

Chemical Analysis Report

WQAP-2021-09-24-01

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-2021-09-06-43**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 15-OCT-2021 11:15



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: Lions Club Boat Ramp

Collection Date/Time: 09/23/2021 09:54

Field ID: NEHAB0036

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2278109	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404155	
		Cylindrospermopsin	0.10	U	ug/L	P404155	
		Desmethyl microcystin LR	0.25	U	ug/L	P404155	
		Microcystin HIR**	0.25	U	ug/L	P404155	
		Microcystin HtyR**	0.25	U	ug/L	P404155	
		Microcystin LA	0.10	U	ug/L	P404155	
		Microcystin LF	0.10	U	ug/L	P404155	
		Microcystin LR	1.3		ug/L	P404155	
		Microcystin LW	0.25	U	ug/L	P404155	
		Microcystin LY	0.10	U	ug/L	P404155	
		Microcystin RR	0.10	U	ug/L	P404155	
		Microcystin WR	0.50	U	ug/L	P404155	
		Microcystin YR	0.25	U	ug/L	P404155	
		Nodularin-R**	0.10	U	ug/L	P404155	
2278114	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P404474	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P404272	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.24		mg N/L	P404225	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P404581	
2278119	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.065		mg P/L	P404184	

Sample Location: COJ St. Johns Marina

Collection Date/Time: 09/23/2021 10:55

Field ID: NEHAB0037

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2278110	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404155	
		Cylindrospermopsin	0.10	U	ug/L	P404155	
		Desmethyl microcystin LR	0.25	U	ug/L	P404155	
		Microcystin HilR**	0.25	U	ug/L	P404155	
		Microcystin HtyR**	0.25	U	ug/L	P404155	
		Microcystin LA	0.10	U	ug/L	P404155	
		Microcystin LF	0.10	U	ug/L	P404155	
		Microcystin LR	1.1		ug/L	P404155	
		Microcystin LW	0.25	U	ug/L	P404155	
		Microcystin LY	0.10	U	ug/L	P404155	
		Microcystin RR	0.10	U	ug/L	P404155	
		Microcystin WR	0.50	U	ug/L	P404155	
		Microcystin YR	0.25	U	ug/L	P404155	
		Nodularin-R**	0.10	U	ug/L	P404155	
2278115	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P404411	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.84		mg N/L	P404217	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.21		mg N/L	P404265	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P404311	
2278120	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.051		mg P/L	P404181	

Sample Location: Canal to Marco Lake

Collection Date/Time: 09/23/2021 11:22

Field ID: NEHAB0038

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2278111	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404155	
		Cylindrospermopsin	0.10	U	ug/L	P404155	
		Desmethyl microcystin LR	1.1		ug/L	P404155	
		Microcystin H1R**	0.74	I	ug/L	P404155	
		Microcystin HtyR**	0.25	U	ug/L	P404155	
		Microcystin LA	0.15	I	ug/L	P404155	
		Microcystin LF	0.10	U	ug/L	P404155	
		Microcystin LR	22		ug/L	P404155	
		Microcystin LW	0.25	U	ug/L	P404155	
		Microcystin LY	0.10	U	ug/L	P404155	
		Microcystin RR	0.10	U	ug/L	P404155	
		Microcystin WR	0.50	U	ug/L	P404155	
		Microcystin YR	0.25	U	ug/L	P404155	
		Nodularin-R**	0.10	U	ug/L	P404155	
2278116	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P404411	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P404219	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.19		mg N/L	P404265	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P404311	
2278121	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.052		mg P/L	P404181	

