

Chemical Analysis Report

SO-DIST-2024-04-12-01

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

Event Description: **Algal Bloom Response -SOROC**
Request ID: **RQ-2023-08-07-55**
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

For additional information please contact
Colin Wright, Ph.D.
Chris Bowen, B.S.
Marek Topolski, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 02-MAY-2024 15:19



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 - Miramar Canal

Collection Date/Time: 04/11/2024 13:05

Field ID: HAB-SD-041124-1305

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2481894	DEP SOP: NU-094-1	Color (true)	39		PCU	P444185	
2481896	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P444359	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P444243	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.015		mg N/L	P444301	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P444310	
2481898	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P444189	
2481904	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P444163	
		Cylindrospermopsin	0.10	U	ug/L	P444161	
		Desmethyl microcystin LR	0.25	U	ug/L	P444161	
		Microcystin HiLR	0.25	U	ug/L	P444161	
		Microcystin HtyR	0.25	U	ug/L	P444161	
		Microcystin LA	0.10	U	ug/L	P444161	
		Microcystin LF	0.10	U	ug/L	P444161	
		Microcystin LR	0.25	U	ug/L	P444161	
		Microcystin LW	0.25	U	ug/L	P444161	
		Microcystin LY	0.10	U	ug/L	P444161	
		Microcystin RR	0.10	U	ug/L	P444161	
		Microcystin WR	0.50	U	ug/L	P444161	
		Neosaxitoxin	0.50	U	ug/L	P444163	
		Microcystin YR	0.25	U	ug/L	P444161	
		Saxitoxin	0.50	U	ug/L	P444163	
		Nodularin-R	0.10	U	ug/L	P444161	

Sample Location: Whiskey Creek - Winkler Road Canal

Collection Date/Time: 04/11/2024 13:40

Field ID: HAB-SD-041124-1340				Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2481895	DEP SOP: NU-094-1	Color (true)	62		PCU	P444185	
2481897	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P444359	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P444336	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.019		mg N/L	P444301	
	EPA 365.1 Rev. 2.0	Total-P	0.076		mg P/L	P444329	
2481899	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.019		mg P/L	P444189	
2481905	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P444163	
		Cylindrospermopsin	0.10	U	ug/L	P444161	
		Desmethyl microcystin LR	0.25	U	ug/L	P444161	
		Microcystin HiLR	0.25	U	ug/L	P444161	
		Microcystin HtyR	0.25	U	ug/L	P444161	
		Microcystin LA	0.10	U	ug/L	P444161	
		Microcystin LF	0.10	U	ug/L	P444161	
		Microcystin LR	0.25	U	ug/L	P444161	
		Microcystin LW	0.25	U	ug/L	P444161	
		Microcystin LY	0.10	U	ug/L	P444161	
		Microcystin RR	0.10	U	ug/L	P444161	
		Microcystin WR	0.50	U	ug/L	P444161	
		Neosaxitoxin	0.50	U	ug/L	P444163	
		Microcystin YR	0.25	U	ug/L	P444161	
		Saxitoxin	0.50	U	ug/L	P444163	
		Nodularin-R	0.10	U	ug/L	P444161	

Quality Assurance Report
Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P444185

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P444359

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P444243

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P444336

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444301

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444310

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444329

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P444189

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

Reference Method: EPA 8321B
Batch ID: P444161

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B

Batch ID: P444161

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

Reference Method: EPA 8321B

Batch ID: P444163

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: P444185

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P444359

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P444243

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P444336

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444301

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444310

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444329

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: P444189

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

Reference Method: EPA 8321B
Batch ID: P444161

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	94.3		P	40 - 150
Desmethyl microcystin LR	93.6		P	40 - 150
Microcystin H1R	93.0		P	40 - 150
Microcystin HtyR	84.5		P	40 - 150

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P444161

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Microcystin LA	100		P	40 - 150
Microcystin LF	106		P	40 - 150
Microcystin LR	106		P	40 - 150
Microcystin LW	94.7		P	40 - 150
Microcystin LY	99.0		P	40 - 150
Microcystin RR	94.3		P	40 - 150
Microcystin WR	90.9		P	40 - 150
Microcystin YR	88.8		P	40 - 150
Nodularin-R	98.7		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P444163

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	106		P	40 - 150
Neosaxitoxin	111		P	40 - 150
Saxitoxin	117		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P444359

