Chemical Analysis Report

WQAP-2022-08-05-01

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

Event Description: **Algal Bloom Response - CEROC**
Request ID: **RQ-2022-07-18-57**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

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Certified by: Colin Wright, Program Administrator

Date Certified: 23-AUG-2022 10:50

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: HABCE0125 Lake Dot - fishing pier **Collection Date/Time: 08/04/2022 10:14**

Field ID: HABCE0125_LakeDot Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2346524	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P417716	
		Cylindrospermopsin	0.10	U	ug/L	P417715	
		Desmethyl microcystin LR	0.25	U	ug/L	P417715	
		Microcystin HilR	0.25	U	ug/L	P417715	
		Microcystin HtyR	0.25	U	ug/L	P417715	
		Microcystin LA	0.10	U	ug/L	P417715	
		Microcystin LF	0.10	U	ug/L	P417715	MS, RPD
		Microcystin LR	0.25	U	ug/L	P417715	MS
		Microcystin LW	0.25	U	ug/L	P417715	MS
		Microcystin LY	0.10	U	ug/L	P417715	RPD
		Microcystin RR	0.16	I	ug/L	P417715	
		Microcystin WR	0.50	U	ug/L	P417715	
		Microcystin YR	0.25	U	ug/L	P417715	
		Nodularin-R	0.10	U	ug/L	P417715	
2346527	EPA 350.1 Rev. 2.0	Ammonia-N	0.15		mg N/L	P417825	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P418180	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P418107	
	EPA 365.1 Rev. 2.0	Total-P	0.060		mg P/L	P417927	
2346530	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P417729	

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: HABCE0116 Lake Griffin - at easement **Collection Date/Time: 08/04/2022 11:31**

Field ID: HABCE0116_LakeGriffin Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2346525	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P417716	
		Cylindrospermopsin	0.15	I	ug/L	P417715	
		Desmethyl microcystin LR	0.25	U	ug/L	P417715	
		Microcystin HilR	0.25	U	ug/L	P417715	
		Microcystin HtyR	0.25	U	ug/L	P417715	
		Microcystin LA	0.10	U	ug/L	P417715	
		Microcystin LF	0.10	U	ug/L	P417715	MS, RPD
		Microcystin LR	0.25	U	ug/L	P417715	MS
		Microcystin LW	0.25	U	ug/L	P417715	MS
		Microcystin LY	0.10	U	ug/L	P417715	RPD
		Microcystin RR	0.10	U	ug/L	P417715	
		Microcystin WR	0.50	U	ug/L	P417715	
		Microcystin YR	0.25	U	ug/L	P417715	
		Nodularin-R	0.10	U	ug/L	P417715	
2346528	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P417825	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P418180	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P417876	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P417927	
2346531	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P417729	

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: HABCE0132 Fish Lake - Sexton Park **Collection Date/Time: 08/04/2022 13:17**

Field ID: HABCE0132_FishLake Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2346526	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P417716	
		Cylindrospermopsin	0.29	I	ug/L	P417715	
		Desmethyl microcystin LR	0.25	U	ug/L	P417715	
		Microcystin HilR	0.25	U	ug/L	P417715	
		Microcystin HtyR	0.25	U	ug/L	P417715	
		Microcystin LA	0.10	U	ug/L	P417715	
		Microcystin LF	0.10	U	ug/L	P417715	MS, RPD
		Microcystin LR	0.25	U	ug/L	P417715	MS
		Microcystin LW	0.25	U	ug/L	P417715	MS
		Microcystin LY	0.10	U	ug/L	P417715	RPD
		Microcystin RR	0.10	U	ug/L	P417715	
		Microcystin WR	0.50	U	ug/L	P417715	
		Microcystin YR	0.25	U	ug/L	P417715	
		Nodularin-R	0.10	U	ug/L	P417715	
2346529	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P417974	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P418182	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P417876	
	EPA 365.1 Rev. 2.0	Total-P	0.053		mg P/L	P417927	
2346532	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P417729	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417825

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417974

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418180

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418182

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417876

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418107

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P417927

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P417729

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

Reference Method: EPA 8321B
Batch ID: P417715

Component	Result	Code	Units
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin HilR	0.25	U	ug/L
Microcystin HtyR	0.25	U	ug/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 8321B
Batch ID: P417715

Component	Result	Code	Units
Microcystin LA	0.10	U	ug/L
Microcystin LF	0.10	U	ug/L
Microcystin LR	0.25	U	ug/L
Microcystin LW	0.25	U	ug/L
Microcystin LY	0.10	U	ug/L
Microcystin RR	0.10	U	ug/L
Microcystin WR	0.50	U	ug/L
Microcystin YR	0.25	U	ug/L
Nodularin-R	0.10	U	ug/L

Reference Method: EPA 8321B
Batch ID: P417716

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417825

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417974

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: P418180

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418182

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417876

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	96.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418107

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P417927

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P417729

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

Reference Method: EPA 8321B
Batch ID: P417715

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	87.6		P	40 - 150
Desmethyl microcystin LR	116		P	40 - 150
Microcystin HilR	110		P	40 - 150
Microcystin HtyR	114		P	40 - 150