Sample Location: Mouth of Craig Creek

Collection Date/Time: 09/23/2021 11:39

Field ID: NEHAB0039

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2278112	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404155	
		Cylindrospermopsin	0.10	U	ug/L	P404155	
		Desmethyl microcystin LR	0.25	U	ug/L	P404155	
		Microcystin HilR**	0.25	U	ug/L	P404155	
		Microcystin HtyR**	0.25	U	ug/L	P404155	
		Microcystin LA	0.10	U	ug/L	P404155	
		Microcystin LF	0.10	U	ug/L	P404155	
		Microcystin LR	1.5		ug/L	P404155	
		Microcystin LW	0.25	U	ug/L	P404155	
		Microcystin LY	0.10	U	ug/L	P404155	
		Microcystin RR	0.10	U	ug/L	P404155	
		Microcystin WR	0.50	U	ug/L	P404155	
		Microcystin YR	0.25	U	ug/L	P404155	
		Nodularin-R**	0.10	U	ug/L	P404155	
2278117	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P404411	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P404219	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.18		mg N/L	P404265	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P404311	
2278122	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.052		mg P/L	P404181	

Sample Location: Mouth of Goodby's Creek

Collection Date/Time: 09/23/2021 13:54

Field ID: NEHAB0040

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2278113	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404155	
		Cylindrospermopsin	0.10	U	ug/L	P404155	
		Desmethyl microcystin LR	0.25	U	ug/L	P404155	
		Microcystin HilR**	0.25	U	ug/L	P404155	
		Microcystin HtyR**	0.25	U	ug/L	P404155	
		Microcystin LA	0.10	U	ug/L	P404155	
		Microcystin LF	0.10	U	ug/L	P404155	
		Microcystin LR	0.81	I	ug/L	P404155	
		Microcystin LW	0.25	U	ug/L	P404155	
		Microcystin LY	0.10	U	ug/L	P404155	
		Microcystin RR	0.10	U	ug/L	P404155	
		Microcystin WR	0.50	U	ug/L	P404155	
		Microcystin YR	0.25	U	ug/L	P404155	
		Nodularin-R**	0.10	U	ug/L	P404155	
2278118	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P404411	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P404219	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P404266	
	EPA 365.1 Rev. 2.0	Total-P	0.099		mg P/L	P404311	
2278123	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.047		mg P/L	P404181	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404411

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404474

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404217

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404219

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404272

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404225

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404265

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404266

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404311

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P404581

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P404181

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P404184

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

Reference Method: EPA 8321B

Batch ID: P404155

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 HIR	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: P404411

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404474

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404217

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404219

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404272

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404225

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	97.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404265

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404266

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404311

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P404581

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: P404181

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P404184

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

Reference Method: EPA 8321B

Batch ID: P404155

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	97.2		P	40 - 150
Cylindrospermopsin	102		P	40 - 150
Desmethyl microcystin LR	101		P	40 - 150
Microcystin HIR	102		P	40 - 150
Microcystin HtyR	102		P	40 - 150
Microcystin LA	85.4		P	40 - 150
Microcystin LF	128		P	40 - 150
Microcystin LR	105		P	40 - 150
Microcystin LW	115		P	40 - 150
Microcystin LY	91.7		P	40 - 150
Microcystin RR	101		P	40 - 150
Microcystin WR	87.4		P	40 - 150
Microcystin YR	106		P	40 - 150
Nodularin-R	111		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404411

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278057	Ammonia-N	96.4	97.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404474

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278803	Ammonia-N	95.6	96.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404217

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278045	Kjeldahl Nitrogen	93.9	93.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404219

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278228	Kjeldahl Nitrogen	92.4	94.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404272

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2277791	Kjeldahl Nitrogen	91.9	92.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404225

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2277790	NO2NO3-N	98.8	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404265

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2277913	NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404266

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278118	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404311

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278115	Total-P	110	110	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P404581

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278209	Total-P	105	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P404181

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278058	O-Phosphate-P	99.3	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P404184

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278171	O-Phosphate-P	100	99.6	P/P	90 - 110