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481311	Ammonia-N	97.0	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P444243

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481737	Kjeldahl Nitrogen	101	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P444336

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481996	Kjeldahl Nitrogen	101	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444301

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481739	NO2NO3-N	101	90.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444310

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481739	Total-P	101	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444329

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481648	Total-P	102	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P444189

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481898	O-Phosphate-P	100	101	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P444161

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481840	Cylindrospermopsin	97.7	98.3	P/P	40 - 150
2481840	Desmethyl microcystin LR	98.2	106	P/P	40 - 150
2481840	Microcystin HilR	94.4	105	P/P	40 - 150
2481840	Microcystin HtyR	80.1	89.2	P/P	40 - 150
2481840	Microcystin LA	93.0	101	P/P	40 - 150
2481840	Microcystin LF	99.5	111	P/P	40 - 150
2481840	Microcystin LR	93.1	106	P/P	40 - 150
2481840	Microcystin LW	90.3	101	P/P	40 - 150
2481840	Microcystin LY	98.8	99.2	P/P	40 - 150
2481840	Microcystin RR	96.9	103	P/P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P444161

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481840	Microcystin WR	95.5	101	P/P	40 - 150
2481840	Microcystin YR	91.2	92.2	P/P	40 - 150
2481840	Nodularin-R	92.7	108	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P444163

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2481840	Anatoxin-a	92.6	98.0	P/P	40 - 150
2481840	Neosaxitoxin	64.1	65.1	P/P	40 - 150
2481840	Saxitoxin	56.2	59.7	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P444185

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481862	Color (true)	0.423	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P444359

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481311	Ammonia-N	1.71	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P444243

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481737	Kjeldahl Nitrogen	3.33	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P444336

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481996	Kjeldahl Nitrogen	2.61	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P444301

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481739	NO2NO3-N	10.5	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444310

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481739	Total-P	2.10	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P444329

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481648	Total-P	1.84	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P444189

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481898	O-Phosphate-P	0.595	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P444161

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481840	Cylindrospermopsin	0.578	Spike	P	0 - 30
2481840	Desmethyl microcystin LR	8.04	Spike	P	0 - 30
2481840	Microcystin HilR	10.2	Spike	P	0 - 30
2481840	Microcystin HtyR	10.8	Spike	P	0 - 30
2481840	Microcystin LA	8.35	Spike	P	0 - 30
2481840	Microcystin LF	11.2	Spike	P	0 - 30
2481840	Microcystin LR	11.0	Spike	P	0 - 30
2481840	Microcystin LW	11.1	Spike	P	0 - 30
2481840	Microcystin LY	0.423	Spike	P	0 - 30
2481840	Microcystin RR	5.68	Spike	P	0 - 30
2481840	Microcystin WR	5.14	Spike	P	0 - 30
2481840	Microcystin YR	1.03	Spike	P	0 - 30
2481840	Nodularin-R	14.8	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P444163

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2481840	Anatoxin-a	5.67	Spike	P	0 - 30
2481840	Neosaxitoxin	1.60	Spike	P	0 - 30
2481840	Saxitoxin	6.08	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2481904
Field Sample ID: HAB-SD-041124-1305

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	113	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	117	P	30 - 160

Lab Sample ID: 2481905
Field Sample ID: HAB-SD-041124-1340

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	115	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	108	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A125265

Included Lab Sample IDs: 2481904, 2481905

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	89.6	88.6	P/P	50 - 160
Desmethyl microcystin LR	90.8	91.8	P/P	50 - 160
Microcystin HilR	93.7	85.8	P/P	50 - 160
Microcystin HtyR	78.9	76.9	P/P	50 - 160
Microcystin LA	97.5	94.7	P/P	50 - 160
Microcystin LF	85.5	85.0	P/P	50 - 160
Microcystin LR	101	88.7	P/P	50 - 160
Microcystin LW	80.9	83.7	P/P	50 - 160
Microcystin LY	93.9	88.1	P/P	50 - 160
Microcystin RR	89.6	85.0	P/P	50 - 160
Microcystin WR	89.2	90.2	P/P	50 - 160
Microcystin YR	84.2	82.1	P/P	50 - 160
Nodularin-R	88.2	89.8	P/P	50 - 160

