

Chemical Analysis Report

WQAP-2021-10-26-02

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-2021-10-18-40**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Jacksonville, FL 32256
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 17-NOV-2021 10:12

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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: COJ St Johns Marina

Collection Date/Time: 10/25/2021 13:20

Field ID: NEHAB0037

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2286032	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P405314	
		Cylindrospermopsin	0.10	U	ug/L	P405314	
		Desmethyl microcystin LR	0.25	U	ug/L	P405314	
		Microcystin HilR**	0.25	U	ug/L	P405314	
		Microcystin HtyR**	0.25	U	ug/L	P405314	
		Microcystin LA	0.10	U	ug/L	P405314	
		Microcystin LF	0.10	U	ug/L	P405314	
		Microcystin LR	0.27	I	ug/L	P405314	
		Microcystin LW	0.25	U	ug/L	P405314	
		Microcystin LY	0.10	U	ug/L	P405314	
		Microcystin RR	0.10	U	ug/L	P405314	
		Microcystin WR	0.50	U	ug/L	P405314	
		Microcystin YR	0.25	U	ug/L	P405314	
		Nodularin-R**	0.10	U	ug/L	P405314	
2286038	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P405859	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.85		mg N/L	P405820	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P405711	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P405630	
2286044	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.043		mg P/L	P405625	

Sample Location: LSJR @ South end of Hart Bridge

Collection Date/Time: 10/25/2021 10:40

Field ID: NEHAB0043

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2286033	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P405314	
		Cylindrospermopsin	0.10	U	ug/L	P405314	
		Desmethyl microcystin LR	0.25	U	ug/L	P405314	
		Microcystin HIR**	0.25	U	ug/L	P405314	
		Microcystin HtyR**	0.25	U	ug/L	P405314	
		Microcystin LA	0.10	U	ug/L	P405314	
		Microcystin LF	0.10	U	ug/L	P405314	
		Microcystin LR	0.25	U	ug/L	P405314	
		Microcystin LW	0.25	U	ug/L	P405314	
		Microcystin LY	0.10	U	ug/L	P405314	
		Microcystin RR	0.10	U	ug/L	P405314	
		Microcystin WR	0.50	U	ug/L	P405314	
		Microcystin YR	0.25	U	ug/L	P405314	
		Nodularin-R**	0.10	U	ug/L	P405314	
2286039	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P405859	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P405820	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P405711	
	EPA 365.1 Rev. 2.0	Total-P	0.089		mg P/L	P405630	
2286045	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.046		mg P/L	P405625	

Sample Location: LSJR @ St Vincent riverside

Collection Date/Time: 10/25/2021 11:10

Field ID: NEHAB0033

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2286034	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P405314	
		Cylindrospermopsin	0.10	U	ug/L	P405314	
		Desmethyl microcystin LR	0.25	U	ug/L	P405314	
		Microcystin HIR**	0.25	U	ug/L	P405314	
		Microcystin HtyR**	0.25	U	ug/L	P405314	
		Microcystin LA	0.10	U	ug/L	P405314	
		Microcystin LF	0.10	U	ug/L	P405314	
		Microcystin LR	0.25	U	ug/L	P405314	
		Microcystin LW	0.25	U	ug/L	P405314	
		Microcystin LY	0.10	U	ug/L	P405314	
		Microcystin RR	0.10	U	ug/L	P405314	
		Microcystin WR	0.50	U	ug/L	P405314	
		Microcystin YR	0.25	U	ug/L	P405314	
		Nodularin-R**	0.10	U	ug/L	P405314	
2286040	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P405859	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P405820	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P405711	
	EPA 365.1 Rev. 2.0	Total-P	0.084		mg P/L	P405630	
2286046	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.041		mg P/L	P405625	

Sample Location: LSJR @ Marina Ortega Land

Collection Date/Time: 10/25/2021 11:35

Field ID: NEHAB0034

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2286035	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P405314	
		Cylindrospermopsin	0.10	U	ug/L	P405314	
		Desmethyl microcystin LR	0.25	U	ug/L	P405314	
		Microcystin HIR**	0.25	U	ug/L	P405314	
		Microcystin HtyR**	0.25	U	ug/L	P405314	
		Microcystin LA	0.10	U	ug/L	P405314	
		Microcystin LF	0.10	U	ug/L	P405314	
		Microcystin LR	0.25	U	ug/L	P405314	
		Microcystin LW	0.25	U	ug/L	P405314	
		Microcystin LY	0.10	U	ug/L	P405314	
		Microcystin RR	0.10	U	ug/L	P405314	
		Microcystin WR	0.50	U	ug/L	P405314	
		Microcystin YR	0.25	U	ug/L	P405314	
		Nodularin-R**	0.10	U	ug/L	P405314	
2286041	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P405859	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.86		mg N/L	P405820	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P405711	
	EPA 365.1 Rev. 2.0	Total-P	0.088		mg P/L	P405630	
2286047	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.044		mg P/L	P405625	

