

Chemical Analysis Report

WQAP-2021-11-05-02

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-2021-10-11-60**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 24-NOV-2021 11:13



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: Doctor's Lake @ White Owl Rd

Collection Date/Time: 11/04/2021 12:30

Field ID: NEHAB0058

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2288402	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P406088	
		Cylindrospermopsin	0.10	U	ug/L	P406088	
		Desmethyl microcystin LR	0.25	U	ug/L	P406088	
		Microcystin HilR**	0.25	U	ug/L	P406088	
		Microcystin HtyR**	0.25	U	ug/L	P406088	
		Microcystin LA	0.10	U	ug/L	P406088	
		Microcystin LF	0.10	U	ug/L	P406088	
		Microcystin LR	0.25	U	ug/L	P406088	RPD
		Microcystin LW	0.25	U	ug/L	P406088	
		Microcystin LY	0.10	U	ug/L	P406088	
		Microcystin RR	0.10	U	ug/L	P406088	
		Microcystin WR	0.50	U	ug/L	P406088	
		Microcystin YR	0.25	U	ug/L	P406088	
		Nodularin-R**	0.10	U	ug/L	P406088	
2288414	EPA 350.1 Rev. 2.0	Ammonia-N	0.058		mg N/L	P406588	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P406415	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P406232	
	EPA 365.1 Rev. 2.0	Total-P	0.052		mg P/L	P406143	
2288420	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P406076	

Sample Location: Pace Island Dock

Collection Date/Time: 11/04/2021 14:00

Field ID: NEHAB0055

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2288403	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P406088	
		Cylindrospermopsin	0.10	U	ug/L	P406088	
		Desmethyl microcystin LR	0.25	U	ug/L	P406088	
		Microcystin HilR**	0.25	U	ug/L	P406088	
		Microcystin HtyR**	0.25	U	ug/L	P406088	
		Microcystin LA	0.10	U	ug/L	P406088	
		Microcystin LF	0.10	U	ug/L	P406088	
		Microcystin LR	0.25	U	ug/L	P406088	RPD
		Microcystin LW	0.25	U	ug/L	P406088	
		Microcystin LY	0.10	U	ug/L	P406088	
		Microcystin RR	0.10	U	ug/L	P406088	
		Microcystin WR	0.50	U	ug/L	P406088	
		Microcystin YR	0.25	U	ug/L	P406088	
		Nodularin-R**	0.10	U	ug/L	P406088	
2288415	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P406588	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.89		mg N/L	P406415	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15		mg N/L	P406232	
	EPA 365.1 Rev. 2.0	Total-P	0.081		mg P/L	P406143	
2288421	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.030		mg P/L	P406076	

Sample Location: Doctor's Lake @ Mill Cove

Collection Date/Time: 11/04/2021 13:00

Field ID: NEHAB0057

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2288404	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P406088	
		Cylindrospermopsin	0.10	U	ug/L	P406088	
		Desmethyl microcystin LR	0.25	U	ug/L	P406088	
		Microcystin HIR**	0.25	U	ug/L	P406088	
		Microcystin HtyR**	0.25	U	ug/L	P406088	
		Microcystin LA	0.10	U	ug/L	P406088	
		Microcystin LF	0.10	U	ug/L	P406088	
		Microcystin LR	0.25	U	ug/L	P406088	RPD
		Microcystin LW	0.25	U	ug/L	P406088	
		Microcystin LY	0.10	U	ug/L	P406088	
		Microcystin RR	0.10	U	ug/L	P406088	
		Microcystin WR	0.50	U	ug/L	P406088	
		Microcystin YR	0.25	U	ug/L	P406088	
		Nodularin-R**	0.10	U	ug/L	P406088	
2288416	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P406588	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P406415	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.074		mg N/L	P406232	
	EPA 365.1 Rev. 2.0	Total-P	0.068		mg P/L	P406143	
2288422	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.011		mg P/L	P406076	