Reference Method: EPA 8321B

Run ID: A125271

Included Lab Sample IDs: 2481904, 2481905

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	103	94.6	P/P	50 - 160
Neosaxitoxin	114	104	P/P	50 - 160
Saxitoxin	116	113	P/P	50 - 160

Reference Method: DEP SOP: NU-094-1

Run ID: A125307

Included Lab Sample IDs: 2481894, 2481895

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.2	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A125313

Included Lab Sample IDs: 2481898, 2481899

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.5	96.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A125335

Included Lab Sample IDs: 2481896, 2481897

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A125353

Included Lab Sample IDs: 2481896

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A125358
Included Lab Sample IDs: 2481896, 2481897

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A125378
Included Lab Sample IDs: 2481896

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A125388
Included Lab Sample IDs: 2481897

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A125404
Included Lab Sample IDs: 2481897

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.9	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	MS
DEP SOP: NU-094-1	Color (true)	98.0			0.423	
EPA 350.1 Rev. 2.0	Ammonia-N	97.0	99.2	97.0		1.71
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	109	101	104		3.33
	Kjeldahl Nitrogen	102	101	105		2.61
EPA 353.2 Rev. 2.0	NO2NO3-N	101	101	90.8		10.5
EPA 365.1 Rev. 2.0	Total-P	107	101	98.6		2.10
	Total-P	104	102	105		1.84
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	100	101		0.595
EPA 8321B	Anatoxin-a	106	92.6	98.0		5.67
	Cylindrospermopsin	94.3	97.7	98.3		0.578
	Desmethyl microcystin LR	93.6	98.2	106		8.04
	Microcystin HiLR	93.0	94.4	105		10.2
	Microcystin HtyR	84.5	80.1	89.2		10.8
	Microcystin LA	100	93.0	101		8.35
	Microcystin LF	106	99.5	111		11.2
	Microcystin LR	106	93.1	106		11.0
	Microcystin LW	94.7	90.3	101		11.1
	Microcystin LY	99.0	98.8	99.2		0.423
	Microcystin RR	94.3	96.9	103		5.68
	Microcystin WR	90.9	95.5	101		5.14
	Microcystin YR	88.8	91.2	92.2		1.03
	Neosaxitoxin	111	64.1	65.1		1.60
	Nodularin-R	98.7	92.7	108		14.8
	Saxitoxin	117	56.2	59.7		6.08

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2481894, 2481895
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2481896, 2481897
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2481896, 2481897
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2481896, 2481897
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2481896, 2481897
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2481898, 2481899
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2481904, 2481905
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2481904, 2481905

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	04/12/2024			04/12/2024 13:34	Jessica K Wilks	2481894, 2481895
EPA 350.1 Rev. 2.0	04/12/2024			04/17/2024 11:50	Kenneth H Lee	2481896
	04/12/2024			04/17/2024 11:51	Kenneth H Lee	2481897
EPA 351.2 Rev. 2.0	04/12/2024	04/16/2024 10:48	Simonne.V. Calhoun	04/17/2024 18:53	Ping Hua	2481896
	04/12/2024	04/17/2024 11:47	Simonne.V. Calhoun	04/18/2024 13:31	Robyn Blevins	2481897
EPA 353.2 Rev. 2.0	04/12/2024			04/15/2024 15:30	Fadila Guebre	2481896
	04/12/2024			04/15/2024 15:32	Fadila Guebre	2481897
EPA 365.1 Rev. 2.0	04/12/2024	04/16/2024 14:10	Adam P Silver	04/17/2024 11:46	Elise M. Gillis	2481896
	04/12/2024	04/17/2024 13:05	Adam P Silver	04/18/2024 10:53	Simonne.V. Calhoun	2481897
EPA 365.1 Rev. 2.0 dissolved	04/12/2024			04/12/2024 16:28	Chandler E Cox	2481898
	04/12/2024			04/12/2024 16:30	Chandler E Cox	2481899
EPA 8321B	04/12/2024	04/12/2024 13:00	Tae K Lee	04/13/2024 16:49	Tae K Lee	2481904
	04/12/2024	04/12/2024 13:00	Tae K Lee	04/13/2024 17:05	Tae K Lee	2481905
	04/12/2024	04/12/2024 13:00	Tae K Lee	04/15/2024 12:38	Tae K Lee	2481904
	04/12/2024	04/12/2024 13:00	Tae K Lee	04/15/2024 12:52	Tae K Lee	2481905