

Chemical Analysis Report

NE-DIST-2024-07-17-01

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

Event Description: **Algae Bloom Response NEROC-as needed**
Request ID: **RQ-2024-07-15-52**
Customer: **NE-DIST**
Project ID: **BLOOM-RESP**

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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 30-JUL-2024 10:18



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: Doctors Lake - Mill Cove

Collection Date/Time: 07/16/2024 09:35

Field ID: NEHAB0057

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2502048	DEP SOP: NU-094-1	Color (true)	57	A	PCU	P447994	
2502053	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P448364	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P448094	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P448392	
	EPA 365.1 Rev. 2.0	Total-P	0.090		mg P/L	P448222	
2502058	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.016		mg P/L	P447982	
2502063	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P447967	
		Cylindrospermopsin	0.10	U	ug/L	P447966	
		Desmethyl microcystin LR	0.25	U	ug/L	P447966	
		Microcystin HiLR	0.25	U	ug/L	P447966	
		Microcystin HtyR	0.25	U	ug/L	P447966	
		Microcystin LA	0.10	U	ug/L	P447966	
		Microcystin LF	0.10	U	ug/L	P447966	
		Microcystin LR	9.2		ug/L	P447966	
		Microcystin LW	0.25	U	ug/L	P447966	
		Microcystin LY	0.10	U	ug/L	P447966	
		Microcystin RR	0.10	U	ug/L	P447966	
		Microcystin WR	0.50	U	ug/L	P447966	
		Neosaxitoxin	0.50	U	ug/L	P447967	
		Microcystin YR	0.25	U	ug/L	P447966	
		Saxitoxin	0.50	U	ug/L	P447967	
		Nodularin-R	0.10	U	ug/L	P447966	

Sample Location: Doctors Lake - Mill Cove

Collection Date/Time: 07/16/2024 09:38

Field ID: FB_07162024

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2501980	DEP SOP: NU-094-1	Color (true)	2.5	U	PCU	P447988	
2501981	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P448361	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P448098	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P448241	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P448237	
2501982	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P447980	
2501983	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P447967	
		Cylindrospermopsin	0.10	U	ug/L	P447966	
		Desmethyl microcystin LR	0.25	U	ug/L	P447966	
		Microcystin HiLR	0.25	U	ug/L	P447966	
		Microcystin HtyR	0.25	U	ug/L	P447966	
		Microcystin LA	0.10	U	ug/L	P447966	
		Microcystin LF	0.10	U	ug/L	P447966	
		Microcystin LR	0.25	U	ug/L	P447966	
		Microcystin LW	0.25	U	ug/L	P447966	
		Microcystin LY	0.10	U	ug/L	P447966	
		Microcystin RR	0.10	U	ug/L	P447966	
		Microcystin WR	0.50	U	ug/L	P447966	
		Neosaxitoxin	0.50	U	ug/L	P447967	
		Microcystin YR	0.25	U	ug/L	P447966	
		Saxitoxin	0.50	U	ug/L	P447967	
		Nodularin-R	0.10	U	ug/L	P447966	

Sample Location: Doctors Lake - Center

Collection Date/Time: 07/16/2024 10:05

Field ID: NEHAB0120

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2502051	DEP SOP: NU-094-1	Color (true)	59		PCU	P447994	
2502056	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P448364	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P448094	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.014		mg N/L	P448392	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P448222	
2502061	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.043		mg P/L	P447982	
2502066	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P447967	
		Cylindrospermopsin	0.10	U	ug/L	P447966	
		Desmethyl microcystin LR	0.25	U	ug/L	P447966	
		Microcystin HiLR	0.25	U	ug/L	P447966	
		Microcystin HtyR	0.25	U	ug/L	P447966	
		Microcystin LA	0.10	U	ug/L	P447966	
		Microcystin LF	0.10	U	ug/L	P447966	
		Microcystin LR	7.1		ug/L	P447966	
		Microcystin LW	0.25	U	ug/L	P447966	
		Microcystin LY	0.10	U	ug/L	P447966	
		Microcystin RR	0.10	U	ug/L	P447966	
		Microcystin WR	0.50	U	ug/L	P447966	
		Neosaxitoxin	0.50	U	ug/L	P447967	
		Microcystin YR	0.25	U	ug/L	P447966	
		Saxitoxin	0.50	U	ug/L	P447967	
		Nodularin-R	0.10	U	ug/L	P447966	

