Chemical Analysis Report

SO-DIST-2023-12-08-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Algal Bloom Response -SOROC**
Request ID: **RQ-2023-07-24-40**
Customer: **SO-DIST**
Project ID: **BLOOM-RESP**

Send Reports to:
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FLDEP South District Office
2295 Victoria Ave. Suite 314
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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: Lake Placid **Collection Date/Time: 12/07/2023 08:38**

Field ID: HAB-HC-120723-0838 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2455667	DEP SOP: NU-094-1	Color (true)	19		PCU	P438721	
2455670	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P438985	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P439050	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P438890	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P438871	
2455673	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P438718	
2455681	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P438795	
		Cylindrospermopsin	0.10	U	ug/L	P438793	
		Desmethyl microcystin LR	0.25	U	ug/L	P438793	
		Microcystin HilR	0.25	U	ug/L	P438793	
		Microcystin HtyR	0.25	U	ug/L	P438793	
		Microcystin LA	0.12	I	ug/L	P438793	
		Microcystin LF	0.10	U	ug/L	P438793	
		Microcystin LR	0.25	U	ug/L	P438793	
		Microcystin LW	0.25	U	ug/L	P438793	
		Microcystin LY	0.10	U	ug/L	P438793	
		Microcystin RR	0.10	U	ug/L	P438793	
		Microcystin WR	0.50	U	ug/L	P438793	
		Neosaxitoxin	0.50	U	ug/L	P438795	
		Microcystin YR	0.25	U	ug/L	P438793	
		Saxitoxin	0.50	U	ug/L	P438795	
		Nodularin-R	0.10	U	ug/L	P438793	

Sample Location: Lake June-in-Winter Boat Ramp **Collection Date/Time: 12/07/2023 09:38**

Field ID: HAB-HC-120723-0938 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2455668	DEP SOP: NU-094-1	Color (true)	12		PCU	P438721	
2455671	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P438985	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P439050	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P438890	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P438871	
2455674	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P438718	
2455682	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P438795	
		Cylindrospermopsin	0.10	U	ug/L	P438793	
		Desmethyl microcystin LR	0.25	U	ug/L	P438793	
		Microcystin HilR	0.25	U	ug/L	P438793	
		Microcystin HtyR	0.25	U	ug/L	P438793	
		Microcystin LA	0.10	U	ug/L	P438793	
		Microcystin LF	0.10	U	ug/L	P438793	
		Microcystin LR	0.25	U	ug/L	P438793	
		Microcystin LW	0.25	U	ug/L	P438793	
		Microcystin LY	0.10	U	ug/L	P438793	
		Microcystin RR	0.10	U	ug/L	P438793	
		Microcystin WR	0.50	U	ug/L	P438793	
		Neosaxitoxin	0.50	U	ug/L	P438795	
		Microcystin YR	0.25	U	ug/L	P438793	
		Saxitoxin	0.50	U	ug/L	P438795	
		Nodularin-R	0.10	U	ug/L	P438793	

Sample Location: Lake Glenada Boat Ramp **Collection Date/Time: 12/07/2023 10:50**

Field ID: HAB-HC-120723-1050 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2455669	DEP SOP: NU-094-1	Color (true)	33		PCU	P438721	
2455672	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P438985	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P439050	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P438890	
	EPA 365.1 Rev. 2.0	Total-P	0.065		mg P/L	P438871	
2455675	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P438718	
2455683	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P438795	
		Cylindrospermopsin	0.10	U	ug/L	P438793	
		Desmethyl microcystin LR	0.26	I	ug/L	P438793	
		Microcystin HilR	0.25	U	ug/L	P438793	
		Microcystin HtyR	0.25	U	ug/L	P438793	
		Microcystin LA	0.16	I	ug/L	P438793	
		Microcystin LF	0.10	I	ug/L	P438793	
		Microcystin LR	7.2		ug/L	P438793	
		Microcystin LW	0.25	U	ug/L	P438793	
		Microcystin LY	0.10	U	ug/L	P438793	
		Microcystin RR	0.15	I	ug/L	P438793	
		Microcystin WR	0.50	U	ug/L	P438793	
		Neosaxitoxin	0.50	U	ug/L	P438795	
		Microcystin YR	0.25	U	ug/L	P438793	
		Saxitoxin	0.50	U	ug/L	P438795	
		Nodularin-R	0.10	U	ug/L	P438793	

Quality Assurance Report
Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P438721

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438985

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P439050

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438890

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438871

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P438718

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

Reference Method: EPA 8321B
Batch ID: P438793

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
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
Method Blank Results

Reference Method: EPA 8321B
Batch ID: P438795

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Neosaxitoxin	0.50	U	ug/L
Saxitoxin	0.50	U	ug/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P438721