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P417715

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Microcystin LA	122		P	40 - 150
Microcystin LF	133		P	40 - 150
Microcystin LR	148		P	40 - 150
Microcystin LW	143		P	40 - 150
Microcystin LY	114		P	40 - 150
Microcystin RR	100		P	40 - 150
Microcystin WR	137		P	40 - 150
Microcystin YR	93.8		P	40 - 150
Nodularin-R	83.5		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P417716

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	121		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417825

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2346125	Ammonia-N	99.8	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417974

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2346644	Ammonia-N	98.4	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418182

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2347718	Kjeldahl Nitrogen	105	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417876

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2346492	NO2NO3-N	94.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418107

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2346527	NO2NO3-N	96.4	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P417927

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2346528	Total-P	107	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P417729

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2346548	O-Phosphate-P	100	99.4	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P417715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2346505	Cylindrospermopsin	86.7	80.8	P/P	40 - 150
2346505	Desmethyl microcystin LR	132	113	P/P	40 - 150
2346505	Microcystin HilR	114	111	P/P	40 - 150
2346505	Microcystin HtyR	118	110	P/P	40 - 150
2346505	Microcystin LA	112	87.4	P/P	40 - 150
2346505	Microcystin LF	176	127	F/P	40 - 150
2346505	Microcystin LR	176	163	F/F	40 - 150
2346505	Microcystin LW	154	163	F/F	40 - 150
2346505	Microcystin LY	111	78.4	P/P	40 - 150
2346505	Microcystin RR	101	93.7	P/P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P417715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2346505	Microcystin WR	145	135	P/P	40 - 150
2346505	Microcystin YR	107	105	P/P	40 - 150
2346505	Nodularin-R	96.0	89.4	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P417716

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2346505	Anatoxin-a	126	125	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417825

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2346125	Ammonia-N	0.691	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417974

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2346644	Ammonia-N	2.61	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418180

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2346554	Kjeldahl Nitrogen	1.43	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418182

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2347718	Kjeldahl Nitrogen	0.965	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417876

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2346492	NO2NO3-N	0.241	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418107

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2346527	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P417927

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2346528	Total-P	2.70	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P417729

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2346548	O-Phosphate-P	0.602	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P417715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2346505	Cylindrospermopsin	7.10	Spike	P	0 - 30
2346505	Desmethyl microcystin LR	16.3	Spike	P	0 - 30
2346505	Microcystin HilR	1.90	Spike	P	0 - 30
2346505	Microcystin HtyR	7.11	Spike	P	0 - 30
2346505	Microcystin LA	25.0	Spike	P	0 - 30
2346505	Microcystin LF	32.7	Spike	F	0 - 30
2346505	Microcystin LR	8.05	Spike	P	0 - 30
2346505	Microcystin LW	5.62	Spike	P	0 - 30
2346505	Microcystin LY	34.2	Spike	F	0 - 30
2346505	Microcystin RR	7.39	Spike	P	0 - 30
2346505	Microcystin WR	6.99	Spike	P	0 - 30
2346505	Microcystin YR	1.42	Spike	P	0 - 30
2346505	Nodularin-R	7.10	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P417716

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2346505	Anatoxin-a	1.45	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2346524
Field Sample ID: HABCE0125_LakeDot

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	136	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	105	P	30 - 160

Lab Sample ID: 2346525
Field Sample ID: HABCE0116_LakeGriffin

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	134	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	108	P	30 - 160

Lab Sample ID: 2346526
Field Sample ID: HABCE0132_FishLake

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR ethyl-d5	138	P	30 - 160
EPA 8321B	Neosaxitoxin-15N7	93.5	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 8321B
Run ID: A113886
Included Lab Sample IDs: 2346524, 2346525, 2346526

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	115	105	P/P	50 - 160
Anatoxin-a	124	115	P/P	50 - 160

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A113934
Included Lab Sample IDs: 2346530, 2346531, 2346532

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	101	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A113943
Included Lab Sample IDs: 2346524, 2346525, 2346526

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	86.3	88.2	P/P	50 - 160
Cylindrospermopsin	94.9	86.3	P/P	50 - 160
Desmethyl microcystin LR	105	111	P/P	50 - 160
Desmethyl microcystin LR	111	110	P/P	50 - 160
Microcystin HilR	101	103	P/P	50 - 160
Microcystin HilR	105	101	P/P	50 - 160
Microcystin HtyR	103	108	P/P	50 - 160
Microcystin HtyR	108	109	P/P	50 - 160
Microcystin LA	115	92.0	P/P	50 - 160
Microcystin LA	92.0	93.7	P/P	50 - 160
Microcystin LF	139	155	P/P	50 - 160
Microcystin LF	155	144	P/P	50 - 160
Microcystin LR	139	141	P/P	50 - 160
Microcystin LR	141	136	P/P	50 - 160
Microcystin LW	148	153	P/P	50 - 160
Microcystin LW	153	138	P/P	50 - 160
Microcystin LY	103	97.7	P/P	50 - 160
Microcystin LY	104	103	P/P	50 - 160
Microcystin RR	97.3	95.2	P/P	50 - 160
Microcystin RR	99.7	97.3	P/P	50 - 160
Microcystin WR	134	137	P/P	50 - 160
Microcystin WR	137	132	P/P	50 - 160
Microcystin YR	95.9	98.6	P/P	50 - 160
Microcystin YR	97.4	95.9	P/P	50 - 160
Nodularin-R	83.9	82.1	P/P	50 - 160
Nodularin-R	85.9	83.9	P/P	50 - 160

