

Chemical Analysis Report

SO-DIST-2023-08-23-01

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

Event Description: **Algal Bloom Response -SOROC**
Request ID: **RQ-2023-07-24-41**
Customer: **SO-DIST**
Project ID: **BLOOM-RESP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 314
Fort Myers, FL 33901-3381
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Certified by: Colin Wright, Program Administrator

Date Certified: 13-SEP-2023 08:22

A handwritten signature in black ink, appearing to read "Colin Wright", is placed over a light blue rectangular background.

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: Caloosahatchee River - Horton Park

Collection Date/Time: 08/22/2023 09:30

Field ID: HAB-SD-082223-0930

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2432776	DEP SOP: NU-094-1	Color (true)	150		PCU	P434244	
2432779	EPA 350.1 Rev. 2.0	Ammonia-N	0.051		mg N/L	P434447	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P434724	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.26		mg N/L	P434741	
	EPA 365.1 Rev. 2.0	Total-P	0.21		mg P/L	P434358	
2432782	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.14		mg P/L	P434237	
2432785	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P434215	
		Cylindrospermopsin	0.10	U	ug/L	P434214	
		Desmethyl microcystin LR	0.25	U	ug/L	P434214	
		Microcystin HilR	0.25	U	ug/L	P434214	
		Microcystin HtyR	0.25	U	ug/L	P434214	
		Microcystin LA	0.10	U	ug/L	P434214	
		Microcystin LF	0.10	U	ug/L	P434214	
		Microcystin LR	0.36	I	ug/L	P434214	
		Microcystin LW	0.25	U	ug/L	P434214	
		Microcystin LY	0.10	U	ug/L	P434214	
		Microcystin RR	0.10	U	ug/L	P434214	
		Microcystin WR	0.50	U	ug/L	P434214	
		Neosaxitoxin	0.50	U	ug/L	P434215	
		Microcystin YR	0.25	U	ug/L	P434214	
		Saxitoxin	0.50	U	ug/L	P434215	
		Nodularin-R	0.10	U	ug/L	P434214	

Sample Location: Caloosahatchee River - Jaycee park

Collection Date/Time: 08/22/2023 09:45

Field ID: HAB-SD-082223-0945

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2432777	DEP SOP: NU-094-1	Color (true)	120		PCU	P434245	
2432780	EPA 350.1 Rev. 2.0	Ammonia-N	0.056		mg N/L	P434579	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.97		mg N/L	P434647	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.26		mg N/L	P434558	
	EPA 365.1 Rev. 2.0	Total-P	0.18		mg P/L	P434272	
2432783	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.14		mg P/L	P434239	
2432786	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P434215	
		Cylindrospermopsin	0.10	U	ug/L	P434214	
		Desmethyl microcystin LR	0.25	U	ug/L	P434214	
		Microcystin HilR	0.25	U	ug/L	P434214	
		Microcystin HtyR	0.25	U	ug/L	P434214	
		Microcystin LA	0.10	U	ug/L	P434214	
		Microcystin LF	0.10	U	ug/L	P434214	
		Microcystin LR	0.49	I	ug/L	P434214	
		Microcystin LW	0.25	U	ug/L	P434214	
		Microcystin LY	0.10	U	ug/L	P434214	
		Microcystin RR	0.10	U	ug/L	P434214	
		Microcystin WR	0.50	U	ug/L	P434214	
		Neosaxitoxin	0.50	U	ug/L	P434215	
		Microcystin YR	0.25	U	ug/L	P434214	
		Saxitoxin	0.50	U	ug/L	P434215	
		Nodularin-R	0.10	U	ug/L	P434214	

