Chemical Analysis Report

SO-DIST-2023-09-19-02

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

Event Description: **Algal Bloom Response -SOROC w/ blank**
Request ID: **RQ-2023-07-31-19**
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
Attn: John Barrington

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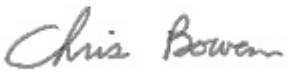
Certified by: Chris Bowen, Environmental Administrator

Date Certified: 06-OCT-2023 15:35



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 - End of Canal Cir **Collection Date/Time: 09/18/2023 09:05**

Field ID: HAB-SD-091823-0905 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2437892	DEP SOP: NU-094-1	Color (true)	130		PCU	P435214	
2437894	EPA 350.1 Rev. 2.0	Ammonia-N	0.047		mg N/L	P435416	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P435650	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.037		mg N/L	P435817	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P435245	
2437896	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P435202	
2437906	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P435160	
		Cylindrospermopsin	0.10	U	ug/L	P435159	
		Desmethyl microcystin LR	0.25	U	ug/L	P435159	
		Microcystin HilR	0.25	U	ug/L	P435159	
		Microcystin HtyR	0.25	U	ug/L	P435159	
		Microcystin LA	0.10	U	ug/L	P435159	
		Microcystin LF	0.10	U	ug/L	P435159	
		Microcystin LR	0.25	U	ug/L	P435159	
		Microcystin LW	0.25	U	ug/L	P435159	
		Microcystin LY	0.10	U	ug/L	P435159	
		Microcystin RR	0.10	U	ug/L	P435159	
		Microcystin WR	0.50	U	ug/L	P435159	
		Neosaxitoxin	0.50	U	ug/L	P435160	
		Microcystin YR	0.25	U	ug/L	P435159	
		Saxitoxin	0.50	U	ug/L	P435160	
		Nodularin-R	0.10	U	ug/L	P435159	

Sample Location: Caloosahatchee River - Jaycee park **Collection Date/Time: 09/18/2023 10:30**

Field ID: HAB-SD-091823-1030 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2437893	DEP SOP: NU-094-1	Color (true)	85		PCU	P435214	
2437895	EPA 350.1 Rev. 2.0	Ammonia-N	0.074		mg N/L	P435416	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.88		mg N/L	P435650	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P435817	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P435245	
2437897	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P435202	
2437907	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P435160	
		Cylindrospermopsin	0.10	U	ug/L	P435159	
		Desmethyl microcystin LR	0.25	U	ug/L	P435159	
		Microcystin HilR	0.25	U	ug/L	P435159	
		Microcystin HtyR	0.25	U	ug/L	P435159	
		Microcystin LA	0.10	U	ug/L	P435159	
		Microcystin LF	0.10	U	ug/L	P435159	
		Microcystin LR	0.25	U	ug/L	P435159	
		Microcystin LW	0.25	U	ug/L	P435159	
		Microcystin LY	0.10	U	ug/L	P435159	
		Microcystin RR	0.10	U	ug/L	P435159	
		Microcystin WR	0.50	U	ug/L	P435159	
		Neosaxitoxin	0.50	U	ug/L	P435160	
		Microcystin YR	0.25	U	ug/L	P435159	
		Saxitoxin	0.50	U	ug/L	P435160	
		Nodularin-R	0.10	U	ug/L	P435159	

Sample Location: Caloosahatchee River - End of Canal Cir **Collection Date/Time: 09/18/2023 09:15**

Field ID: FB_09182023 Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2437879	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P435160	
		Cylindrospermopsin	0.10	U	ug/L	P435159	
		Desmethyl microcystin LR	0.25	U	ug/L	P435159	
		Microcystin HilR	0.25	U	ug/L	P435159	
		Microcystin HtyR	0.25	U	ug/L	P435159	
		Microcystin LA	0.10	U	ug/L	P435159	
		Microcystin LF	0.10	U	ug/L	P435159	
		Microcystin LR	0.25	U	ug/L	P435159	
		Microcystin LW	0.25	U	ug/L	P435159	
		Microcystin LY	0.10	U	ug/L	P435159	
		Microcystin RR	0.10	U	ug/L	P435159	
		Microcystin WR	0.50	U	ug/L	P435159	
		Neosaxitoxin	0.50	U	ug/L	P435160	
		Microcystin YR	0.25	U	ug/L	P435159	
		Saxitoxin	0.50	U	ug/L	P435160	
		Nodularin-R	0.10	U	ug/L	P435159	
2437881	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P435415	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P435898	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P435969	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P435310	
2437882	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P435201	