Sample Location: LSJR @ Riverside Way

Collection Date/Time: 11/04/2021 10:20

Field ID: NEHAB0060

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2288405	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P406088	
		Cylindrospermopsin	0.10	U	ug/L	P406088	
		Desmethyl microcystin LR	0.25	U	ug/L	P406088	
		Microcystin HIR**	0.25	U	ug/L	P406088	
		Microcystin HtyR**	0.25	U	ug/L	P406088	
		Microcystin LA	0.10	U	ug/L	P406088	
		Microcystin LF	0.10	U	ug/L	P406088	
		Microcystin LR	0.25	U	ug/L	P406088	RPD
		Microcystin LW	0.25	U	ug/L	P406088	
		Microcystin LY	0.10	U	ug/L	P406088	
		Microcystin RR	0.10	U	ug/L	P406088	
		Microcystin WR	0.50	U	ug/L	P406088	
		Microcystin YR	0.25	U	ug/L	P406088	
		Nodularin-R**	0.10	U	ug/L	P406088	
2288417	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P406588	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.88		mg N/L	P406415	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P406232	
	EPA 365.1 Rev. 2.0	Total-P	0.064		mg P/L	P406143	
2288423	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.027		mg P/L	P406076	

Sample Location: Pottsburg Creek @ River Hills Cr E

Collection Date/Time: 11/04/2021 10:25

Field ID: NEHAB0032

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2288406	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P406088	
		Cylindrospermopsin	0.10	U	ug/L	P406088	
		Desmethyl microcystin LR	0.25	U	ug/L	P406088	
		Microcystin HilR**	0.25	U	ug/L	P406088	
		Microcystin HtyR**	0.25	U	ug/L	P406088	
		Microcystin LA	0.10	U	ug/L	P406088	
		Microcystin LF	0.10	U	ug/L	P406088	
		Microcystin LR	0.25	U	ug/L	P406088	RPD
		Microcystin LW	0.25	U	ug/L	P406088	
		Microcystin LY	0.10	U	ug/L	P406088	
		Microcystin RR	0.10	U	ug/L	P406088	
		Microcystin WR	0.50	U	ug/L	P406088	
		Microcystin YR	0.25	U	ug/L	P406088	
		Nodularin-R**	0.10	U	ug/L	P406088	
2288418	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P406589	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57		mg N/L	P406663	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.18		mg N/L	P406241	
	EPA 365.1 Rev. 2.0	Total-P	0.092		mg P/L	P406312	
2288424	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.057		mg P/L	P406077	

Sample Location: LSJR @ Arlington Boat Ramp

Collection Date/Time: 11/04/2021 09:55

Field ID: NEHAB0031

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2288407	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P406088	
		Cylindrospermopsin	0.10	U	ug/L	P406088	
		Desmethyl microcystin LR	0.25	U	ug/L	P406088	
		Microcystin HIR**	0.25	U	ug/L	P406088	
		Microcystin HtyR**	0.25	U	ug/L	P406088	
		Microcystin LA	0.10	U	ug/L	P406088	
		Microcystin LF	0.10	U	ug/L	P406088	
		Microcystin LR	0.25	U	ug/L	P406088	RPD
		Microcystin LW	0.25	U	ug/L	P406088	
		Microcystin LY	0.10	U	ug/L	P406088	
		Microcystin RR	0.10	U	ug/L	P406088	
		Microcystin WR	0.50	U	ug/L	P406088	
		Microcystin YR	0.25	U	ug/L	P406088	
		Nodularin-R**	0.10	U	ug/L	P406088	
2288419	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P406589	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.65		mg N/L	P406663	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.18		mg N/L	P406241	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P406312	
2288425	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.061		mg P/L	P406077	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406588

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406589

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406415

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406663

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406232

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406241

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406143

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406312

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406076

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406077

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

Reference Method: EPA 8321B
Batch ID: P406088

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 H1R	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: P406588

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406589

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406415

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406663

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406232

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406241

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: P406143

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406312

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: P406076

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406077

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.4		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P406088

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	100		P	40 - 150
Cylindrospermopsin	102		P	40 - 150
Desmethyl microcystin LR	110		P	40 - 150
Microcystin HIR	104		P	40 - 150
Microcystin HtyR	94.2		P	40 - 150
Microcystin LA	101		P	40 - 150
Microcystin LF	101		P	40 - 150
Microcystin LR	102		P	40 - 150
Microcystin LW	93.9		P	40 - 150
Microcystin LY	97.5		P	40 - 150
Microcystin RR	99.1		P	40 - 150
Microcystin WR	97.6		P	40 - 150
Microcystin YR	95.6		P	40 - 150
Nodularin-R	100		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406588

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2288355	Ammonia-N	96.6	96.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406589