Sample Location: Doctors Lake - Wyndegate Dr

Collection Date/Time: 07/16/2024 10:25

Field ID: NEHAB0117

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2502050	DEP SOP: NU-094-1	Color (true)	64		PCU	P447994	
2502055	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P448364	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.90		mg N/L	P448094	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P448392	
	EPA 365.1 Rev. 2.0	Total-P	0.083		mg P/L	P448222	
2502060	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.045		mg P/L	P447982	
2502065	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P447967	
		Cylindrospermopsin	0.19	I	ug/L	P447966	
		Desmethyl microcystin LR	0.25	U	ug/L	P447966	
		Microcystin HilR	0.25	U	ug/L	P447966	
		Microcystin HtyR	0.25	U	ug/L	P447966	
		Microcystin LA	0.10	U	ug/L	P447966	
		Microcystin LF	0.10	U	ug/L	P447966	
		Microcystin LR	1.4		ug/L	P447966	
		Microcystin LW	0.25	U	ug/L	P447966	
		Microcystin LY	0.10	U	ug/L	P447966	
		Microcystin RR	0.10	U	ug/L	P447966	
		Microcystin WR	0.50	U	ug/L	P447966	
		Neosaxitoxin	0.50	U	ug/L	P447967	
		Microcystin YR	0.25	U	ug/L	P447966	
		Saxitoxin	0.50	U	ug/L	P447967	
		Nodularin-R	0.10	U	ug/L	P447966	

Sample Location: Doctors Lake - End of Lawrence Rd

Collection Date/Time: 07/16/2024 10:45

Field ID: NEHAB0073

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2502049	DEP SOP: NU-094-1	Color (true)	56		PCU	P447994	
2502054	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P448364	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P448094	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P448392	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P448222	
2502059	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.027		mg P/L	P447982	
2502064	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P447967	
		Cylindrospermopsin	0.10	U	ug/L	P447966	
		Desmethyl microcystin LR	0.25	U	ug/L	P447966	
		Microcystin H1LR	0.25	U	ug/L	P447966	
		Microcystin HtyR	0.25	U	ug/L	P447966	
		Microcystin LA	0.10	U	ug/L	P447966	
		Microcystin LF	0.10	U	ug/L	P447966	
		Microcystin LR	11		ug/L	P447966	
		Microcystin LW	0.25	U	ug/L	P447966	
		Microcystin LY	0.10	U	ug/L	P447966	
		Microcystin RR	0.10	U	ug/L	P447966	
		Microcystin WR	0.50	U	ug/L	P447966	
		Neosaxitoxin	0.50	U	ug/L	P447967	
		Microcystin YR	0.25	U	ug/L	P447966	
		Saxitoxin	0.50	U	ug/L	P447967	
		Nodularin-R	0.10	U	ug/L	P447966	

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2502135	DEP SOP: NU-094-1	Color (true)	58		PCU	P447995	
2502136	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P448364	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P448094	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.014		mg N/L	P448392	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P448222	
2502137	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.034		mg P/L	P447982	
2502142	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P447967	
		Cylindrospermopsin	0.10	U	ug/L	P447966	
		Desmethyl microcystin LR	0.30	I	ug/L	P447966	
		Microcystin HiIR	0.25	U	ug/L	P447966	
		Microcystin HtyR	0.25	U	ug/L	P447966	
		Microcystin LA	0.10	U	ug/L	P447966	
		Microcystin LF	0.10	U	ug/L	P447966	
		Microcystin LR	17		ug/L	P447966	
		Microcystin LW	0.25	U	ug/L	P447966	
		Microcystin LY	0.10	U	ug/L	P447966	
		Microcystin RR	0.10	U	ug/L	P447966	
		Microcystin WR	0.50	U	ug/L	P447966	
		Neosaxitoxin	0.50	U	ug/L	P447967	
		Microcystin YR	0.25	U	ug/L	P447966	
		Saxitoxin	0.50	U	ug/L	P447967	
		Nodularin-R	0.10	U	ug/L	P447966	

Quality Assurance Report

Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P447988

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: DEP SOP: NU-094-1
Batch ID: P447994

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: DEP SOP: NU-094-1
Batch ID: P447995