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438985

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P439050

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438890

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438871

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P438718

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

Reference Method: EPA 8321B
Batch ID: P438793

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	79.8		P	40 - 150
Desmethyl microcystin LR	95.5		P	40 - 150
Microcystin HilR	104		P	40 - 150
Microcystin HtyR	110		P	40 - 150
Microcystin LA	98.8		P	40 - 150
Microcystin LF	107		P	40 - 150
Microcystin LR	107		P	40 - 150
Microcystin LW	99.7		P	40 - 150
Microcystin LY	106		P	40 - 150
Microcystin RR	78.8		P	40 - 150
Microcystin WR	111		P	40 - 150
Microcystin YR	104		P	40 - 150
Nodularin-R	88.7		P	40 - 150

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P438795

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	92.3		P	40 - 150
Neosaxitoxin	89.1		P	40 - 150
Saxitoxin	97.2		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438985

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2455628	Ammonia-N	97.6	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P439050

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2455630	Kjeldahl Nitrogen	97.2	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438890

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2455630	NO2NO3-N	96.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438871

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2455671	Total-P	106	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P438718

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2455674	O-Phosphate-P	97.2	97.7	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P438793

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2455681	Cylindrospermopsin	82.1	78.0	P/P	40 - 150
2455681	Desmethyl microcystin LR	102	106	P/P	40 - 150
2455681	Microcystin HilR	107	110	P/P	40 - 150
2455681	Microcystin HtyR	104	104	P/P	40 - 150
2455681	Microcystin LA	91.9	96.4	P/P	40 - 150
2455681	Microcystin LF	117	122	P/P	40 - 150
2455681	Microcystin LR	109	111	P/P	40 - 150
2455681	Microcystin LW	107	109	P/P	40 - 150
2455681	Microcystin LY	104	107	P/P	40 - 150
2455681	Microcystin RR	77.5	79.4	P/P	40 - 150
2455681	Microcystin WR	111	121	P/P	40 - 150
2455681	Microcystin YR	112	113	P/P	40 - 150
2455681	Nodularin-R	84.9	84.5	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P438795

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2455681	Anatoxin-a	83.9	86.5	P/P	40 - 150
2455681	Neosaxitoxin	73.5	75.1	P/P	40 - 150
2455681	Saxitoxin	81.4	88.1	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P438721

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2455684	Color (true)	1.71	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438985

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2455628	Ammonia-N	1.41	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P439050

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2455630	Kjeldahl Nitrogen	1.51	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438890

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2455630	NO2NO3-N	1.26	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438871

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2455671	Total-P	0.369	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P438718

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2455674	O-Phosphate-P	0.513	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P438793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2455681	Cylindrospermopsin	5.20	Spike	P	0 - 30
2455681	Desmethyl microcystin LR	3.10	Spike	P	0 - 30
2455681	Microcystin HilR	2.67	Spike	P	0 - 30
2455681	Microcystin HtyR	0.454	Spike	P	0 - 30
2455681	Microcystin LA	4.77	Spike	P	0 - 30
2455681	Microcystin LF	4.34	Spike	P	0 - 30
2455681	Microcystin LR	2.02	Spike	P	0 - 30
2455681	Microcystin LW	2.25	Spike	P	0 - 30
2455681	Microcystin LY	2.87	Spike	P	0 - 30

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P438793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2455681	Microcystin RR	2.51	Spike	P	0 - 30
2455681	Microcystin WR	8.73	Spike	P	0 - 30
2455681	Microcystin YR	1.17	Spike	P	0 - 30
2455681	Nodularin-R	0.484	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P438795

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2455681	Anatoxin-a	3.13	Spike	P	0 - 30
2455681	Neosaxitoxin	2.25	Spike	P	0 - 30
2455681	Saxitoxin	7.88	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2455681
Field Sample ID: HAB-HC-120723-0838

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	95.7	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	95.9	P	30 - 160

Lab Sample ID: 2455682
Field Sample ID: HAB-HC-120723-0938

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	88.8	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	104	P	30 - 160

Lab Sample ID: 2455683
Field Sample ID: HAB-HC-120723-1050

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	90.0	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	120	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A123105
Included Lab Sample IDs: 2455673, 2455674, 2455675

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

Reference Method: DEP SOP: NU-094-1
Run ID: A123108
Included Lab Sample IDs: 2455667, 2455668, 2455669

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A123188
Included Lab Sample IDs: 2455670, 2455671, 2455672

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A123224
Included Lab Sample IDs: 2455672

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.5	98.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A123230
Included Lab Sample IDs: 2455670, 2455671, 2455672

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.3	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A123232
Included Lab Sample IDs: 2455670, 2455671

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

Reference Method: EPA 8321B
Run ID: A123233
Included Lab Sample IDs: 2455681, 2455682, 2455683

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	89.2	87.9	P/P	50 - 160
Desmethyl microcystin LR	107	110	P/P	50 - 160
Microcystin HilR	116	123	P/P	50 - 160
Microcystin HtyR	110	128	P/P	50 - 160
Microcystin LA	105	119	P/P	50 - 160
Microcystin LF	115	132	P/P	50 - 160
Microcystin LR	115	122	P/P	50 - 160
Microcystin LW	105	122	P/P	50 - 160
Microcystin LY	108	116	P/P	50 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 8321B
Run ID: A123233
Included Lab Sample IDs: 2455681, 2455682, 2455683

