

Chemical Analysis Report

SE-DIST-2024-04-03-01

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

Event Description: **Algal Bloom Response - SE ROC**
Request ID: **RQ-2024-03-04-71**
Customer: **SE-DIST**
Project ID: **BLOOM-RESP**

Send Reports to:
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Date Certified: 24-APR-2024 11:26



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: St. Lucie River at Palm City Bridge

Collection Date/Time: 04/02/2024 14:00

Field ID: SEHAB0113

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2479277	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P443596	
		Cylindrospermopsin	0.10	U	ug/L	P443595	
		Desmethyl microcystin LR	0.25	U	ug/L	P443595	
		Microcystin HilR	0.25	U	ug/L	P443595	
		Microcystin HtyR	0.25	U	ug/L	P443595	
		Microcystin LA	0.10	U	ug/L	P443595	
		Microcystin LF	0.10	U	ug/L	P443595	
		Microcystin LR	0.25	U	ug/L	P443595	
		Microcystin LW	0.25	U	ug/L	P443595	
		Microcystin LY	0.10	U	ug/L	P443595	
		Microcystin RR	0.10	U	ug/L	P443595	
		Microcystin WR	0.50	U	ug/L	P443595	
		Neosaxitoxin	0.50	U	ug/L	P443596	
		Microcystin YR	0.25	U	ug/L	P443595	
		Saxitoxin	0.50	U	ug/L	P443596	
2479293	DEP SOP: NU-094-1	Nodularin-R	0.10	U	ug/L	P443595	
		Color (true)	36	J	PCU	P443737	
		Ammonia-N	0.062		mg N/L	P443843	
		Kjeldahl Nitrogen	0.92		mg N/L	P443778	
		NO2NO3-N	0.18		mg N/L	P444604	
2479297	EPA 350.1 Rev. 2.0	Total-P	0.13		mg P/L	P443776	
2479301	EPA 353.2 Rev. 2.0						
	EPA 365.1 Rev. 2.0						
	EPA 365.1 Rev. 2.0 dissolved						

Ref. Method and Comment:
DEP SOP: NU-094-1: The result may be biased high because of turbidity.

Sample Location: St. Lucie Canal - Army Corp Campground

Collection Date/Time: 04/02/2024 13:00

Field ID: SEHAB0116

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2479278	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P443596	
		Cylindrospermopsin	0.10	U	ug/L	P443595	
		Desmethyl microcystin LR	0.25	U	ug/L	P443595	
		Microcystin HILR	0.25	U	ug/L	P443595	
		Microcystin HtyR	0.25	U	ug/L	P443595	
		Microcystin LA	0.10	U	ug/L	P443595	
		Microcystin LF	0.10	U	ug/L	P443595	
		Microcystin LR	0.25	U	ug/L	P443595	
		Microcystin LW	0.25	U	ug/L	P443595	
		Microcystin LY	0.10	U	ug/L	P443595	
		Microcystin RR	0.10	U	ug/L	P443595	
		Microcystin WR	0.50	U	ug/L	P443595	
		Neosaxitoxin	0.50	U	ug/L	P443596	
		Microcystin YR	0.25	U	ug/L	P443595	
		Saxitoxin	0.50	U	ug/L	P443596	
		Nodularin-R	0.10	U	ug/L	P443595	
2479294	DEP SOP: NU-094-1	Color (true)	76	AJ	PCU	P443737	
2479298	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P443785	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P443760	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.27		mg N/L	P444103	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P443775	
2479302	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.066		mg P/L	P443717	

Ref. Method and Comment:
DEP SOP: NU-094-1: The result may be biased high because of turbidity.