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289092	Ammonia-N	98.0	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406415

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2288506	Kjeldahl Nitrogen	99.6	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2289236	Kjeldahl Nitrogen	108	112	P/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406232

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2288414	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406241

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2288346	NO2NO3-N	97.4	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406143

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2288416	Total-P	105	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406312

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2288346	Total-P	97.7	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406076

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2288381	O-Phosphate-P	95.2	95.3	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406077

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2288424	O-Phosphate-P	97.2	98.3	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P406088

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2288376	Anatoxin-a	91.3	115	P/P	40 - 150
2288376	Cylindrospermopsin	92.0	118	P/P	40 - 150
2288376	Desmethyl microcystin LR	92.1	115	P/P	40 - 150
2288376	Microcystin H1LR	89.6	120	P/P	40 - 150
2288376	Microcystin HtyR	84.0	109	P/P	40 - 150
2288376	Microcystin LA	85.1	110	P/P	40 - 150
2288376	Microcystin LF	85.7	100	P/P	40 - 150
2288376	Microcystin LR	77.4	107	P/P	40 - 150
2288376	Microcystin LW	90.1	113	P/P	40 - 150
2288376	Microcystin LY	83.0	111	P/P	40 - 150
2288376	Microcystin RR	86.0	112	P/P	40 - 150
2288376	Microcystin WR	85.0	112	P/P	40 - 150
2288376	Microcystin YR	88.6	104	P/P	40 - 150
2288376	Nodularin-R	92.6	110	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406588

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288355	Ammonia-N	0.196	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P406589

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289092	Ammonia-N	0.579	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406415

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288506	Kjeldahl Nitrogen	2.51	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2289236	Kjeldahl Nitrogen	2.86	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406232

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288414	NO2NO3-N	0.943	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406241

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288346	NO2NO3-N	0.980	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406143

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288416	Total-P	0.894	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406312

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288346	Total-P	0.887	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P406076

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288381	O-Phosphate-P	0.105	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P406077

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288424	O-Phosphate-P	0.710	Spike	P	0 - 20

Reference Method: EPA 8321B
 Batch ID: P406088

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2288376	Anatoxin-a	23.2	Spike	P	0 - 30
2288376	Cylindrospermopsin	24.6	Spike	P	0 - 30
2288376	Desmethyl microcystin LR	21.9	Spike	P	0 - 30
2288376	Microcystin HlIR	29.0	Spike	P	0 - 30
2288376	Microcystin HtyR	25.7	Spike	P	0 - 30
2288376	Microcystin LA	25.8	Spike	P	0 - 30
2288376	Microcystin LF	15.8	Spike	P	0 - 30
2288376	Microcystin LR	30.7	Spike	F	0 - 30
2288376	Microcystin LW	22.6	Spike	P	0 - 30
2288376	Microcystin LY	29.2	Spike	P	0 - 30
2288376	Microcystin RR	25.8	Spike	P	0 - 30
2288376	Microcystin WR	27.4	Spike	P	0 - 30
2288376	Microcystin YR	16.1	Spike	P	0 - 30
2288376	Nodularin-R	17.4	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2288402
Field Sample ID: NEHAB0058

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	98.1	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	80.6	P	30 - 160

Lab Sample ID: 2288403
Field Sample ID: NEHAB0055

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	98.0	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	83.8	P	30 - 160

Lab Sample ID: 2288404
Field Sample ID: NEHAB0057

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	102	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	88.1	P	30 - 160

Lab Sample ID: 2288405
Field Sample ID: NEHAB0060

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	100	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	91.0	P	30 - 160

Lab Sample ID: 2288406
Field Sample ID: NEHAB0032

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	105	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	90.9	P	30 - 160

Lab Sample ID: 2288407
Field Sample ID: NEHAB0031

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	99.6	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	79.6	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A108751

Included Lab Sample IDs: 2288420, 2288421, 2288422, 2288423, 2288424, 2288425

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.4	98.8	P/P	90 - 110
O-Phosphate-P	98.8	99.8	P/P	90 - 110
O-Phosphate-P	99.8	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108827