Sample Location: Caloosahatchee River - Whitecap Cir Dock

Collection Date/Time: 08/22/2023 09:00

Field ID: HAB-SD-082223-0900

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2432775	DEP SOP: NU-094-1	Color (true)	130		PCU	P434244	
2432778	EPA 350.1 Rev. 2.0	Ammonia-N	0.11		mg N/L	P434447	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P434650	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.24		mg N/L	P434741	
	EPA 365.1 Rev. 2.0	Total-P	0.17		mg P/L	P434358	
2432781	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.12		mg P/L	P434237	
2432784	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P434215	
		Cylindrospermopsin	0.10	U	ug/L	P434214	
		Desmethyl microcystin LR	0.25	U	ug/L	P434214	
		Microcystin HilR	0.25	U	ug/L	P434214	
		Microcystin HtyR	0.25	U	ug/L	P434214	
		Microcystin LA	0.10	U	ug/L	P434214	
		Microcystin LF	0.10	U	ug/L	P434214	
		Microcystin LR	0.28	I	ug/L	P434214	
		Microcystin LW	0.25	U	ug/L	P434214	
		Microcystin LY	0.10	U	ug/L	P434214	
		Microcystin RR	0.10	U	ug/L	P434214	
		Microcystin WR	0.50	U	ug/L	P434214	
		Neosaxitoxin	0.50	U	ug/L	P434215	
		Microcystin YR	0.25	U	ug/L	P434214	
		Saxitoxin	0.50	U	ug/L	P434215	
		Nodularin-R	0.10	U	ug/L	P434214	

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P434244

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: DEP SOP: NU-094-1
Batch ID: P434245

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434447

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434579

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434647

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434650

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434724

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434558

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434741

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434272

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434358

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P434237

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P434239

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

Reference Method: EPA 8321B
Batch ID: P434214

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

Reference Method: EPA 8321B
Batch ID: P434215

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: P434244

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

Reference Method: DEP SOP: NU-094-1
Batch ID: P434245

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: P434447

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434579

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434647

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434650

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434724

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	109		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434558

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434741

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434272

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434358

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P434237

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: P434239

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.9		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P434214

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	95.1		P	40 - 160
Desmethyl microcystin LR	96.1		P	40 - 160
Microcystin HILR	91.6		P	40 - 160
Microcystin HtyR	84.2		P	40 - 160
Microcystin LA	98.0		P	40 - 160
Microcystin LF	95.0		P	40 - 160
Microcystin LR	83.1		P	40 - 160
Microcystin LW	94.8		P	40 - 160
Microcystin LY	86.7		P	40 - 160
Microcystin RR	95.4		P	40 - 160
Microcystin WR	106		P	40 - 160
Microcystin YR	91.7		P	40 - 160
Nodularin-R	73.9		P	40 - 160

Reference Method: EPA 8321B
Batch ID: P434215

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	113		P	40 - 150
Neosaxitoxin	93.9		P	40 - 150
Saxitoxin	92.5		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434447

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432701	Ammonia-N	98.6	98.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434579

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2433894	Ammonia-N	99.2	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434647

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432936	Kjeldahl Nitrogen	101	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434650

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432778	Kjeldahl Nitrogen	91.1	98.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434724

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432703	Kjeldahl Nitrogen	111	103	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432410	NO2NO3-N	97.4	98.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434741

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432701	NO2NO3-N	104	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434272

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2431289	Total-P	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434358

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432653	Total-P	104	104	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P434237

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2433072	O-Phosphate-P	97.9	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P434239

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432783	O-Phosphate-P	98.8	97.6	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P434214

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432784	Cylindrospermopsin	94.4	84.7	P/P	40 - 160
2432784	Desmethyl microcystin LR	101	95.9	P/P	40 - 160
2432784	Microcystin H1R	88.5	83.3	P/P	40 - 160
2432784	Microcystin HtyR	92.4	90.6	P/P	40 - 160
2432784	Microcystin LA	101	92.5	P/P	40 - 160
2432784	Microcystin LF	101	104	P/P	40 - 160
2432784	Microcystin LR	92.2	79.4	P/P	40 - 160
2432784	Microcystin LW	97.6	91.0	P/P	40 - 160
2432784	Microcystin LY	84.1	82.7	P/P	40 - 160
2432784	Microcystin RR	92.7	87.6	P/P	40 - 160
2432784	Microcystin WR	104	97.4	P/P	40 - 160
2432784	Microcystin YR	87.3	78.7	P/P	40 - 160
2432784	Nodularin-R	87.4	86.4	P/P	40 - 160

Reference Method: EPA 8321B
Batch ID: P434215

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432784	Anatoxin-a	99.2	101	P/P	40 - 150
2432784	Neosaxitoxin	58.1	60.2	P/P	40 - 150
2432784	Saxitoxin	63.4	66.2	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P434244

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432648	Color (true)	2.54	Sample	P	0 - 20

Reference Method: DEP SOP: NU-094-1
Batch ID: P434245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432874	Color (true)	0.384	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434447

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432701	Ammonia-N	0.385	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434579

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2433894	Ammonia-N	0.372	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434647

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432936	Kjeldahl Nitrogen	1.86	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432778	Kjeldahl Nitrogen	4.48	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434724

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432703	Kjeldahl Nitrogen	4.92	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434558

