

Chemical Analysis Report

WQAP-2021-10-07-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Algal Bloom Response - SE ROC**
Request ID: **RQ-2021-10-04-73**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Jordan Skaggs

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 29-OCT-2021 15:23

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Nutrients and Pesticides.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: M Canal - Royal Palm Beach

Collection Date/Time: 10/06/2021 12:40

Field ID: SEHAB0068

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2281322	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404636	
		Cylindrospermopsin	0.10	U	ug/L	P404636	
		Desmethyl microcystin LR	0.25	U	ug/L	P404636	
		Microcystin HilR**	0.25	U	ug/L	P404636	
		Microcystin HtyR**	0.25	U	ug/L	P404636	
		Microcystin LA	0.10	U	ug/L	P404636	
		Microcystin LF	0.10	U	ug/L	P404636	
		Microcystin LR	0.25	U	ug/L	P404636	
		Microcystin LW	0.25	U	ug/L	P404636	
		Microcystin LY	0.10	U	ug/L	P404636	
		Microcystin RR	0.10	U	ug/L	P404636	
		Microcystin WR	0.50	U	ug/L	P404636	
		Microcystin YR	0.25	U	ug/L	P404636	
		Nodularin-R**	0.10	U	ug/L	P404636	
2281324	EPA 350.1 Rev. 2.0	Ammonia-N	0.086		mg N/L	P405072	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P405039	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.046		mg N/L	P404849	
	EPA 365.1 Rev. 2.0	Total-P	0.093		mg P/L	P404950	
2281326	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.044		mg P/L	P404712	

Sample Location: Bel Lido Dr

Collection Date/Time: 10/06/2021 15:20

Field ID: SEHAB0067

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2281323	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P404636	
		Cylindrospermopsin	0.10	U	ug/L	P404636	
		Desmethyl microcystin LR	0.25	U	ug/L	P404636	
		Microcystin HIR**	0.25	U	ug/L	P404636	
		Microcystin HtyR**	0.25	U	ug/L	P404636	
		Microcystin LA	0.10	U	ug/L	P404636	
		Microcystin LF	0.10	U	ug/L	P404636	
		Microcystin LR	0.25	U	ug/L	P404636	
		Microcystin LW	0.25	U	ug/L	P404636	
		Microcystin LY	0.10	U	ug/L	P404636	
		Microcystin RR	0.10	U	ug/L	P404636	
		Microcystin WR	0.50	U	ug/L	P404636	
		Microcystin YR	0.25	U	ug/L	P404636	
		Nodularin-R**	0.10	U	ug/L	P404636	
2281325	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P404984	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37	I	mg N/L	P404992	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P404911	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P405107	
2281327	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.01	I	mg P/L	P404737	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404984

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405072

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404992

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405039

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404849

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404911

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404950

Component	Result	Code	Units
Total-P	0.005	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405107

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404712

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404737

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

Reference Method: EPA 8321B
Batch ID: P404636

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin H1R	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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404984

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405072

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404992

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: P405039

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404849

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: P404911

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: P404950

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405107

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404712

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404737

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.4		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P404636

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	123		P	40 - 150
Cylindrospermopsin	110		P	40 - 150
Desmethyl microcystin LR	119		P	40 - 150
Microcystin HIR	131		P	40 - 150
Microcystin HtyR	134		P	40 - 150
Microcystin LA	110		P	40 - 150
Microcystin LF	96.8		P	40 - 150
Microcystin LR	123		P	40 - 150
Microcystin LW	110		P	40 - 150
Microcystin LY	119		P	40 - 150
Microcystin RR	112		P	40 - 150
Microcystin WR	127		P	40 - 150
Microcystin YR	130		P	40 - 150
Nodularin-R	106		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404984

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280788	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405072

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2281363	Ammonia-N	96.6	97.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404992

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2281154	Kjeldahl Nitrogen	102	94.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405039