Included Lab Sample IDs: 2288414, 2288415, 2288416, 2288417

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108835

Included Lab Sample IDs: 2288418, 2288419

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

Reference Method: EPA 8321B

Run ID: A108849

Included Lab Sample IDs: 2288402, 2288403, 2288404, 2288405, 2288406, 2288407

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	101	106	P/P	50 - 160
Anatoxin-a	90.8	101	P/P	50 - 160
Cylindrospermopsin	102	104	P/P	60 - 160
Cylindrospermopsin	86.4	102	P/P	60 - 160
Desmethyl microcystin LR	77.2	97.7	P/P	60 - 160
Desmethyl microcystin LR	97.7	92.0	P/P	60 - 160
Microcystin HILR	87.2	97.7	P/P	60 - 160
Microcystin HILR	97.7	92.5	P/P	60 - 160
Microcystin HtyR	78.8	92.0	P/P	60 - 160
Microcystin HtyR	92.0	85.3	P/P	60 - 160
Microcystin LA	82.4	92.9	P/P	50 - 160
Microcystin LA	92.9	93.3	P/P	50 - 160
Microcystin LF	87.4	95.2	P/P	60 - 160
Microcystin LF	95.2	92.3	P/P	60 - 160
Microcystin LR	90.1	92.0	P/P	60 - 160
Microcystin LR	92.0	82.7	P/P	60 - 160
Microcystin LW	85.4	87.2	P/P	60 - 160
Microcystin LW	87.2	81.9	P/P	60 - 160
Microcystin LY	83.2	89.6	P/P	60 - 160
Microcystin LY	89.6	81.8	P/P	60 - 160
Microcystin RR	82.1	94.0	P/P	60 - 160
Microcystin RR	94.0	93.8	P/P	60 - 160
Microcystin WR	75.8	82.9	P/P	60 - 160
Microcystin WR	82.9	87.0	P/P	60 - 160
Microcystin YR	82.5	75.3	P/P	60 - 160
Microcystin YR	87.2	82.5	P/P	60 - 160
Nodularin-R	91.2	97.4	P/P	60 - 160
Nodularin-R	97.4	93.5	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108889

Included Lab Sample IDs: 2288415, 2288416, 2288417

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	100	P/P	90 - 110
Total-P	100	98.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108894

Included Lab Sample IDs: 2288414

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.0	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A108965

Included Lab Sample IDs: 2288414, 2288415, 2288416, 2288417

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.4	97.2	P/P	90 - 110
Kjeldahl Nitrogen	96.6	94.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108995

Included Lab Sample IDs: 2288419

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108996

Included Lab Sample IDs: 2288418

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.2	97.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A109005

Included Lab Sample IDs: 2288414, 2288415, 2288416, 2288417, 2288418, 2288419

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.9	98.6	P/P	90 - 110
Ammonia-N	98.6	98.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A109054

Included Lab Sample IDs: 2288418, 2288419

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	103	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	97.6	96.6	96.8			0.196
	Ammonia-N	96.8	98.0	99.0			0.579
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.3	99.6	104			2.51
	Kjeldahl Nitrogen	104	108	112			2.86
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	104	101	102			0.943
	NO ₂ NO ₃ -N	99.0	97.4	98.4			0.980
EPA 365.1 Rev. 2.0	Total-P	102	105	106			0.894
	Total-P	103	97.7	98.8			0.887
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.6	95.2	95.3			0.105
	O-Phosphate-P	98.4	97.2	98.3			0.710
EPA 8321B	Anatoxin-a	100	115	91.3			23.2
	Cylindrospermopsin	102	118	92.0			24.6
	Desmethyl microcystin LR	110	92.1	115			21.9
	Microcystin HiLR	104	89.6	120			29.0
	Microcystin HtyR	94.2	84.0	109			25.7
	Microcystin LA	101	85.1	110			25.8
	Microcystin LF	101	85.7	100			15.8
	Microcystin LR	102	77.4	107			30.7
	Microcystin LW	93.9	90.1	113			22.6
	Microcystin LY	97.5	83.0	111			29.2
	Microcystin RR	99.1	112	86.0			25.8
	Microcystin WR	97.6	85.0	112			27.4
	Microcystin YR	95.6	88.6	104			16.1
	Nodularin-R	100	110	92.6			17.4

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2288414, 2288415, 2288416, 2288417, 2288418, 2288419
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2288414, 2288415, 2288416, 2288417, 2288418, 2288419
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2288414, 2288415, 2288416, 2288417, 2288418, 2288419
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2288414, 2288415, 2288416, 2288417, 2288418, 2288419
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2288420, 2288421, 2288422, 2288423, 2288424, 2288425
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2288402, 2288403, 2288404, 2288405, 2288406, 2288407