Sample Location: LSJR @ Worth Dr S

Collection Date/Time: 10/25/2021 12:15

Field ID: NEHAB0041

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2286036	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P405314	
		Cylindrospermopsin	0.10	U	ug/L	P405314	
		Desmethyl microcystin LR	0.25	U	ug/L	P405314	
		Microcystin HIR**	0.25	U	ug/L	P405314	
		Microcystin HtyR**	0.25	U	ug/L	P405314	
		Microcystin LA	0.10	U	ug/L	P405314	
		Microcystin LF	0.10	U	ug/L	P405314	
		Microcystin LR	0.25	U	ug/L	P405314	
		Microcystin LW	0.25	U	ug/L	P405314	
		Microcystin LY	0.10	U	ug/L	P405314	
		Microcystin RR	0.10	U	ug/L	P405314	
		Microcystin WR	0.50	U	ug/L	P405314	
		Microcystin YR	0.25	U	ug/L	P405314	
		Nodularin-R**	0.10	U	ug/L	P405314	
2286042	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P405859	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.77		mg N/L	P405820	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P405711	
	EPA 365.1 Rev. 2.0	Total-P	0.080		mg P/L	P405630	
2286048	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.041		mg P/L	P405625	

Sample Location: Canal to Marco Lake

Collection Date/Time: 10/25/2021 12:50

Field ID: NEHAB0038

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2286037	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P405314	
		Cylindrospermopsin	0.10	U	ug/L	P405314	
		Desmethyl microcystin LR	0.25	U	ug/L	P405314	
		Microcystin HilR**	0.25	U	ug/L	P405314	
		Microcystin HtyR**	0.25	U	ug/L	P405314	
		Microcystin LA	0.10	U	ug/L	P405314	
		Microcystin LF	0.10	U	ug/L	P405314	
		Microcystin LR	0.25	U	ug/L	P405314	
		Microcystin LW	0.25	U	ug/L	P405314	
		Microcystin LY	0.10	U	ug/L	P405314	
		Microcystin RR	0.10	U	ug/L	P405314	
		Microcystin WR	0.50	U	ug/L	P405314	
		Microcystin YR	0.25	U	ug/L	P405314	
		Nodularin-R**	0.10	U	ug/L	P405314	
2286043	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P405859	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.86		mg N/L	P405820	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15		mg N/L	P405712	
	EPA 365.1 Rev. 2.0	Total-P	0.086		mg P/L	P405630	
2286049	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.042		mg P/L	P405625	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405859

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405820

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405711

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405712

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405630

Component	Result	Code	Units
Total-P	0.005	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405625

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

Reference Method: EPA 8321B
Batch ID: P405314

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 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 Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405859

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405820

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405711

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405712

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: P405630

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	103		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405625

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

Reference Method: EPA 8321B
Batch ID: P405314

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	89.6		P	40 - 150
Cylindrospermopsin	95.6		P	40 - 150
Desmethyl microcystin LR	88.5		P	40 - 150
Microcystin H1LR	87.0		P	40 - 150
Microcystin HtyR	89.0		P	40 - 150
Microcystin LA	106		P	40 - 150
Microcystin LF	96.6		P	40 - 150
Microcystin LR	87.8		P	40 - 150
Microcystin LW	89.8		P	40 - 150
Microcystin LY	93.3		P	40 - 150
Microcystin RR	88.6		P	40 - 150
Microcystin WR	93.8		P	40 - 150
Microcystin YR	86.1		P	40 - 150
Nodularin-R	88.4		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P405859

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286041	Ammonia-N	96.2	97.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P405820

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285983	Kjeldahl Nitrogen	102	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P405711

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285972	NO2NO3-N	95.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P405712

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286043	NO2NO3-N	98.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P405630

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286038	Total-P	107	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P405625

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2286047	O-Phosphate-P	96.2	97.6	P/P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P405314

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2285901	Anatoxin-a	114	114	P/P	40 - 150
2285901	Cylindrospermopsin	111	106	P/P	40 - 150
2285901	Desmethyl microcystin LR	108	98.5	P/P	40 - 150
2285901	Microcystin HilR	105	101	P/P	40 - 150
2285901	Microcystin HtyR	106	104	P/P	40 - 150
2285901	Microcystin LA	116	107	P/P	40 - 150
2285901	Microcystin LF	106	109	P/P	40 - 150
2285901	Microcystin LR	99.6	96.7	P/P	40 - 150
2285901	Microcystin LW	105	98.1	P/P	40 - 150
2285901	Microcystin LY	103	103	P/P	40 - 150
2285901	Microcystin RR	98.7	98.3	P/P	40 - 150
2285901	Microcystin WR	105	109	P/P	40 - 150
2285901	Microcystin YR	102	97.4	P/P	40 - 150
2285901	Nodularin-R	105	105	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405859