Sample Location: St. Lucie Canal - 96th Street Bridge

Collection Date/Time: 04/02/2024 13:30

Field ID: SEHAB0111

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2479275	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P443596	
		Cylindrospermopsin	0.10	U	ug/L	P443595	
		Desmethyl microcystin LR	0.25	U	ug/L	P443595	
		Microcystin HILR	0.25	U	ug/L	P443595	
		Microcystin HtyR	0.25	U	ug/L	P443595	
		Microcystin LA	0.10	U	ug/L	P443595	
		Microcystin LF	0.10	U	ug/L	P443595	
		Microcystin LR	0.25	U	ug/L	P443595	
		Microcystin LW	0.25	U	ug/L	P443595	
		Microcystin LY	0.10	U	ug/L	P443595	
		Microcystin RR	0.10	U	ug/L	P443595	
		Microcystin WR	0.50	U	ug/L	P443595	
		Neosaxitoxin	0.50	U	ug/L	P443596	
		Microcystin YR	0.25	U	ug/L	P443595	
		Saxitoxin	0.50	U	ug/L	P443596	
		Nodularin-R	0.10	U	ug/L	P443595	
2479291	DEP SOP: NU-094-1	Color (true)	63	J	PCU	P443737	
2479295	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P443939	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P443760	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.28		mg N/L	P444122	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P443774	
2479299	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.072		mg P/L	P443716	

Ref. Method and Comment:
DEP SOP: NU-094-1: The result may be biased high because of turbidity.

Sample Location: St. Lucie River -at Four Rivers

Collection Date/Time: 04/02/2024 14:40

Field ID: SEHAB0112

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2479276	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P443596	
		Cylindrospermopsin	0.10	U	ug/L	P443595	
		Desmethyl microcystin LR	0.25	U	ug/L	P443595	
		Microcystin HILR	0.25	U	ug/L	P443595	
		Microcystin HtyR	0.25	U	ug/L	P443595	
		Microcystin LA	0.10	U	ug/L	P443595	
		Microcystin LF	0.10	U	ug/L	P443595	
		Microcystin LR	0.25	U	ug/L	P443595	
		Microcystin LW	0.25	U	ug/L	P443595	
		Microcystin LY	0.10	U	ug/L	P443595	
		Microcystin RR	0.10	U	ug/L	P443595	
		Microcystin WR	0.50	U	ug/L	P443595	
		Neosaxitoxin	0.50	U	ug/L	P443596	
		Microcystin YR	0.25	U	ug/L	P443595	
		Saxitoxin	0.50	U	ug/L	P443596	
		Nodularin-R	0.10	U	ug/L	P443595	
2479292	DEP SOP: NU-094-1	Color (true)	51	J	PCU	P443737	
2479296	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P443939	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P443760	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.21		mg N/L	P444103	
	EPA 365.1 Rev. 2.0	Total-P	0.25		mg P/L	P443775	
2479300	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.075		mg P/L	P443716	

Ref. Method and Comment:

DEP SOP: NU-094-1: The result may be biased high because of turbidity.

Quality Assurance Report

Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P443737

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P443785

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P443843

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P443939

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P443760

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P443778

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444103

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444122

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444604

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: P443774

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P443775

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P443776

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P443716

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P443717

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

Reference Method: EPA 8321B
Batch ID: P443595

Component	Result	Code	Units
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin H1LR	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: P443596

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: P443737

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	105		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P443785

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P443843

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P443939

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P443760

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P443778

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.6		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444103

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444122

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444604

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: P443774

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P443775

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P443776

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P443716

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P443717

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.7		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P443595

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	92.7		P	40 - 150
Desmethyl microcystin LR	94.6		P	40 - 150
Microcystin H11R	108		P	40 - 150
Microcystin HtyR	105		P	40 - 150
Microcystin LA	101		P	40 - 150
Microcystin LF	93.6		P	40 - 150
Microcystin LR	107		P	40 - 150
Microcystin LW	95.9		P	40 - 150
Microcystin LY	105		P	40 - 150
Microcystin RR	94.2		P	40 - 150
Microcystin WR	103		P	40 - 150
Microcystin YR	99.5		P	40 - 150
Nodularin-R	96.0		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P443596

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	98.7		P	40 - 150
Neosaxitoxin	94.9		P	40 - 150
Saxitoxin	106		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P443785