Reference Method: EPA 8321B

Batch ID: P404155

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278074	Anatoxin-a	111	109	P/P	40 - 150
2278074	Cylindrospermopsin	101	93.4	P/P	40 - 150
2278074	Desmethyl microcystin LR	103	99.8	P/P	40 - 150
2278074	Microcystin HilR	101	100	P/P	40 - 150
2278074	Microcystin HtyR	97.4	93.5	P/P	40 - 150
2278074	Microcystin LA	78.1	82.5	P/P	40 - 150
2278074	Microcystin LF	117	115	P/P	40 - 150
2278074	Microcystin LR	103	97.6	P/P	40 - 150
2278074	Microcystin LW	109	102	P/P	40 - 150
2278074	Microcystin LY	100	99.0	P/P	40 - 150
2278074	Microcystin RR	104	93.3	P/P	40 - 150
2278074	Microcystin WR	96.6	97.6	P/P	40 - 150
2278074	Microcystin YR	99.3	99.9	P/P	40 - 150
2278074	Nodularin-R	101	104	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404411

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278057	Ammonia-N	0.784	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404474

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278803	Ammonia-N	0.379	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404217

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278045	Kjeldahl Nitrogen	0.600	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404219

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278228	Kjeldahl Nitrogen	1.73	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404272

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2277791	Kjeldahl Nitrogen	0.543	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404225

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2277790	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404265

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2277913	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404266

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278118	NO2NO3-N	0.315	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P404311

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278115	Total-P	0.321	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P404581

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278209	Total-P	1.24	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P404181

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278058	O-Phosphate-P	0.101	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P404184

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278171	O-Phosphate-P	0.255	Spike	P	0 - 20

Reference Method: EPA 8321B
 Batch ID: P404155

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278074	Anatoxin-a	2.02	Spike	P	0 - 30
2278074	Cylindrospermopsin	7.44	Spike	P	0 - 30
2278074	Desmethyl microcystin LR	3.05	Spike	P	0 - 30
2278074	Microcystin H1LR	0.950	Spike	P	0 - 30
2278074	Microcystin HtyR	4.11	Spike	P	0 - 30
2278074	Microcystin LA	5.42	Spike	P	0 - 30
2278074	Microcystin LF	2.10	Spike	P	0 - 30
2278074	Microcystin LR	5.64	Spike	P	0 - 30
2278074	Microcystin LW	6.12	Spike	P	0 - 30
2278074	Microcystin LY	1.44	Spike	P	0 - 30
2278074	Microcystin RR	10.6	Spike	P	0 - 30
2278074	Microcystin WR	0.975	Spike	P	0 - 30
2278074	Microcystin YR	0.521	Spike	P	0 - 30
2278074	Nodularin-R	2.89	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2278109
Field Sample ID: NEHAB0036

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	116	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	140	P	30 - 160

Lab Sample ID: 2278110
Field Sample ID: NEHAB0037

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	103	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	134	P	30 - 160

Lab Sample ID: 2278111
Field Sample ID: NEHAB0038

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	88.6	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	121	P	30 - 160

Lab Sample ID: 2278112
Field Sample ID: NEHAB0039

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	114	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	136	P	30 - 160

Lab Sample ID: 2278113
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	129	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A107986

Included Lab Sample IDs: 2278119, 2278120, 2278121, 2278122, 2278123

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.5	98.9	P/P	90 - 110
O-Phosphate-P	98.9	98.6	P/P	90 - 110
O-Phosphate-P	98.9	99.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108006

Included Lab Sample IDs: 2278114

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108029

Included Lab Sample IDs: 2278115, 2278116, 2278117, 2278118

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	103	P/P	90 - 110
NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A108038