Quality Assurance Report
Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P435214

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P435415

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P435416

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P435650

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P435898

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P435817

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P435969

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P435245

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P435310

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 dissolved
Batch ID: P435201

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P435202

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

Reference Method: EPA 8321B
Batch ID: P435159

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: P435160

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: P435214

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P435415

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P435416

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P435650

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P435898

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P435817

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: P435969

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	93.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P435245

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P435310

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P435201

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P435202

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

Reference Method: EPA 8321B
Batch ID: P435159

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	82.1		P	40 - 160
Desmethyl microcystin LR	108		P	40 - 160
Microcystin HilR	109		P	40 - 160
Microcystin HtyR	113		P	40 - 160
Microcystin LA	98.8		P	40 - 160
Microcystin LF	92.7		P	40 - 160
Microcystin LR	100		P	40 - 160
Microcystin LW	95.4		P	40 - 160
Microcystin LY	105		P	40 - 160
Microcystin RR	104		P	40 - 160
Microcystin WR	111		P	40 - 160
Microcystin YR	103		P	40 - 160
Nodularin-R	99.9		P	40 - 160

Reference Method: EPA 8321B
Batch ID: P435160

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	101		P	40 - 150
Neosaxitoxin	85.6		P	40 - 150
Saxitoxin	96.1		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P435415

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437794	Ammonia-N	95.0	97.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P435416

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437849	Ammonia-N	96.4	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P435650

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437405	Kjeldahl Nitrogen	97.7	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P435898

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2438166	Kjeldahl Nitrogen	98.4	98.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P435817

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437405	NO2NO3-N	96.8	97.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P435969

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437872	NO2NO3-N	97.0	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P435245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437927	Total-P	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P435310

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437890	Total-P	108	110	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P435201

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437891	O-Phosphate-P	98.5	98.7	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P435202

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437897	O-Phosphate-P	98.5	99.3	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P435159

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437810	Cylindrospermopsin	101	94.8	P/P	40 - 160
2437810	Desmethyl microcystin LR	112	108	P/P	40 - 160
2437810	Microcystin HilR	105	107	P/P	40 - 160
2437810	Microcystin HtyR	104	102	P/P	40 - 160
2437810	Microcystin LA	105	98.8	P/P	40 - 160
2437810	Microcystin LF	112	105	P/P	40 - 160
2437810	Microcystin LR	102	99.4	P/P	40 - 160
2437810	Microcystin LW	101	97.6	P/P	40 - 160
2437810	Microcystin LY	90.7	88.4	P/P	40 - 160
2437810	Microcystin RR	99.0	97.2	P/P	40 - 160
2437810	Microcystin WR	101	105	P/P	40 - 160
2437810	Microcystin YR	92.9	99.4	P/P	40 - 160
2437810	Nodularin-R	98.5	95.5	P/P	40 - 160

Reference Method: EPA 8321B
Batch ID: P435160

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2437810	Anatoxin-a	101	107	P/P	40 - 150
2437810	Neosaxitoxin	71.1	73.8	P/P	40 - 150
2437810	Saxitoxin	86.5	89.1	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P435214

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437805	Color (true)	2.64	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P435415

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437794	Ammonia-N	2.54	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P435416

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437849	Ammonia-N	2.10	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P435650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437405	Kjeldahl Nitrogen	0.294	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P435898

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2438166	Kjeldahl Nitrogen	0.272	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P435817

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437405	NO2NO3-N	0.490	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P435969

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437872	NO2NO3-N	2.54	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P435245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437927	Total-P	0.259	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P435310

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437890	Total-P	1.65	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P435201