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286041	Ammonia-N	0.966	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405820

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285983	Kjeldahl Nitrogen	0.183	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405711

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285972	NO2NO3-N	0.463	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P405712

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286043	NO2NO3-N	0.288	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405630

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286038	Total-P	1.36	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P405625

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2286047	O-Phosphate-P	0.995	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P405314

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285901	Anatoxin-a	0.281	Spike	P	0 - 30
2285901	Cylindrospermopsin	4.81	Spike	P	0 - 30
2285901	Desmethyl microcystin LR	9.51	Spike	P	0 - 30
2285901	Microcystin HtLR	3.72	Spike	P	0 - 30
2285901	Microcystin HtyR	1.54	Spike	P	0 - 30
2285901	Microcystin LA	7.73	Spike	P	0 - 30
2285901	Microcystin LF	3.13	Spike	P	0 - 30
2285901	Microcystin LR	2.93	Spike	P	0 - 30
2285901	Microcystin LW	6.82	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P405314

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2285901	Microcystin LY	0.400	Spike	P	0 - 30
2285901	Microcystin RR	0.390	Spike	P	0 - 30
2285901	Microcystin WR	3.83	Spike	P	0 - 30
2285901	Microcystin YR	4.51	Spike	P	0 - 30
2285901	Nodularin-R	0.240	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2286032
Field Sample ID: NEHAB0037

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	100	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	69.0	P	30 - 160

Lab Sample ID: 2286033
Field Sample ID: NEHAB0043

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	106	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	90.9	P	30 - 160

Lab Sample ID: 2286034
Field Sample ID: NEHAB0033

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	102	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	79.7	P	30 - 160

Lab Sample ID: 2286035
Field Sample ID: NEHAB0034

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	110	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	87.7	P	30 - 160

Lab Sample ID: 2286036
Field Sample ID: NEHAB0041

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	107	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	93.2	P	30 - 160

Lab Sample ID: 2286037
Field Sample ID: NEHAB0038

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	106	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	85.4	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A108546

Included Lab Sample IDs: 2286044, 2286045, 2286046, 2286047, 2286048, 2286049

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.5	98.5	P/P	90 - 110
O-Phosphate-P	98.5	98.6	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A108548

Included Lab Sample IDs: 2286032, 2286033, 2286034, 2286035, 2286036, 2286037

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	114	108	P/P	50 - 160
Cylindrospermopsin	127	121	P/P	60 - 160
Desmethyl microcystin LR	100	108	P/P	60 - 160
Microcystin HtIR	99.2	101	P/P	60 - 160
Microcystin HtyR	100	99.7	P/P	60 - 160
Microcystin LA	107	115	P/P	50 - 160
Microcystin LF	113	115	P/P	60 - 160
Microcystin LR	95.1	95.3	P/P	60 - 160
Microcystin LW	92.9	87.6	P/P	60 - 160
Microcystin LY	107	103	P/P	60 - 160
Microcystin RR	100	96.8	P/P	60 - 160
Microcystin WR	88.1	88.7	P/P	60 - 160
Microcystin YR	96.9	92.5	P/P	60 - 160
Nodularin-R	101	110	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108585

Included Lab Sample IDs: 2286038, 2286039, 2286040, 2286041, 2286042, 2286043

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108587

Included Lab Sample IDs: 2286038, 2286039, 2286040, 2286041, 2286042, 2286043

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A108661

Included Lab Sample IDs: 2286038, 2286039, 2286040, 2286041, 2286042, 2286043

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	107	P/P	90 - 110
Kjeldahl Nitrogen	107	104	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A108662

Included Lab Sample IDs: 2286038, 2286039, 2286040, 2286041, 2286042, 2286043

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.5	97.7	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	97.6	96.2	97.4			0.966
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	102	103			0.183
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	95.8				0.463
	NO ₂ NO ₃ -N	99.0	98.5	99.0			0.288
EPA 365.1 Rev. 2.0	Total-P	103	107	105			1.36
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.7	96.2	97.6			0.995
EPA 8321B	Anatoxin-a	89.6	114	114			0.281
	Cylindrospermopsin	95.6	111	106			4.81
	Desmethyl microcystin LR	88.5	108	98.5			9.51
	Microcystin HiLR	87.0	105	101			3.72
	Microcystin HtyR	89.0	106	104			1.54
	Microcystin LA	106	116	107			7.73
	Microcystin LF	96.6	106	109			3.13
	Microcystin LR	87.8	99.6	96.7			2.93
	Microcystin LW	89.8	105	98.1			6.82
	Microcystin LY	93.3	103	103			0.400
	Microcystin RR	88.6	98.7	98.3			0.390
	Microcystin WR	93.8	105	109			3.83
	Microcystin YR	86.1	102	97.4			4.51
	Nodularin-R	88.4	105	105			0.240