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P448361

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P448364

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P448094

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P448098

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P448241

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P448392

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: P448222

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P448237

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P447980

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P447982

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

Reference Method: EPA 8321B
Batch ID: P447966

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: P447967

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: P447988

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.7		P	90 - 110

Reference Method: DEP SOP: NU-094-1
Batch ID: P447994

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.6		P	90 - 110

Reference Method: DEP SOP: NU-094-1
Batch ID: P447995

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P448361

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P448364

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: P448094

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P448098

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P448241

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P448392

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P448222

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.1		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P448237

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P447980

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P447982

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

Reference Method: EPA 8321B
Batch ID: P447966

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	91.2		P	40 - 160
Desmethyl microcystin LR	88.9		P	40 - 160
Microcystin HII R	89.8		P	40 - 160
Microcystin HtyR	92.0		P	40 - 160
Microcystin LA	87.9		P	40 - 160
Microcystin LF	88.5		P	40 - 160
Microcystin LR	93.5		P	40 - 160
Microcystin LW	89.0		P	40 - 160
Microcystin LY	92.9		P	40 - 160
Microcystin RR	90.0		P	40 - 160
Microcystin WR	96.4		P	40 - 160
Microcystin YR	92.6		P	40 - 160
Nodularin-R	91.3		P	40 - 160

Reference Method: EPA 8321B
Batch ID: P447967

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	87.5		P	40 - 150
Neosaxitoxin	106		P	40 - 150
Saxitoxin	88.9		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P448361

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2501953	Ammonia-N	97.6	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P448364

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2502053	Ammonia-N	95.8	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P448094

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2501705	Kjeldahl Nitrogen	97.6	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P448098

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2502029	Kjeldahl Nitrogen	103	98.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P448241

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2501953	NO2NO3-N	100	99.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P448392

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2502650	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P448222

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2502055	Total-P	98.4	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P448237

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2501957	Total-P	99.9	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P447980

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2501912	O-Phosphate-P	96.6	96.5	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P447982

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2502058	O-Phosphate-P	98.0	99.2	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P447966

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2501949	Cylindrospermopsin	89.8	92.9	P/P	40 - 160
2501949	Desmethyl microcystin LR	92.1	88.9	P/P	40 - 160
2501949	Microcystin HiLR	95.5	94.7	P/P	40 - 160
2501949	Microcystin HtyR	88.1	89.9	P/P	40 - 160
2501949	Microcystin LA	86.4	90.6	P/P	40 - 160
2501949	Microcystin LF	95.7	92.4	P/P	40 - 160
2501949	Microcystin LR	95.4	94.7	P/P	40 - 160
2501949	Microcystin LW	93.7	90.4	P/P	40 - 160
2501949	Microcystin LY	94.0	92.6	P/P	40 - 160
2501949	Microcystin RR	92.5	90.7	P/P	40 - 160
2501949	Microcystin WR	96.2	96.2	P/P	40 - 160
2501949	Microcystin YR	95.9	96.4	P/P	40 - 160
2501949	Nodularin-R	94.8	92.3	P/P	40 - 160

Reference Method: EPA 8321B
Batch ID: P447967

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2501949	Anatoxin-a	90.6	90.9	P/P	40 - 150
2501949	Neosaxitoxin	71.1	71.5	P/P	40 - 150
2501949	Saxitoxin	66.4	68.5	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P447988

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2501960	Color (true)	0.823	Sample	P	0 - 20

Reference Method: DEP SOP: NU-094-1
Batch ID: P447994

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2502048	Color (true)	4.46	Sample	P	0 - 20

Reference Method: DEP SOP: NU-094-1
Batch ID: P447995

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2502138	Color (true)	0.506	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P448361

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2501953	Ammonia-N	2.63	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P448364

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2502053	Ammonia-N	1.71	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P448094

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2501705	Kjeldahl Nitrogen	1.65	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P448098

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2502029	Kjeldahl Nitrogen	4.24	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P448241

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2501953	NO2NO3-N	0.501	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P448392

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2502650	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P448222

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2502055	Total-P	0.0233	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P448237

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2501957	Total-P	0.609	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P447980

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2501912	O-Phosphate-P	0.0785	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P447982

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2502058	O-Phosphate-P	1.05	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P447966