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437891	O-Phosphate-P	0.164	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P435202

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437897	O-Phosphate-P	0.386	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P435159

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437810	Cylindrospermopsin	6.43	Spike	P	0 - 30
2437810	Desmethyl microcystin LR	3.97	Spike	P	0 - 30
2437810	Microcystin HilR	2.31	Spike	P	0 - 30
2437810	Microcystin HtyR	2.24	Spike	P	0 - 30
2437810	Microcystin LA	5.99	Spike	P	0 - 30
2437810	Microcystin LF	6.46	Spike	P	0 - 30
2437810	Microcystin LR	3.03	Spike	P	0 - 30
2437810	Microcystin LW	2.94	Spike	P	0 - 30
2437810	Microcystin LY	2.59	Spike	P	0 - 30
2437810	Microcystin RR	1.86	Spike	P	0 - 30
2437810	Microcystin WR	4.39	Spike	P	0 - 30
2437810	Microcystin YR	6.80	Spike	P	0 - 30
2437810	Nodularin-R	3.07	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P435160

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2437810	Anatoxin-a	6.46	Spike	P	0 - 30
2437810	Neosaxitoxin	3.66	Spike	P	0 - 30
2437810	Saxitoxin	3.04	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2437879
Field Sample ID: FB_09182023

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	87.9	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	94.7	P	30 - 160

Lab Sample ID: 2437906
Field Sample ID: HAB-SD-091823-0905

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	80.7	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	88.4	P	30 - 160

Lab Sample ID: 2437907
Field Sample ID: HAB-SD-091823-1030

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	75.3	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	97.5	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A121628
Included Lab Sample IDs: 2437882, 2437896, 2437897

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.8	99.9	P/P	90 - 110
O-Phosphate-P	99.9	100	P/P	90 - 110

Reference Method: DEP SOP: NU-094-1
Run ID: A121632
Included Lab Sample IDs: 2437892, 2437893

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A121634
Included Lab Sample IDs: 2437879, 2437906, 2437907

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	100	103	P/P	60 - 160
Desmethyl microcystin LR	96.7	112	P/P	50 - 160
Microcystin HilR	110	105	P/P	60 - 160
Microcystin HtyR	108	105	P/P	60 - 160
Microcystin LA	101	97.9	P/P	50 - 160
Microcystin LF	88.6	90.7	P/P	60 - 160
Microcystin LR	98.7	93.6	P/P	60 - 160
Microcystin LW	81.7	77.6	P/P	60 - 160
Microcystin LY	100	97.0	P/P	60 - 160
Microcystin RR	109	104	P/P	60 - 160
Microcystin WR	104	98.3	P/P	60 - 160
Microcystin YR	100	87.3	P/P	60 - 160
Nodularin-R	102	96.2	P/P	60 - 160

Reference Method: EPA 8321B
Run ID: A121635
Included Lab Sample IDs: 2437879, 2437906, 2437907

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	97.6	98.5	P/P	50 - 160
Neosaxitoxin	93.7	94.3	P/P	50 - 160
Saxitoxin	110	109	P/P	50 - 160

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A121723
Included Lab Sample IDs: 2437894, 2437895

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A121729
Included Lab Sample IDs: 2437881

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	95.0	99.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A121734
Included Lab Sample IDs: 2437881, 2437894, 2437895

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.2	99.7	P/P	90 - 110
Ammonia-N	99.7	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A121848
Included Lab Sample IDs: 2437894, 2437895

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A121888
Included Lab Sample IDs: 2437894, 2437895

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A121945
Included Lab Sample IDs: 2437881

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	91.0	90.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A121950
Included Lab Sample IDs: 2437881