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2286038, 2286039, 2286040, 2286041, 2286042, 2286043
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2286038, 2286039, 2286040, 2286041, 2286042, 2286043
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2286038, 2286039, 2286040, 2286041, 2286042, 2286043
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2286038, 2286039, 2286040, 2286041, 2286042, 2286043
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2286044, 2286045, 2286046, 2286047, 2286048, 2286049
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2286032, 2286033, 2286034, 2286035, 2286036, 2286037

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	10/26/2021			11/02/2021 12:25	Ping Hua	2286041
	10/26/2021			11/02/2021 12:29	Ping Hua	2286038
	10/26/2021			11/02/2021 12:30	Ping Hua	2286039
	10/26/2021			11/02/2021 12:32	Ping Hua	2286040
	10/26/2021			11/02/2021 12:33	Ping Hua	2286042
	10/26/2021			11/02/2021 12:34	Ping Hua	2286043
EPA 351.2 Rev. 2.0	10/26/2021	11/01/2021 13:20	Benjamin T. Nordmann	11/02/2021 12:07	Alexandra J Mattheus	2286038
	10/26/2021	11/01/2021 13:20	Benjamin T. Nordmann	11/02/2021 12:09	Alexandra J Mattheus	2286039
	10/26/2021	11/01/2021 13:20	Benjamin T. Nordmann	11/02/2021 12:11	Alexandra J Mattheus	2286040
	10/26/2021	11/01/2021 13:20	Benjamin T. Nordmann	11/02/2021 12:12	Alexandra J Mattheus	2286041
	10/26/2021	11/01/2021 13:20	Benjamin T. Nordmann	11/02/2021 12:17	Alexandra J Mattheus	2286042
	10/26/2021	11/01/2021 13:20	Benjamin T. Nordmann	11/02/2021 12:19	Alexandra J Mattheus	2286043
EPA 353.2 Rev. 2.0	10/26/2021			10/28/2021 11:12	Beverly Y. Sanders	2286038
	10/26/2021			10/28/2021 11:13	Beverly Y. Sanders	2286039
	10/26/2021			10/28/2021 11:14	Beverly Y. Sanders	2286040
	10/26/2021			10/28/2021 11:15	Beverly Y. Sanders	2286041
	10/26/2021			10/28/2021 11:16	Beverly Y. Sanders	2286042
	10/26/2021			10/28/2021 11:24	Beverly Y. Sanders	2286043
EPA 365.1 Rev. 2.0	10/26/2021	10/27/2021 15:15	Simonne.V. Calhoun	10/28/2021 10:55	Lipi Saha	2286038
	10/26/2021	10/27/2021 15:15	Simonne.V. Calhoun	10/28/2021 11:05	Lipi Saha	2286039
	10/26/2021	10/27/2021 15:15	Simonne.V. Calhoun	10/28/2021 11:06	Lipi Saha	2286040
	10/26/2021	10/27/2021 15:15	Simonne.V. Calhoun	10/28/2021 11:07	Lipi Saha	2286041
	10/26/2021	10/27/2021 15:15	Simonne.V. Calhoun	10/28/2021 11:08	Lipi Saha	2286042
	10/26/2021	10/27/2021 15:15	Simonne.V. Calhoun	10/28/2021 11:09	Lipi Saha	2286043
EPA 365.1 Rev. 2.0 dissolved	10/26/2021			10/26/2021 16:58	James L Waggeberby	2286047
	10/26/2021			10/26/2021 17:05	James L Waggeberby	2286044
	10/26/2021			10/26/2021 17:06	James L Waggeberby	2286045
	10/26/2021			10/26/2021 17:07	James L Waggeberby	2286046, 2286048
	10/26/2021			10/26/2021 17:08	James L Waggeberby	2286049
EPA 8321B	10/26/2021	10/26/2021 13:00	Manjita Shrestha	10/26/2021 18:46	Manjita Shrestha	2286032
	10/26/2021	10/26/2021 13:00	Manjita Shrestha	10/26/2021 19:02	Manjita Shrestha	2286033
	10/26/2021	10/26/2021 13:00	Manjita Shrestha	10/26/2021 19:19	Manjita Shrestha	2286034
	10/26/2021	10/26/2021 13:00	Manjita Shrestha	10/26/2021 19:36	Manjita Shrestha	2286035
	10/26/2021	10/26/2021 13:00	Manjita Shrestha	10/26/2021 19:53	Manjita Shrestha	2286036
	10/26/2021	10/26/2021 13:00	Manjita Shrestha	10/26/2021 20:09	Manjita Shrestha	2286037