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2479414	Ammonia-N	99.0	99.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P443843

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2479372	Ammonia-N	100	106	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P443939

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2479295	Ammonia-N	96.8	97.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P443760

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2479316	Kjeldahl Nitrogen	102	94.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P443778

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2479259	Kjeldahl Nitrogen	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444103

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2479296	NO2NO3-N	96.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444122

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2479161	NO2NO3-N	101	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444604

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2478979	NO2NO3-N	96.0	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P443774

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2479219	Total-P	103	103	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P443775

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2479307	Total-P	104	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P443776

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2478976	Total-P	99.1	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P443716

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2479223	O-Phosphate-P	95.1	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P443717

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2479450	O-Phosphate-P	95.8	98.9	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P443595

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2478763	Cylindrospermopsin	107	111	P/P	40 - 150
2478763	Desmethyl microcystin LR	104	105	P/P	40 - 150
2478763	Microcystin HilR	110	113	P/P	40 - 150
2478763	Microcystin HtyR	112	115	P/P	40 - 150
2478763	Microcystin LA	101	106	P/P	40 - 150
2478763	Microcystin LF	108	112	P/P	40 - 150
2478763	Microcystin LR	104	106	P/P	40 - 150
2478763	Microcystin LW	112	118	P/P	40 - 150
2478763	Microcystin LY	111	116	P/P	40 - 150
2478763	Microcystin RR	100	105	P/P	40 - 150
2478763	Microcystin WR	106	117	P/P	40 - 150
2478763	Microcystin YR	107	114	P/P	40 - 150
2478763	Nodularin-R	106	109	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P443596

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2478763	Anatoxin-a	96.8	95.5	P/P	40 - 150
2478763	Neosaxitoxin	63.3	61.5	P/P	40 - 150
2478763	Saxitoxin	79.5	78.3	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P443737

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2479294	Color (true)	3.77	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P443785

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2479414	Ammonia-N	0.364	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P443843

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2479372	Ammonia-N	3.88	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P443939

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2479295	Ammonia-N	0.325	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P443760

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2479316	Kjeldahl Nitrogen	6.18	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P443778

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2479259	Kjeldahl Nitrogen	0.274	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444103

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2479296	NO2NO3-N	0.499	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2479161	NO2NO3-N	1.96	Spike	P	0 - 20

Quality Assurance Report

Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444604

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2478979	NO2NO3-N	0.508	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P443774

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2479219	Total-P	0.0237	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P443775

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2479307	Total-P	1.10	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P443776

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2478976	Total-P	0.147	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P443716

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2479223	O-Phosphate-P	0.816	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P443717

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2479450	O-Phosphate-P	2.89	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P443595

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2478763	Cylindrospermopsin	3.77	Spike	P	0 - 30
2478763	Desmethyl microcystin LR	1.01	Spike	P	0 - 30
2478763	Microcystin HtIR	2.67	Spike	P	0 - 30
2478763	Microcystin HtyR	3.25	Spike	P	0 - 30
2478763	Microcystin LA	4.95	Spike	P	0 - 30
2478763	Microcystin LF	3.27	Spike	P	0 - 30
2478763	Microcystin LR	2.17	Spike	P	0 - 30
2478763	Microcystin LW	4.93	Spike	P	0 - 30
2478763	Microcystin LY	3.86	Spike	P	0 - 30

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P443595

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2478763	Microcystin RR	4.31	Spike	P	0 - 30
2478763	Microcystin WR	10.0	Spike	P	0 - 30
2478763	Microcystin YR	6.38	Spike	P	0 - 30
2478763	Nodularin-R	2.67	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P443596

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2478763	Anatoxin-a	1.38	Spike	P	0 - 30
2478763	Neosaxitoxin	2.97	Spike	P	0 - 30
2478763	Saxitoxin	1.57	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2479275
Field Sample ID: SEHAB0111

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	103	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	98.9	P	30 - 160

Lab Sample ID: 2479276
Field Sample ID: SEHAB0112

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	99.0	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	94.8	P	30 - 160