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.0	98.0	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)	99.8				2.64	
EPA 350.1 Rev. 2.0	Ammonia-N	98.2	95.0	97.8			2.54
	Ammonia-N	98.0	96.4	100			2.10
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	97.7	98.0			0.294
	Kjeldahl Nitrogen	94.0	98.4	98.1			0.272
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	96.8	97.2			0.490
	NO2NO3-N	93.0	97.0	99.5			2.54
EPA 365.1 Rev. 2.0	Total-P	100	100	101			0.259
	Total-P	102	108	110			1.65
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.5	98.7			0.164
	O-Phosphate-P	101	98.5	99.3			0.386
EPA 8321B	Anatoxin-a	101	101	107			6.46
	Cylindrospermopsin	82.1	101	94.8			6.43
	Desmethyl microcystin LR	108	112	108			3.97
	Microcystin HilR	109	105	107			2.31
	Microcystin HtyR	113	104	102			2.24
	Microcystin LA	98.8	105	98.8			5.99
	Microcystin LF	92.7	112	105			6.46
	Microcystin LR	100	102	99.4			3.03
	Microcystin LW	95.4	101	97.6			2.94
	Microcystin LY	105	90.7	88.4			2.59
	Microcystin RR	104	99.0	97.2			1.86
	Microcystin WR	111	101	105			4.39
	Microcystin YR	103	92.9	99.4			6.80
	Neosaxitoxin	85.6	71.1	73.8			3.66
	Nodularin-R	99.9	98.5	95.5			3.07
	Saxitoxin	96.1	86.5	89.1			3.04

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2437892, 2437893
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2437881, 2437894, 2437895
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2437881, 2437894, 2437895
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2437881, 2437894, 2437895
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2437881, 2437894, 2437895
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2437882, 2437896, 2437897
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2437879, 2437906, 2437907
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2437879, 2437906, 2437907

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	09/19/2023			09/19/2023 17:02	Alexis Price	2437892
	09/19/2023			09/19/2023 17:03	Alexis Price	2437893
EPA 350.1 Rev. 2.0	09/19/2023			09/22/2023 12:53	Khloe J Berg	2437881
	09/19/2023			09/22/2023 13:18	Khloe J Berg	2437894
	09/19/2023			09/22/2023 13:19	Khloe J Berg	2437895
EPA 351.2 Rev. 2.0	09/19/2023	09/28/2023 13:28	Simonne.V. Calhoun	09/29/2023 11:50	Ping Hua	2437894
	09/19/2023	09/28/2023 13:28	Simonne.V. Calhoun	09/29/2023 11:51	Ping Hua	2437895
	09/19/2023	10/03/2023 17:00	Simonne.V. Calhoun	10/04/2023 10:57	Ping Hua	2437881
EPA 353.2 Rev. 2.0	09/19/2023			10/02/2023 13:30	Anna M. Plaviak	2437894
	09/19/2023			10/02/2023 13:31	Anna M. Plaviak	2437895
	09/19/2023			10/04/2023 14:10	Fadila Guebre	2437881
EPA 365.1 Rev. 2.0	09/19/2023	09/20/2023 15:00	Alexis Price	09/22/2023 13:06	James L Waggerby	2437894
	09/19/2023	09/20/2023 15:00	Alexis Price	09/22/2023 13:07	James L Waggerby	2437895
	09/19/2023	09/21/2023 14:48	Adam P Silver	09/22/2023 14:15	James L Waggerby	2437881
EPA 365.1 Rev. 2.0 dissolved	09/19/2023			09/19/2023 15:33	Elise M. Gillis	2437882
	09/19/2023			09/19/2023 15:39	Elise M. Gillis	2437897
	09/19/2023			09/19/2023 15:45	Elise M. Gillis	2437896
EPA 8321B	09/19/2023	09/19/2023 12:00	Tae K Lee	09/19/2023 19:04	Hana Lee	2437879
	09/19/2023	09/19/2023 12:00	Tae K Lee	09/19/2023 19:18	Hana Lee	2437906
	09/19/2023	09/19/2023 12:00	Tae K Lee	09/19/2023 19:32	Hana Lee	2437907
	09/19/2023	09/19/2023 12:00	Tae K Lee	09/19/2023 20:08	Hana Lee	2437879
	09/19/2023	09/19/2023 12:00	Tae K Lee	09/19/2023 20:23	Hana Lee	2437906
	09/19/2023	09/19/2023 12:00	Tae K Lee	09/19/2023 20:39	Hana Lee	2437907