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2501949	Cylindrospermopsin	3.41	Spike	P	0 - 30
2501949	Desmethyl microcystin LR	3.56	Spike	P	0 - 30
2501949	Microcystin HiiR	0.844	Spike	P	0 - 30
2501949	Microcystin HtyR	2.09	Spike	P	0 - 30
2501949	Microcystin LA	4.82	Spike	P	0 - 30
2501949	Microcystin LF	3.50	Spike	P	0 - 30
2501949	Microcystin LR	0.651	Spike	P	0 - 30
2501949	Microcystin LW	3.61	Spike	P	0 - 30
2501949	Microcystin LY	1.48	Spike	P	0 - 30
2501949	Microcystin RR	1.95	Spike	P	0 - 30
2501949	Microcystin WR	0.0715	Spike	P	0 - 30
2501949	Microcystin YR	0.499	Spike	P	0 - 30
2501949	Nodularin-R	2.65	Spike	P	0 - 30

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P447967

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2501949	Anatoxin-a	0.297	Spike	P	0 - 30
2501949	Neosaxitoxin	0.575	Spike	P	0 - 30
2501949	Saxitoxin	3.09	Spike	P	0 - 30

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

Quality Assurance Report

Surrogates

Lab Sample ID: 2501983

Field Sample ID: FB_07162024

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	42.6	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	64.2	P	30 - 160

Lab Sample ID: 2502063

Field Sample ID: NEHAB0057

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	86.0	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	114	P	30 - 160

Lab Sample ID: 2502064

Field Sample ID: NEHAB0073

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	82.0	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	105	P	30 - 160

Lab Sample ID: 2502065

Field Sample ID: NEHAB0117

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	86.5	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	98.6	P	30 - 160

Lab Sample ID: 2502066

Field Sample ID: NEHAB0120

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	86.1	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	107	P	30 - 160

Lab Sample ID: 2502142

Field Sample ID: NEHAB0119

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	85.1	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	113	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A126706

Included Lab Sample IDs: 2501983, 2502063, 2502064, 2502065, 2502066, 2502142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	84.1	92.8	P/P	50 - 160
Anatoxin-a	92.8	90.7	P/P	50 - 160
Neosaxitoxin	106	89.4	P/P	50 - 160
Neosaxitoxin	89.4	97.5	P/P	50 - 160
Saxitoxin	89.7	92.3	P/P	50 - 160
Saxitoxin	92.3	89.9	P/P	50 - 160

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A126721

Included Lab Sample IDs: 2501982, 2502058, 2502059, 2502060, 2502061, 2502137

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	98.9	P/P	90 - 110
O-Phosphate-P	99.0	99.3	P/P	90 - 110
O-Phosphate-P	99.3	98.7	P/P	90 - 110

Reference Method: DEP SOP: NU-094-1

Run ID: A126723

Included Lab Sample IDs: 2501980

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.4	99.5	P/P	90 - 110

Reference Method: DEP SOP: NU-094-1

Run ID: A126726

Included Lab Sample IDs: 2502048, 2502049, 2502050, 2502051, 2502135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.6	98.9	P/P	90 - 110
Color (true)	99.9	99.6	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A126734

Included Lab Sample IDs: 2501983, 2502063, 2502064, 2502065, 2502066, 2502142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	104	116	P/P	60 - 160
Cylindrospermopsin	94.1	104	P/P	60 - 160
Desmethyl microcystin LR	94.9	96.1	P/P	60 - 160
Desmethyl microcystin LR	96.1	95.3	P/P	60 - 160
Microcystin HiIR	90.4	91.8	P/P	60 - 160
Microcystin HiIR	91.8	97.2	P/P	60 - 160
Microcystin HtyR	91.9	94.0	P/P	60 - 160
Microcystin HtyR	97.4	91.9	P/P	60 - 160
Microcystin LA	89.7	92.4	P/P	50 - 160
Microcystin LA	92.4	92.6	P/P	50 - 160
Microcystin LF	94.6	99.1	P/P	50 - 160
Microcystin LF	96.3	94.6	P/P	50 - 160
Microcystin LR	97.5	106	P/P	60 - 160
Microcystin LR	99.2	97.5	P/P	60 - 160
Microcystin LW	92.9	94.7	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A126734

Included Lab Sample IDs: 2501983, 2502063, 2502064, 2502065, 2502066, 2502142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Microcystin LW	94.7	95.7	P/P	60 - 160
Microcystin LY	95.0	98.0	P/P	60 - 160
Microcystin LY	95.1	95.0	P/P	60 - 160
Microcystin RR	89.9	90.1	P/P	60 - 160
Microcystin RR	90.1	92.3	P/P	60 - 160
Microcystin WR	90.6	95.0	P/P	60 - 160
Microcystin WR	95.0	96.2	P/P	60 - 160
Microcystin YR	100	104	P/P	60 - 160
Microcystin YR	92.1	100	P/P	60 - 160
Nodularin-R	92.1	93.2	P/P	60 - 160
Nodularin-R	93.2	92.1	P/P	60 - 160

