287090	Ammonia-N	0.656	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406398

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2287180	Ammonia-N	1.16	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406530

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2287181	Ammonia-N	0.974	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406009

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2287135	Kjeldahl Nitrogen	4.99	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406051

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2287352	NO2NO3-N	0.501	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405927

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2287177	Total-P	0.402	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405872

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2287103	O-Phosphate-P	1.55	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P405834

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2287123	Anatoxin-a	5.19	Spike	P	0 - 30
2287123	Cylindrospermopsin	2.28	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B

Batch ID: P405834

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2287123	Desmethyl microcystin LR	4.82	Spike	P	0 - 30
2287123	Microcystin HilR	10.4	Spike	P	0 - 30
2287123	Microcystin HtyR	1.44	Spike	P	0 - 30
2287123	Microcystin LA	5.71	Spike	P	0 - 30
2287123	Microcystin LF	5.20	Spike	P	0 - 30
2287123	Microcystin LR	0.392	Spike	P	0 - 30
2287123	Microcystin LW	16.7	Spike	P	0 - 30
2287123	Microcystin LY	2.44	Spike	P	0 - 30
2287123	Microcystin RR	1.35	Spike	P	0 - 30
2287123	Microcystin WR	4.37	Spike	P	0 - 30
2287123	Microcystin YR	2.66	Spike	P	0 - 30
2287123	Nodularin-R	1.03	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2287171
Field Sample ID: NEHAB0040

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	101	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	95.3	P	30 - 160

Lab Sample ID: 2287172
Field Sample ID: NEHAB0047

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	109	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	99.7	P	30 - 160

Lab Sample ID: 2287173
Field Sample ID: NEHAB0046

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	106	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	103	P	30 - 160

Lab Sample ID: 2287174
Field Sample ID: NEHAB0029

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	116	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	105	P	30 - 160

Lab Sample ID: 2287175
Field Sample ID: NEHAB0042

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	117	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	104	P	30 - 160

Lab Sample ID: 2287176
Field Sample ID: NEHAB0024

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	106	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	87.9	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A108663

Included Lab Sample IDs: 2287183, 2287184, 2287185, 2287186, 2287187, 2287188

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

Reference Method: EPA 8321B

Run ID: A108701

Included Lab Sample IDs: 2287171, 2287172, 2287173, 2287174, 2287175, 2287176

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	117	118	P/P	50 - 160
Anatoxin-a	118	121	P/P	50 - 160
Cylindrospermopsin	105	108	P/P	60 - 160
Cylindrospermopsin	108	112	P/P	60 - 160
Desmethyl microcystin LR	107	103	P/P	60 - 160
Desmethyl microcystin LR	96.4	107	P/P	60 - 160
Microcystin HiIR	103	109	P/P	60 - 160
Microcystin HiIR	109	109	P/P	60 - 160
Microcystin HtyR	107	105	P/P	60 - 160
Microcystin HtyR	99.2	107	P/P	60 - 160
Microcystin LA	107	108	P/P	50 - 160
Microcystin LA	108	112	P/P	50 - 160
Microcystin LF	113	107	P/P	60 - 160
Microcystin LF	117	113	P/P	60 - 160
Microcystin LR	100	95.7	P/P	60 - 160
Microcystin LR	90.7	100	P/P	60 - 160
Microcystin LW	112	100	P/P	60 - 160
Microcystin LW	115	112	P/P	60 - 160
Microcystin LY	110	113	P/P	60 - 160
Microcystin LY	113	107	P/P	60 - 160
Microcystin RR	104	111	P/P	60 - 160
Microcystin RR	111	107	P/P	60 - 160
Microcystin WR	102	103	P/P	60 - 160
Microcystin WR	99.4	102	P/P	60 - 160
Microcystin YR	102	105	P/P	60 - 160
Microcystin YR	105	104	P/P	60 - 160
Nodularin-R	106	114	P/P	60 - 160
Nodularin-R	114	114	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108724

Included Lab Sample IDs: 2287177, 2287178, 2287179, 2287180, 2287181, 2287182

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108740

Included Lab Sample IDs: 2287177, 2287178, 2287179, 2287180, 2287181, 2287182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A108742

Included Lab Sample IDs: 2287177, 2287178, 2287179, 2287180, 2287181, 2287182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	104	P/P	90 - 110
Kjeldahl Nitrogen	101	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A108837

Included Lab Sample IDs: 2287177, 2287178, 2287179

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.4	98.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A108931

Included Lab Sample IDs: 2287180, 2287182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.4	96.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A108981

Included Lab Sample IDs: 2287181

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	104	100	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	99.0	98.0	99.0			0.656
	Ammonia-N	94.2	96.8	98.6			1.16
	Ammonia-N	99.4	98.6	99.8			0.974
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.7					4.99
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.0	100	99.5			0.501
EPA 365.1 Rev. 2.0	Total-P	107	109	108			0.402
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.1	93.7	92.2			1.55
EPA 8321B	Anatoxin-a	144	148	156			5.19
	Cylindrospermopsin	125	136	139			2.28
	Desmethyl microcystin LR	125	131	137			4.82
	Microcystin H ₁ R	130	128	142			10.4
	Microcystin H ₂ R	125	132	130			1.44
	Microcystin LA	132	132	140			5.71
	Microcystin LF	144	136	129			5.20
	Microcystin LR	120	123	122			0.392
	Microcystin LW	140	119	140			16.7
	Microcystin LY	137	130	134			2.44
	Microcystin RR	127	133	135			1.35
	Microcystin WR	130	126	132			4.37
	Microcystin YR	131	126	130			2.66
	Nodularin-R	132	139	140			1.03