Included Lab Sample IDs: 2278109, 2278110, 2278111, 2278112, 2278113

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	93.3	99.1	P/P	50 - 160
Anatoxin-a	99.1	93.9	P/P	50 - 160
Cylindrospermopsin	87.1	92.8	P/P	60 - 160
Cylindrospermopsin	92.8	91.5	P/P	60 - 160
Desmethyl microcystin LR	91.1	97.3	P/P	60 - 160
Desmethyl microcystin LR	97.3	92.5	P/P	60 - 160
Microcystin H1LR	94.1	96.0	P/P	60 - 160
Microcystin H1LR	96.0	95.3	P/P	60 - 160
Microcystin HtyR	89.8	97.6	P/P	60 - 160
Microcystin HtyR	97.6	89.8	P/P	60 - 160
Microcystin LA	78.3	84.9	P/P	50 - 160
Microcystin LA	84.9	82.1	P/P	50 - 160
Microcystin LF	106	108	P/P	60 - 160
Microcystin LF	108	104	P/P	60 - 160
Microcystin LR	96.2	92.9	P/P	60 - 160
Microcystin LR	98.8	96.2	P/P	60 - 160
Microcystin LW	102	100	P/P	60 - 160
Microcystin LW	95.8	102	P/P	60 - 160
Microcystin LY	89.4	89.5	P/P	60 - 160
Microcystin LY	95.8	89.4	P/P	60 - 160
Microcystin RR	87.9	84.5	P/P	60 - 160
Microcystin RR	92.4	87.9	P/P	60 - 160
Microcystin WR	88.2	88.7	P/P	60 - 160
Microcystin WR	88.7	92.2	P/P	60 - 160
Microcystin YR	90.5	86.2	P/P	60 - 160
Microcystin YR	95.8	90.5	P/P	60 - 160
Nodularin-R	100	98.9	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A108038

Included Lab Sample IDs: 2278109, 2278110, 2278111, 2278112, 2278113

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Nodularin-R	102	100	P/P	60 - 160

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A108054

Included Lab Sample IDs: 2278114, 2278115, 2278116, 2278117, 2278118

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.6	98.0	P/P	90 - 110
Kjeldahl Nitrogen	96.6	103	P/P	90 - 110
Kjeldahl Nitrogen	96.6	99.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A108078

Included Lab Sample IDs: 2278115, 2278116, 2278117, 2278118

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.3	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108079

Included Lab Sample IDs: 2278115, 2278116, 2278117, 2278118

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	99.6	P/P	90 - 110
Total-P	102	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A108109

Included Lab Sample IDs: 2278114

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.2	99.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108209

Included Lab Sample IDs: 2278114

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	108	108	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	96.4	96.4	97.4			0.784
	Ammonia-N	95.4	95.6	96.0			0.379
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.6	93.9	93.3			0.600
	Kjeldahl Nitrogen	95.2	92.4	94.3			1.73
EPA 353.2 Rev. 2.0	Kjeldahl Nitrogen	99.1	91.9	92.5			0.543
	NO2NO3-N	97.0	98.8	98.8			0.0
	NO2NO3-N	102	103	103			0.0
	NO2NO3-N	103	101	102			0.315
EPA 365.1 Rev. 2.0	Total-P	110	110	110			0.321
	Total-P	103	105	103			1.24
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.8	99.3	99.4			0.101
	O-Phosphate-P	100	100	99.6			0.255
EPA 8321B	Anatoxin-a	97.2	111	109			2.02
	Cylindrospermopsin	102	101	93.4			7.44
	Desmethyl microcystin LR	101	103	99.8			3.05
	Microcystin HiLR	102	101	100			0.950
	Microcystin HtyR	102	97.4	93.5			4.11
	Microcystin LA	85.4	78.1	82.5			5.42
	Microcystin LF	128	117	115			2.10
	Microcystin LR	105	103	97.6			5.64
	Microcystin LW	115	109	102			6.12
	Microcystin LY	91.7	100	99.0			1.44
	Microcystin RR	101	104	93.3			10.6
	Microcystin WR	87.4	96.6	97.6			0.975
	Microcystin YR	106	99.3	99.9			0.521
	Nodularin-R	111	101	104			2.89