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A126812

Included Lab Sample IDs: 2502053, 2502054, 2502055, 2502056, 2502136

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.6	99.1	P/P	90 - 110
Kjeldahl Nitrogen	97.3	96.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A126819

Included Lab Sample IDs: 2501981

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A126827

Included Lab Sample IDs: 2501981

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A126829

Included Lab Sample IDs: 2502056, 2502136

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A126831

Included Lab Sample IDs: 2502053, 2502054, 2502055

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	97.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A126860

Included Lab Sample IDs: 2501981, 2502053, 2502054, 2502055, 2502056, 2502136

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.1	98.3	P/P	90 - 110
Ammonia-N	97.4	97.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A126874

Included Lab Sample IDs: 2502053, 2502054, 2502055, 2502056, 2502136

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: A126877

Included Lab Sample IDs: 2501981

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	94.2	96.0	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)	98.7			0.823	
	Color (true)	98.6			4.46	
	Color (true)	98.5			0.506	
EPA 350.1 Rev. 2.0	Ammonia-N	95.6	97.6	100		2.63
	Ammonia-N	95.6	95.8	97.8		1.71
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	97.6	99.4		1.65
	Kjeldahl Nitrogen	106	103	98.3		4.24
EPA 353.2 Rev. 2.0	NO2NO3-N	100	100	99.5		0.501
	NO2NO3-N	100	101	101		0.0
EPA 365.1 Rev. 2.0	Total-P	97.1	98.4	98.4		0.0233
	Total-P	97.6	99.9	101		0.609
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.9	96.6	96.5		0.0785
	O-Phosphate-P	98.5	98.0	99.2		1.05
EPA 8321B	Anatoxin-a	87.5	90.6	90.9		0.297
	Cylindrospermopsin	91.2	89.8	92.9		3.41
	Desmethyl microcystin LR	88.9	92.1	88.9		3.56
	Microcystin HilR	89.8	95.5	94.7		0.844
	Microcystin HtyR	92.0	88.1	89.9		2.09
	Microcystin LA	87.9	86.4	90.6		4.82
	Microcystin LF	88.5	95.7	92.4		3.50
	Microcystin LR	93.5	95.4	94.7		0.651
	Microcystin LW	89.0	93.7	90.4		3.61
	Microcystin LY	92.9	94.0	92.6		1.48
	Microcystin RR	90.0	92.5	90.7		1.95
	Microcystin WR	96.4	96.2	96.2		0.0715
	Microcystin YR	92.6	95.9	96.4		0.499
	Neosaxitoxin	106	71.1	71.5		0.575
	Nodularin-R	91.3	94.8	92.3		2.65
	Saxitoxin	88.9	66.4	68.5		3.09

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2501980, 2502048, 2502049, 2502050, 2502051, 2502135
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2501981, 2502053, 2502054, 2502055, 2502056, 2502136
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2501981, 2502053, 2502054, 2502055, 2502056, 2502136
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2501981, 2502053, 2502054, 2502055, 2502056, 2502136
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2501981, 2502053, 2502054, 2502055, 2502056, 2502136
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2501982, 2502058, 2502059, 2502060, 2502061, 2502137
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2501983, 2502063, 2502064, 2502065, 2502066, 2502142
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2501983, 2502063, 2502064, 2502065, 2502066, 2502142