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432410	NO2NO3-N	0.990	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P434741

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432701	NO2NO3-N	1.66	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P434272

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2431289	Total-P	0.607	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P434358

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432653	Total-P	0.0681	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P434237

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2433072	O-Phosphate-P	0.0526	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P434239

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432783	O-Phosphate-P	0.514	Spike	P	0 - 20

Reference Method: EPA 8321B

Batch ID: P434214

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432784	Cylindrospermopsin	10.8	Spike	P	0 - 30
2432784	Desmethyl microcystin LR	4.82	Spike	P	0 - 30
2432784	Microcystin H1LR	6.06	Spike	P	0 - 30
2432784	Microcystin HtyR	1.88	Spike	P	0 - 30
2432784	Microcystin LA	8.61	Spike	P	0 - 30
2432784	Microcystin LF	2.44	Spike	P	0 - 30
2432784	Microcystin LR	14.5	Spike	P	0 - 30
2432784	Microcystin LW	6.96	Spike	P	0 - 30
2432784	Microcystin LY	1.64	Spike	P	0 - 30
2432784	Microcystin RR	5.64	Spike	P	0 - 30
2432784	Microcystin WR	6.13	Spike	P	0 - 30
2432784	Microcystin YR	10.3	Spike	P	0 - 30
2432784	Nodularin-R	1.22	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P434215

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432784	Anatoxin-a	1.36	Spike	P	0 - 30
2432784	Neosaxitoxin	3.58	Spike	P	0 - 30
2432784	Saxitoxin	4.34	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2432784

Field Sample ID: HAB-SD-082223-0900

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	96.4	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	69.9	P	30 - 160

Lab Sample ID: 2432785

Field Sample ID: HAB-SD-082223-0930

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	93.7	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	90.8	P	30 - 160

Lab Sample ID: 2432786

Field Sample ID: HAB-SD-082223-0945

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	86.0	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	90.5	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A121203

Included Lab Sample IDs: 2432781, 2432782, 2432783

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.5	97.9	P/P	90 - 110
O-Phosphate-P	98.8	98.6	P/P	90 - 110

Reference Method: DEP SOP: NU-094-1

Run ID: A121205

Included Lab Sample IDs: 2432775, 2432776, 2432777

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	101	P/P	90 - 110
Color (true)	101	102	P/P	90 - 110
Color (true)	101	99.7	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A121207

Included Lab Sample IDs: 2432784, 2432785, 2432786

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	107	106	P/P	50 - 160
Neosaxitoxin	106	107	P/P	50 - 160
Saxitoxin	105	104	P/P	50 - 160

Reference Method: EPA 8321B

Run ID: A121208

Included Lab Sample IDs: 2432784, 2432785, 2432786

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	90.8	101	P/P	60 - 160
Desmethyl microcystin LR	94.9	99.0	P/P	50 - 160
Microcystin H1R	77.1	87.9	P/P	60 - 160
Microcystin HtyR	94.0	94.1	P/P	60 - 160
Microcystin LA	85.6	97.4	P/P	50 - 160
Microcystin LF	96.7	93.6	P/P	60 - 160
Microcystin LR	80.0	83.3	P/P	60 - 160
Microcystin LW	88.0	91.3	P/P	60 - 160
Microcystin LY	80.7	80.6	P/P	60 - 160
Microcystin RR	93.4	91.2	P/P	60 - 160
Microcystin WR	99.1	107	P/P	60 - 160
Microcystin YR	89.2	84.4	P/P	60 - 160
Nodularin-R	86.4	86.6	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A121250

Included Lab Sample IDs: 2432780

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A121286

Included Lab Sample IDs: 2432778, 2432779

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A121292

Included Lab Sample IDs: 2432778, 2432779

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.5	99.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A121351