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2278114, 2278115, 2278116, 2278117, 2278118
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2278114, 2278115, 2278116, 2278117, 2278118
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2278114, 2278115, 2278116, 2278117, 2278118
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2278114, 2278115, 2278116, 2278117, 2278118
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2278119, 2278120, 2278121, 2278122, 2278123
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2278109, 2278110, 2278111, 2278112, 2278113

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	09/24/2021			09/30/2021 14:24	Ping Hua	2278115
	09/24/2021			09/30/2021 14:25	Ping Hua	2278116
	09/24/2021			09/30/2021 14:26	Ping Hua	2278117
	09/24/2021			09/30/2021 14:28	Ping Hua	2278118
	09/24/2021			10/01/2021 12:24	Ping Hua	2278114
EPA 351.2 Rev. 2.0	09/24/2021	09/27/2021 11:20	Benjamin T. Nordmann	09/29/2021 10:16	Alexandra J Mattheus	2278115
	09/24/2021	09/27/2021 11:20	Benjamin T. Nordmann	09/29/2021 10:50	Alexandra J Mattheus	2278116
	09/24/2021	09/27/2021 11:20	Benjamin T. Nordmann	09/29/2021 10:52	Alexandra J Mattheus	2278117
	09/24/2021	09/27/2021 11:20	Benjamin T. Nordmann	09/29/2021 10:53	Alexandra J Mattheus	2278118
	09/24/2021	09/28/2021 11:28	Benjamin T. Nordmann	09/29/2021 11:49	Alexandra J Mattheus	2278114
EPA 353.2 Rev. 2.0	09/24/2021			09/27/2021 10:44	Beverly Y. Sanders	2278114
	09/24/2021			09/28/2021 09:47	Beverly Y. Sanders	2278115
	09/24/2021			09/28/2021 09:48	Beverly Y. Sanders	2278116
	09/24/2021			09/28/2021 09:49	Beverly Y. Sanders	2278117
	09/24/2021			09/28/2021 09:56	Beverly Y. Sanders	2278118
EPA 365.1 Rev. 2.0	09/24/2021	09/29/2021 16:23	Simonne.V. Calhoun	09/30/2021 14:37	Lipi Saha	2278115
	09/24/2021	09/29/2021 16:23	Simonne.V. Calhoun	09/30/2021 14:40	Lipi Saha	2278116
	09/24/2021	09/29/2021 16:23	Simonne.V. Calhoun	09/30/2021 14:41	Lipi Saha	2278117
	09/24/2021	09/29/2021 16:23	Simonne.V. Calhoun	09/30/2021 14:44	Lipi Saha	2278118
	09/24/2021	10/05/2021 13:20	Simonne.V. Calhoun	10/06/2021 13:53	Lipi Saha	2278114
EPA 365.1 Rev. 2.0 dissolved	09/24/2021			09/24/2021 14:50	James L Waggeberby	2278120
	09/24/2021			09/24/2021 14:51	James L Waggeberby	2278121
	09/24/2021			09/24/2021 14:56	James L Waggeberby	2278122
	09/24/2021			09/24/2021 14:57	James L Waggeberby	2278123
	09/24/2021			09/24/2021 15:38	James L Waggeberby	2278119
EPA 8321B	09/24/2021	09/28/2021 09:00	Manjita Shrestha	09/28/2021 12:30	Manjita Shrestha	2278109
	09/24/2021	09/28/2021 09:00	Manjita Shrestha	09/28/2021 12:47	Manjita Shrestha	2278110
	09/24/2021	09/28/2021 09:00	Manjita Shrestha	09/28/2021 13:04	Manjita Shrestha	2278111
	09/24/2021	09/28/2021 09:00	Manjita Shrestha	09/28/2021 13:20	Manjita Shrestha	2278112
	09/24/2021	09/28/2021 09:00	Manjita Shrestha	09/28/2021 13:54	Manjita Shrestha	2278113