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	07/17/2024			07/17/2024 11:38	Jessica K Wilks	2501980
	07/17/2024			07/17/2024 14:13	Jessica K Wilks	2502048, 2502049
	07/17/2024			07/17/2024 14:14	Jessica K Wilks	2502050, 2502051
	07/17/2024			07/17/2024 14:18	Jessica K Wilks	2502135
EPA 350.1 Rev. 2.0	07/17/2024			07/24/2024 11:11	Robyn Blevins	2501981
	07/17/2024			07/24/2024 12:21	Robyn Blevins	2502053
	07/17/2024			07/24/2024 12:25	Robyn Blevins	2502054
	07/17/2024			07/24/2024 12:27	Robyn Blevins	2502055
	07/17/2024			07/24/2024 12:28	Robyn Blevins	2502056
EPA 351.2 Rev. 2.0	07/17/2024			07/24/2024 12:29	Robyn Blevins	2502136
	07/17/2024	07/19/2024 08:33	Simonne.V. Calhoun	07/22/2024 15:28	Ping Hua	2502053
	07/17/2024	07/19/2024 08:33	Simonne.V. Calhoun	07/22/2024 15:33	Ping Hua	2502054
	07/17/2024	07/19/2024 08:33	Simonne.V. Calhoun	07/22/2024 15:34	Ping Hua	2502055
	07/17/2024	07/19/2024 08:33	Simonne.V. Calhoun	07/22/2024 15:36	Ping Hua	2502056
	07/17/2024	07/19/2024 08:33	Simonne.V. Calhoun	07/22/2024 15:37	Ping Hua	2502136
EPA 353.2 Rev. 2.0	07/17/2024	07/19/2024 11:10	Simonne.V. Calhoun	07/23/2024 12:51	Samantha L Bates	2501981
	07/17/2024			07/22/2024 15:03	Fadila Guebre	2501981
	07/17/2024			07/24/2024 14:07	Fadila Guebre	2502054
	07/17/2024			07/24/2024 14:08	Fadila Guebre	2502055
	07/17/2024			07/24/2024 14:09	Fadila Guebre	2502056
	07/17/2024			07/24/2024 14:11	Fadila Guebre	2502136
EPA 365.1 Rev. 2.0	07/17/2024			07/24/2024 14:14	Fadila Guebre	2502053
	07/17/2024	07/22/2024 15:17	Adam P Silver	07/23/2024 13:26	Chandler E Cox	2502056
	07/17/2024	07/22/2024 15:17	Adam P Silver	07/23/2024 13:27	Chandler E Cox	2502136
	07/17/2024	07/22/2024 15:17	Adam P Silver	07/23/2024 14:28	Chandler E Cox	2502055
	07/17/2024	07/22/2024 15:17	Adam P Silver	07/23/2024 14:29	Chandler E Cox	2502053
	07/17/2024	07/22/2024 15:17	Adam P Silver	07/23/2024 14:30	Chandler E Cox	2502054
EPA 365.1 Rev. 2.0 dissolved	07/17/2024	07/23/2024 15:16	Simonne.V. Calhoun	07/25/2024 09:12	Simonne.V. Calhoun	2501981
	07/17/2024			07/17/2024 12:58	Elise M. Gillis	2501982
	07/17/2024			07/17/2024 13:19	Elise M. Gillis	2502058
	07/17/2024			07/17/2024 13:26	Elise M. Gillis	2502059
	07/17/2024			07/17/2024 13:27	Elise M. Gillis	2502060
	07/17/2024			07/17/2024 13:28	Elise M. Gillis	2502061
EPA 8321B	07/17/2024			07/17/2024 13:29	Elise M. Gillis	2502137
	07/17/2024	07/17/2024 12:00	Samatha Luckman	07/17/2024 23:22	Samatha Luckman	2501983
	07/17/2024	07/17/2024 12:00	Samatha Luckman	07/17/2024 23:38	Samatha Luckman	2502063
	07/17/2024	07/17/2024 12:00	Samatha Luckman	07/17/2024 23:55	Samatha Luckman	2502064
	07/17/2024	07/17/2024 12:00	Samatha Luckman	07/18/2024 00:03	Samatha Luckman	2501983
	07/17/2024	07/17/2024 12:00	Samatha Luckman	07/18/2024 00:11	Samatha Luckman	2502065
	07/17/2024	07/17/2024 12:00	Samatha Luckman	07/18/2024 00:16	Samatha Luckman	2502063

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	07/17/2024	07/17/2024 12:00	Samatha Luckman	07/18/2024 00:28	Samatha Luckman	2502066
	07/17/2024	07/17/2024 12:00	Samatha Luckman	07/18/2024 00:30	Samatha Luckman	2502064
	07/17/2024	07/17/2024 12:00	Samatha Luckman	07/18/2024 00:44	Samatha Luckman	2502065
	07/17/2024	07/17/2024 12:00	Samatha Luckman	07/18/2024 00:58	Samatha Luckman	2502066
	07/17/2024	07/17/2024 12:00	Samatha Luckman	07/18/2024 01:50	Samatha Luckman	2502142
	07/17/2024	07/17/2024 12:00	Samatha Luckman	07/18/2024 02:08	Samatha Luckman	2502142