Lab Sample ID: 2479277
Field Sample ID: SEHAB0113

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	91.3	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	95.5	P	30 - 160

Lab Sample ID: 2479278
Field Sample ID: SEHAB0116

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	101	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	92.6	P	30 - 160

Quality Assurance Report

Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A125145

Included Lab Sample IDs: 2479299, 2479300, 2479301, 2479302

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

Reference Method: DEP SOP: NU-094-1

Run ID: A125153

Included Lab Sample IDs: 2479291, 2479292, 2479293, 2479294

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.2	99.3	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A125155

Included Lab Sample IDs: 2479275, 2479276, 2479277, 2479278

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	104	104	P/P	50 - 160
Desmethyl microcystin LR	113	120	P/P	50 - 160
Microcystin HiiR	123	127	P/P	50 - 160
Microcystin HtyR	116	126	P/P	50 - 160
Microcystin LA	110	114	P/P	50 - 160
Microcystin LF	112	114	P/P	50 - 160
Microcystin LR	113	118	P/P	50 - 160
Microcystin LW	111	116	P/P	50 - 160
Microcystin LY	118	119	P/P	50 - 160
Microcystin RR	101	103	P/P	50 - 160
Microcystin WR	117	126	P/P	50 - 160
Microcystin YR	114	122	P/P	50 - 160
Nodularin-R	112	114	P/P	50 - 160

Reference Method: EPA 8321B

Run ID: A125170

Included Lab Sample IDs: 2479275, 2479276, 2479277, 2479278

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	100	98.4	P/P	50 - 160
Neosaxitoxin	103	103	P/P	50 - 160
Saxitoxin	114	117	P/P	50 - 160

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A125173

Included Lab Sample IDs: 2479298

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.7	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A125187

Included Lab Sample IDs: 2479295, 2479296, 2479297, 2479298

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	101	P/P	90 - 110
Total-P	103	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A125191

Included Lab Sample IDs: 2479297

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.2	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A125220

Included Lab Sample IDs: 2479295, 2479296

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.8	98.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A125221

Included Lab Sample IDs: 2479297

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.0	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A125239

Included Lab Sample IDs: 2479295, 2479296, 2479298

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.8	97.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A125279

Included Lab Sample IDs: 2479296, 2479298

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A125283

Included Lab Sample IDs: 2479295

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A125445

Included Lab Sample IDs: 2479297

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	102	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		LCS	Precision	MS
						SMP	
DEP SOP: NU-094-1	Color (true)	105				3.77	
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	99.0	99.4			0.364
	Ammonia-N	97.0	100	106			3.88
	Ammonia-N	95.6	96.8	97.2			0.325
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.2	102	94.1			6.18
	Kjeldahl Nitrogen	99.6	104	104			0.274
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	96.0				0.499
	NO2NO3-N	102	101	103			1.96
	NO2NO3-N	99.5	96.0	96.4			0.508
EPA 365.1 Rev. 2.0	Total-P	103	103	103			0.0237
	Total-P	101	104	106			1.10
	Total-P	103	99.1	99.0			0.147
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	95.1	96.0			0.816
	O-Phosphate-P	99.7	95.8	98.9			2.89
EPA 8321B	Anatoxin-a	98.7	96.8	95.5			1.38
	Cylindrospermopsin	92.7	107	111			3.77
	Desmethyl microcystin LR	94.6	104	105			1.01
	Microcystin HilR	108	110	113			2.67
	Microcystin HtyR	105	112	115			3.25
	Microcystin LA	101	101	106			4.95
	Microcystin LF	93.6	108	112			3.27
	Microcystin LR	107	104	106			2.17
	Microcystin LW	95.9	112	118			4.93
	Microcystin LY	105	111	116			3.86
	Microcystin RR	94.2	100	105			4.31
	Microcystin WR	103	106	117			10.0
	Microcystin YR	99.5	107	114			6.38
	Neosaxitoxin	94.9	63.3	61.5			2.97
	Nodularin-R	96.0	106	109			2.67
	Saxitoxin	106	79.5	78.3			1.57