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	11/05/2021			11/19/2021 12:16	Ping Hua	2288414
	11/05/2021			11/19/2021 12:18	Ping Hua	2288415
	11/05/2021			11/19/2021 12:19	Ping Hua	2288416
	11/05/2021			11/19/2021 12:20	Ping Hua	2288417
	11/05/2021			11/19/2021 12:47	Ping Hua	2288418
	11/05/2021			11/19/2021 12:48	Ping Hua	2288419
EPA 351.2 Rev. 2.0	11/05/2021	11/17/2021 12:10	Benjamin T. Nordmann	11/18/2021 10:38	Alexandra J Mattheus	2288414
	11/05/2021	11/17/2021 12:10	Benjamin T. Nordmann	11/18/2021 10:39	Alexandra J Mattheus	2288415
	11/05/2021	11/17/2021 12:10	Benjamin T. Nordmann	11/18/2021 10:41	Alexandra J Mattheus	2288416
	11/05/2021	11/17/2021 12:10	Benjamin T. Nordmann	11/18/2021 10:46	Alexandra J Mattheus	2288417
	11/05/2021	11/22/2021 13:28	Benjamin T. Nordmann	11/23/2021 11:43	Alexandra J Mattheus	2288418
	11/05/2021	11/22/2021 13:28	Benjamin T. Nordmann	11/23/2021 11:44	Alexandra J Mattheus	2288419
EPA 353.2 Rev. 2.0	11/05/2021			11/10/2021 09:33	Beverly Y. Sanders	2288414
	11/05/2021			11/10/2021 09:41	Beverly Y. Sanders	2288415
	11/05/2021			11/10/2021 09:43	Beverly Y. Sanders	2288416
	11/05/2021			11/10/2021 09:44	Beverly Y. Sanders	2288417
	11/05/2021			11/10/2021 12:28	Beverly Y. Sanders	2288418
	11/05/2021			11/10/2021 12:29	Beverly Y. Sanders	2288419
EPA 365.1 Rev. 2.0	11/05/2021	11/09/2021 13:49	Simonne.V. Calhoun	11/12/2021 14:21	Sarah A Nixon	2288416
	11/05/2021	11/09/2021 13:49	Simonne.V. Calhoun	11/12/2021 14:30	Sarah A Nixon	2288415
	11/05/2021	11/09/2021 13:49	Simonne.V. Calhoun	11/12/2021 14:31	Sarah A Nixon	2288417
	11/05/2021	11/09/2021 13:49	Simonne.V. Calhoun	11/12/2021 17:49	Sarah A Nixon	2288414
	11/05/2021	11/16/2021 19:16	Simonne.V. Calhoun	11/17/2021 12:10	Sarah A Nixon	2288419
	11/05/2021	11/16/2021 19:16	Simonne.V. Calhoun	11/17/2021 16:03	Sarah A Nixon	2288418
EPA 365.1 Rev. 2.0 dissolved	11/05/2021			11/05/2021 14:40	James L Waggeberby	2288420, 2288421
	11/05/2021			11/05/2021 14:41	James L Waggeberby	2288422
	11/05/2021			11/05/2021 14:42	James L Waggeberby	2288423
	11/05/2021			11/05/2021 14:53	James L Waggeberby	2288424
	11/05/2021			11/05/2021 15:00	James L Waggeberby	2288425
EPA 8321B	11/05/2021	11/10/2021 08:00	Manjita Shrestha	11/10/2021 11:15	Manjita Shrestha	2288403
	11/05/2021	11/10/2021 08:00	Manjita Shrestha	11/10/2021 11:32	Manjita Shrestha	2288404
	11/05/2021	11/10/2021 08:00	Manjita Shrestha	11/10/2021 12:30	Manjita Shrestha	2288406
	11/05/2021	11/10/2021 08:00	Manjita Shrestha	11/10/2021 12:47	Manjita Shrestha	2288407
	11/05/2021	11/10/2021 08:00	Manjita Shrestha	11/10/2021 14:11	Manjita Shrestha	2288402
	11/05/2021	11/10/2021 08:00	Manjita Shrestha	11/10/2021 14:27	Manjita Shrestha	2288405