Included Lab Sample IDs: 2432780

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A121360

Included Lab Sample IDs: 2432780

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A121418

Included Lab Sample IDs: 2432780

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A121424

Included Lab Sample IDs: 2432778, 2432779

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A121429

Included Lab Sample IDs: 2432778

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A121448

Included Lab Sample IDs: 2432779

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	109	P/P	90 - 110

Quality Assurance Report

Calibration Verification

* 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
DEP SOP: NU-094-1	Color (true)	103				2.54
	Color (true)	102				0.384
EPA 350.1 Rev. 2.0	Ammonia-N	96.0	98.6	98.0		0.385
	Ammonia-N	100	99.2	99.8		0.372
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	101	103		1.86
	Kjeldahl Nitrogen	104	91.1	98.4		4.48
	Kjeldahl Nitrogen	109	111	103		4.92
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	97.4	98.4		0.990
	NO2NO3-N	99.5	104	101		1.66
EPA 365.1 Rev. 2.0	Total-P	106	104	105		0.607
	Total-P	104	104	104		0.0681
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.8	97.9	98.0		0.0526
	O-Phosphate-P	97.9	98.8	97.6		0.514
EPA 8321B	Anatoxin-a	113	99.2	101		1.36
	Cylindrospermopsin	95.1	94.4	84.7		10.8
	Desmethyl microcystin LR	96.1	101	95.9		4.82
	Microcystin HilR	91.6	88.5	83.3		6.06
	Microcystin HtyR	84.2	92.4	90.6		1.88
	Microcystin LA	98.0	101	92.5		8.61
	Microcystin LF	95.0	101	104		2.44
	Microcystin LR	83.1	92.2	79.4		14.5
	Microcystin LW	94.8	97.6	91.0		6.96
	Microcystin LY	86.7	84.1	82.7		1.64
	Microcystin RR	95.4	92.7	87.6		5.64
	Microcystin WR	106	104	97.4		6.13
	Microcystin YR	91.7	87.3	78.7		10.3
	Neosaxitoxin	93.9	58.1	60.2		3.58
	Nodularin-R	73.9	87.4	86.4		1.22
	Saxitoxin	92.5	63.4	66.2		4.34

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2432775, 2432776, 2432777
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2432778, 2432779, 2432780
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2432778, 2432779, 2432780
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2432778, 2432779, 2432780
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2432778, 2432779, 2432780
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2432781, 2432782, 2432783
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2432784, 2432785, 2432786
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2432784, 2432785, 2432786

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	08/23/2023			08/23/2023 15:38	Alexis Price	2432775
	08/23/2023			08/23/2023 15:43	Alexis Price	2432777
	08/23/2023			08/23/2023 16:09	Alexis Price	2432776
EPA 350.1 Rev. 2.0	08/23/2023			08/28/2023 14:16	Ping Hua	2432778
	08/23/2023			08/28/2023 14:17	Ping Hua	2432779
	08/23/2023			09/05/2023 13:11	Ping Hua	2432780
EPA 351.2 Rev. 2.0	08/23/2023	09/07/2023 13:14	Simonne.V. Calhoun	09/08/2023 11:43	Samantha L Bates	2432780
	08/23/2023	09/08/2023 10:05	Simonne.V. Calhoun	09/08/2023 15:30	Samantha L Bates	2432778
	08/23/2023	09/08/2023 12:21	Simonne.V. Calhoun	09/11/2023 09:48	Samantha L Bates	2432779
EPA 353.2 Rev. 2.0	08/23/2023			08/29/2023 12:03	Anna M. Plaviak	2432780
	08/23/2023			09/07/2023 13:35	Anna M. Plaviak	2432778
	08/23/2023			09/07/2023 13:37	Anna M. Plaviak	2432779
EPA 365.1 Rev. 2.0	08/23/2023	08/24/2023 14:28	Alexis Price	08/25/2023 10:09	James L Waggeberby	2432780
	08/23/2023	08/25/2023 14:35	Adam P Silver	08/28/2023 12:03	Chandler E Cox	2432778
	08/23/2023	08/25/2023 14:35	Adam P Silver	08/28/2023 12:04	Chandler E Cox	2432779
EPA 365.1 Rev. 2.0 dissolved	08/23/2023			08/23/2023 14:38	Elise M. Gillis	2432782
	08/23/2023			08/23/2023 14:39	Elise M. Gillis	2432781
	08/23/2023			08/23/2023 15:02	Elise M. Gillis	2432783
EPA 8321B	08/23/2023	08/23/2023 12:00	Hana Lee	08/23/2023 21:29	Tae K Lee	2432784
	08/23/2023	08/23/2023 12:00	Hana Lee	08/23/2023 21:46	Tae K Lee	2432785
	08/23/2023	08/23/2023 12:00	Hana Lee	08/23/2023 22:03	Tae K Lee	2432786
	08/23/2023	08/23/2023 12:00	Hana Lee	08/23/2023 22:27	Tae K Lee	2432784
	08/23/2023	08/23/2023 12:00	Hana Lee	08/23/2023 22:41	Tae K Lee	2432785
	08/23/2023	08/23/2023 12:00	Hana Lee	08/23/2023 22:55	Tae K Lee	2432786