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2287177, 2287178, 2287179, 2287180, 2287181, 2287182
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2287177, 2287178, 2287179, 2287180, 2287181, 2287182
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2287177, 2287178, 2287179, 2287180, 2287181, 2287182
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2287177, 2287178, 2287179, 2287180, 2287181, 2287182
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2287183, 2287184, 2287185, 2287186, 2287187, 2287188
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2287171, 2287172, 2287173, 2287174, 2287175, 2287176

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	11/02/2021			11/05/2021 12:20	Ping Hua	2287177
	11/02/2021			11/05/2021 12:21	Ping Hua	2287178
	11/02/2021			11/05/2021 12:23	Ping Hua	2287179
	11/02/2021			11/16/2021 13:14	Ping Hua	2287180
	11/02/2021			11/16/2021 13:19	Ping Hua	2287182
	11/02/2021			11/18/2021 12:17	Ping Hua	2287181
EPA 351.2 Rev. 2.0	11/02/2021	11/04/2021 12:46	Benjamin T. Nordmann	11/05/2021 11:08	Alexandra J Mattheus	2287177
	11/02/2021	11/04/2021 12:46	Benjamin T. Nordmann	11/05/2021 11:10	Alexandra J Mattheus	2287178
	11/02/2021	11/04/2021 12:46	Benjamin T. Nordmann	11/05/2021 11:11	Alexandra J Mattheus	2287179
	11/02/2021	11/04/2021 12:46	Benjamin T. Nordmann	11/05/2021 11:16	Alexandra J Mattheus	2287180
	11/02/2021	11/04/2021 12:46	Benjamin T. Nordmann	11/05/2021 11:18	Alexandra J Mattheus	2287181
	11/02/2021	11/04/2021 12:46	Benjamin T. Nordmann	11/05/2021 11:20	Alexandra J Mattheus	2287182
EPA 353.2 Rev. 2.0	11/02/2021			11/05/2021 10:12	Beverly Y. Sanders	2287177
	11/02/2021			11/05/2021 10:14	Beverly Y. Sanders	2287178
	11/02/2021			11/05/2021 10:15	Beverly Y. Sanders	2287179
	11/02/2021			11/05/2021 10:16	Beverly Y. Sanders	2287180
	11/02/2021			11/05/2021 10:17	Beverly Y. Sanders	2287181
	11/02/2021			11/05/2021 10:18	Beverly Y. Sanders	2287182
EPA 365.1 Rev. 2.0	11/02/2021	11/03/2021 16:35	Simonne.V. Calhoun	11/04/2021 15:17	Lipi Saha	2287177
	11/02/2021	11/03/2021 16:35	Simonne.V. Calhoun	11/04/2021 15:20	Lipi Saha	2287178
	11/02/2021	11/03/2021 16:35	Simonne.V. Calhoun	11/04/2021 15:21	Lipi Saha	2287179
	11/02/2021	11/03/2021 16:35	Simonne.V. Calhoun	11/04/2021 15:22	Lipi Saha	2287180
	11/02/2021	11/03/2021 16:35	Simonne.V. Calhoun	11/04/2021 15:23	Lipi Saha	2287181
	11/02/2021	11/03/2021 16:35	Simonne.V. Calhoun	11/04/2021 15:24	Lipi Saha	2287182
EPA 365.1 Rev. 2.0 dissolved	11/02/2021			11/02/2021 15:15	James L Waggeberby	2287183
	11/02/2021			11/02/2021 15:16	James L Waggeberby	2287184
	11/02/2021			11/02/2021 15:17	James L Waggeberby	2287185
	11/02/2021			11/02/2021 15:18	James L Waggeberby	2287186, 2287187
	11/02/2021			11/02/2021 15:19	James L Waggeberby	2287188
EPA 8321B	11/02/2021	11/03/2021 07:00	Manjita Shrestha	11/03/2021 09:23	Manjita Shrestha	2287175
	11/02/2021	11/03/2021 07:00	Manjita Shrestha	11/03/2021 10:46	Manjita Shrestha	2287171
	11/02/2021	11/03/2021 07:00	Manjita Shrestha	11/03/2021 12:13	Manjita Shrestha	2287172
	11/02/2021	11/03/2021 07:00	Manjita Shrestha	11/03/2021 12:30	Manjita Shrestha	2287173
	11/02/2021	11/03/2021 07:00	Manjita Shrestha	11/03/2021 12:47	Manjita Shrestha	2287174
	11/02/2021	11/03/2021 07:00	Manjita Shrestha	11/03/2021 13:03	Manjita Shrestha	2287175
	11/02/2021	11/03/2021 07:00	Manjita Shrestha	11/03/2021 13:20	Manjita Shrestha	2287176