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Microcystin RR	83.0	85.3	P/P	50 - 160
Microcystin WR	110	133	P/P	50 - 160
Microcystin YR	121	134	P/P	50 - 160
Nodularin-R	90.4	102	P/P	50 - 160

Reference Method: EPA 8321B
Run ID: A123239
Included Lab Sample IDs: 2455681, 2455682, 2455683

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	83.1	87.9	P/P	50 - 160
Neosaxitoxin	86.4	86.8	P/P	50 - 160
Saxitoxin	92.0	95.6	P/P	50 - 160

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A123294
Included Lab Sample IDs: 2455670, 2455671, 2455672

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	95.8	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
DEP SOP: NU-094-1	Color (true)	102				1.71	
EPA 350.1 Rev. 2.0	Ammonia-N	95.8	97.6	99.4			1.41
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	97.2	100			1.51
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	96.2				1.26
EPA 365.1 Rev. 2.0	Total-P	106	106	105			0.369
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	97.2	97.7			0.513
EPA 8321B	Anatoxin-a	92.3	83.9	86.5			3.13
	Cylindrospermopsin	79.8	82.1	78.0			5.20
	Desmethyl microcystin LR	95.5	102	106			3.10
	Microcystin HilR	104	107	110			2.67
	Microcystin HtyR	110	104	104			0.454
	Microcystin LA	98.8	91.9	96.4			4.77
	Microcystin LF	107	117	122			4.34
	Microcystin LR	107	109	111			2.02
	Microcystin LW	99.7	107	109			2.25
	Microcystin LY	106	104	107			2.87
	Microcystin RR	78.8	77.5	79.4			2.51
	Microcystin WR	111	111	121			8.73
	Microcystin YR	104	112	113			1.17
	Neosaxitoxin	89.1	73.5	75.1			2.25
	Nodularin-R	88.7	84.9	84.5			0.484
	Saxitoxin	97.2	81.4	88.1			7.88

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2455667, 2455668, 2455669
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2455670, 2455671, 2455672
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2455670, 2455671, 2455672
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2455670, 2455671, 2455672
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2455670, 2455671, 2455672
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2455673, 2455674, 2455675
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2455681, 2455682, 2455683
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2455681, 2455682, 2455683

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	12/08/2023			12/08/2023 14:36	Samantha L Bates	2455667
	12/08/2023			12/08/2023 14:37	Samantha L Bates	2455668
	12/08/2023			12/08/2023 14:38	Samantha L Bates	2455669
EPA 350.1 Rev. 2.0	12/08/2023			12/14/2023 11:07	Khloe J Berg	2455670
	12/08/2023			12/14/2023 11:08	Khloe J Berg	2455671
	12/08/2023			12/14/2023 11:09	Khloe J Berg	2455672
EPA 351.2 Rev. 2.0	12/08/2023	12/15/2023 13:03	Simonne.V. Calhoun	12/18/2023 14:21	Samantha L Bates	2455670
	12/08/2023	12/15/2023 13:03	Simonne.V. Calhoun	12/18/2023 14:23	Samantha L Bates	2455671
	12/08/2023	12/15/2023 13:03	Simonne.V. Calhoun	12/18/2023 14:25	Samantha L Bates	2455672
EPA 353.2 Rev. 2.0	12/08/2023			12/12/2023 13:36	Fadila Guebre	2455670
	12/08/2023			12/12/2023 13:38	Fadila Guebre	2455671
	12/08/2023			12/12/2023 13:39	Fadila Guebre	2455672
EPA 365.1 Rev. 2.0	12/08/2023	12/13/2023 13:13	Adam P Silver	12/14/2023 11:23	James L Waggerby	2455672
	12/08/2023	12/13/2023 13:13	Adam P Silver	12/14/2023 14:55	James L Waggerby	2455671
	12/08/2023	12/13/2023 13:13	Adam P Silver	12/14/2023 14:56	James L Waggerby	2455670
EPA 365.1 Rev. 2.0 dissolved	12/08/2023			12/08/2023 14:05	Elise M. Gillis	2455674
	12/08/2023			12/08/2023 14:09	Elise M. Gillis	2455673
	12/08/2023			12/08/2023 14:10	Elise M. Gillis	2455675
EPA 8321B	12/08/2023	12/14/2023 05:50	Hana Lee	12/14/2023 07:04	Tae K Lee	2455681
	12/08/2023	12/14/2023 05:50	Hana Lee	12/14/2023 07:20	Tae K Lee	2455682
	12/08/2023	12/14/2023 05:50	Hana Lee	12/14/2023 07:37	Tae K Lee	2455683
	12/08/2023	12/14/2023 08:00	Hana Lee	12/14/2023 17:32	Tae K Lee	2455681
	12/08/2023	12/14/2023 08:00	Hana Lee	12/14/2023 17:45	Tae K Lee	2455682
	12/08/2023	12/14/2023 08:00	Hana Lee	12/14/2023 17:59	Tae K Lee	2455683