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2479291, 2479292, 2479293, 2479294
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2479295, 2479296, 2479297, 2479298
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2479295, 2479296, 2479297, 2479298
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2479295, 2479296, 2479297, 2479298
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2479295, 2479296, 2479297, 2479298
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2479299, 2479300, 2479301, 2479302
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2479275, 2479276, 2479277, 2479278
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2479275, 2479276, 2479277, 2479278

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	04/03/2024			04/03/2024 15:59	Jessica K Wilks	2479291
	04/03/2024			04/03/2024 16:00	Jessica K Wilks	2479292, 2479293
	04/03/2024			04/03/2024 16:01	Jessica K Wilks	2479294
EPA 350.1 Rev. 2.0	04/03/2024			04/04/2024 14:00	Ping Hua	2479298
	04/03/2024			04/05/2024 12:15	Kenneth H Lee	2479297
	04/03/2024			04/08/2024 11:11	Kenneth H Lee	2479295
	04/03/2024			04/08/2024 11:24	Kenneth H Lee	2479296
EPA 351.2 Rev. 2.0	04/03/2024	04/04/2024 14:43	Robyn Blevins	04/08/2024 12:29	Robyn Blevins	2479297
	04/03/2024	04/04/2024 14:50	Robyn Blevins	04/09/2024 13:19	Ping Hua	2479295
	04/03/2024	04/04/2024 14:50	Robyn Blevins	04/09/2024 13:20	Ping Hua	2479296
	04/03/2024	04/04/2024 14:50	Robyn Blevins	04/09/2024 13:22	Ping Hua	2479298
EPA 353.2 Rev. 2.0	04/03/2024			04/08/2024 14:38	Fadila Guebre	2479296
	04/03/2024			04/08/2024 14:45	Fadila Guebre	2479298
	04/03/2024			04/10/2024 13:20	Fadila Guebre	2479295
	04/03/2024			04/19/2024 15:13	Fadila Guebre	2479297
EPA 365.1 Rev. 2.0	04/03/2024	04/04/2024 15:07	Josephine W Gitau	04/05/2024 10:22	Elise M. Gillis	2479295
	04/03/2024	04/04/2024 15:07	Josephine W Gitau	04/05/2024 10:27	Elise M. Gillis	2479296
	04/03/2024	04/04/2024 15:07	Josephine W Gitau	04/05/2024 10:28	Elise M. Gillis	2479298
	04/03/2024	04/04/2024 15:07	Josephine W Gitau	04/05/2024 10:48	Elise M. Gillis	2479297
EPA 365.1 Rev. 2.0 dissolved	04/03/2024			04/03/2024 14:01	Elise M. Gillis	2479299
	04/03/2024			04/03/2024 14:02	Elise M. Gillis	2479300
	04/03/2024			04/03/2024 14:03	Elise M. Gillis	2479301
	04/03/2024			04/03/2024 14:08	Elise M. Gillis	2479302
EPA 8321B	04/03/2024	04/03/2024 12:00	Hana Lee	04/04/2024 01:03	Hana Lee	2479275
	04/03/2024	04/03/2024 12:00	Hana Lee	04/04/2024 01:20	Hana Lee	2479276
	04/03/2024	04/03/2024 12:00	Hana Lee	04/04/2024 01:37	Hana Lee	2479277
	04/03/2024	04/03/2024 12:00	Hana Lee	04/04/2024 01:53	Hana Lee	2479278
	04/03/2024	04/03/2024 12:00	Hana Lee	04/04/2024 12:32	Hana Lee	2479275
	04/03/2024	04/03/2024 12:00	Hana Lee	04/04/2024 12:45	Hana Lee	2479276
	04/03/2024	04/03/2024 12:00	Hana Lee	04/04/2024 12:59	Hana Lee	2479277
	04/03/2024	04/03/2024 12:00	Hana Lee	04/04/2024 13:13	Hana Lee	2479278