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A113986
Included Lab Sample IDs: 2346527, 2346528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.9	99.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A114001
Included Lab Sample IDs: 2346528, 2346529

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.5	97.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A114030
Included Lab Sample IDs: 2346529

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.6	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A114034
Included Lab Sample IDs: 2346527, 2346529

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A114036
Included Lab Sample IDs: 2346528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.2	97.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A114090
Included Lab Sample IDs: 2346527

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.0	96.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A114226
Included Lab Sample IDs: 2346527, 2346528, 2346529

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	95.6	P/P	90 - 110
Kjeldahl Nitrogen	95.0	98.9	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	95.6	99.8	101			0.691
	Ammonia-N	96.8	98.4	101			2.61
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102					1.43
	Kjeldahl Nitrogen	99.4	105	103			0.965
EPA 353.2 Rev. 2.0	NO2NO3-N	96.5	94.0				0.241
	NO2NO3-N	97.0	96.4	96.4			0.0
EPA 365.1 Rev. 2.0	Total-P	105	107	104			2.70
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.8	100	99.4			0.602
EPA 8321B	Anatoxin-a	121	126	125			1.45
	Cylindrospermopsin	87.6	86.7	80.8			7.10
	Desmethyl microcystin LR	116	132	113			16.3
	Microcystin HilR	110	114	111			1.90
	Microcystin HtyR	114	118	110			7.11
	Microcystin LA	122	112	87.4			25.0
	Microcystin LF	133	176	127			32.7
	Microcystin LR	148	176	163			8.05
	Microcystin LW	143	154	163			5.62
	Microcystin LY	114	111	78.4			34.2
	Microcystin RR	100	101	93.7			7.39
	Microcystin WR	137	145	135			6.99
	Microcystin YR	93.8	107	105			1.42
	Nodularin-R	83.5	96.0	89.4			7.10

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2346527, 2346528, 2346529
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2346527, 2346528, 2346529
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2346527, 2346528, 2346529
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2346527, 2346528, 2346529
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2346530, 2346531, 2346532
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2346524, 2346525, 2346526
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2346524, 2346525, 2346526

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	08/05/2022			08/09/2022 11:09	Ping Hua	2346527
	08/05/2022			08/09/2022 11:10	Ping Hua	2346528
	08/05/2022			08/11/2022 12:01	Ping Hua	2346529
EPA 351.2 Rev. 2.0	08/05/2022	08/17/2022 14:08	Samantha L Bates	08/19/2022 13:21	Alexandra J Mattheus	2346527
	08/05/2022	08/17/2022 14:08	Samantha L Bates	08/19/2022 13:23	Alexandra J Mattheus	2346528
	08/05/2022	08/17/2022 14:08	Samantha L Bates	08/19/2022 13:49	Alexandra J Mattheus	2346529
EPA 353.2 Rev. 2.0	08/05/2022			08/10/2022 09:46	Beverly Y. Sanders	2346528
	08/05/2022			08/10/2022 09:47	Beverly Y. Sanders	2346529
	08/05/2022			08/15/2022 09:39	Beverly Y. Sanders	2346527
EPA 365.1 Rev. 2.0	08/05/2022	08/10/2022 16:53	Adam P Silver	08/11/2022 11:49	James L Waggerby	2346527
	08/05/2022	08/10/2022 16:53	Adam P Silver	08/11/2022 11:50	James L Waggerby	2346529
	08/05/2022	08/10/2022 16:53	Adam P Silver	08/11/2022 13:23	Simonne.V. Calhoun	2346528
EPA 365.1 Rev. 2.0 dissolved	08/05/2022			08/05/2022 14:34	Chandler E Cox	2346530
	08/05/2022			08/05/2022 14:35	Chandler E Cox	2346531
	08/05/2022			08/05/2022 14:36	Chandler E Cox	2346532
EPA 8321B	08/05/2022	08/05/2022 12:00	Umesh Chiluwal	08/05/2022 17:41	Umesh Chiluwal	2346524
	08/05/2022	08/05/2022 12:00	Umesh Chiluwal	08/05/2022 17:58	Umesh Chiluwal	2346525
	08/05/2022	08/05/2022 12:00	Umesh Chiluwal	08/05/2022 18:32	Umesh Chiluwal	2346526
	08/05/2022	08/05/2022 12:00	Umesh Chiluwal	08/05/2022 23:08	Umesh Chiluwal	2346524
	08/05/2022	08/05/2022 12:00	Umesh Chiluwal	08/05/2022 23:22	Umesh Chiluwal	2346525
	08/05/2022	08/05/2022 12:00	Umesh Chiluwal	08/05/2022 23:50	Umesh Chiluwal	2346526