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2281377	Kjeldahl Nitrogen	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404849

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2281156	NO2NO3-N	97.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2281325	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404950

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279749	Total-P	105	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405107

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2282576	Total-P	108	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404712

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2281477	O-Phosphate-P	96.5	96.0	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404737

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2281365	O-Phosphate-P	97.8	98.6	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P404636

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2280926	Anatoxin-a	129	127	P/P	40 - 150
2280926	Cylindrospermopsin	95.3	98.3	P/P	40 - 150
2280926	Desmethyl microcystin LR	109	108	P/P	40 - 150
2280926	Microcystin H1LR	123	117	P/P	40 - 150
2280926	Microcystin HtyR	123	117	P/P	40 - 150
2280926	Microcystin LA	96.4	93.9	P/P	40 - 150
2280926	Microcystin LF	85.3	88.4	P/P	40 - 150
2280926	Microcystin LR	112	115	P/P	40 - 150
2280926	Microcystin LW	92.7	101	P/P	40 - 150
2280926	Microcystin LY	103	107	P/P	40 - 150
2280926	Microcystin RR	102	101	P/P	40 - 150
2280926	Microcystin WR	111	115	P/P	40 - 150
2280926	Microcystin YR	124	115	P/P	40 - 150
2280926	Nodularin-R	101	97.3	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404984

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280788	Ammonia-N	0.508	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P405072

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2281363	Ammonia-N	0.638	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404992

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2281154	Kjeldahl Nitrogen	6.02	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P405039

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2281377	Kjeldahl Nitrogen	0.441	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404849

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2281156	NO2NO3-N	0.242	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2281325	NO2NO3-N	0.948	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404950

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279749	Total-P	1.70	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P405107

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2282576	Total-P	0.333	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P404712

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2281477	O-Phosphate-P	0.461	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P404737

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2281365	O-Phosphate-P	0.608	Spike	P	0 - 20

Reference Method: EPA 8321B
 Batch ID: P404636

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2280926	Anatoxin-a	1.58	Spike	P	0 - 30
2280926	Cylindrospermopsin	3.11	Spike	P	0 - 30
2280926	Desmethyl microcystin LR	1.23	Spike	P	0 - 30
2280926	Microcystin HllR	4.95	Spike	P	0 - 30
2280926	Microcystin HtyR	4.62	Spike	P	0 - 30
2280926	Microcystin LA	2.53	Spike	P	0 - 30
2280926	Microcystin LF	3.58	Spike	P	0 - 30
2280926	Microcystin LR	2.94	Spike	P	0 - 30
2280926	Microcystin LW	8.21	Spike	P	0 - 30
2280926	Microcystin LY	3.88	Spike	P	0 - 30
2280926	Microcystin RR	1.07	Spike	P	0 - 30
2280926	Microcystin WR	4.01	Spike	P	0 - 30
2280926	Microcystin YR	7.47	Spike	P	0 - 30
2280926	Nodularin-R	3.40	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2281322
Field Sample ID: SEHAB0068

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	123	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	101	P	30 - 160

Lab Sample ID: 2281323
Field Sample ID: SEHAB0067

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	89.6	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	82.2	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A108196

Included Lab Sample IDs: 2281326

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.4	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A108211

Included Lab Sample IDs: 2281327

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	99.0	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A108213

Included Lab Sample IDs: 2281322, 2281323

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	119	118	P/P	50 - 160
Cylindrospermopsin	102	103	P/P	50 - 160
Desmethyl microcystin LR	115	112	P/P	50 - 160
Microcystin HILR	121	123	P/P	50 - 160
Microcystin HtyR	131	129	P/P	50 - 160
Microcystin LA	106	106	P/P	50 - 160
Microcystin LF	110	111	P/P	50 - 160
Microcystin LR	122	117	P/P	50 - 160
Microcystin LW	121	125	P/P	50 - 160
Microcystin LY	117	115	P/P	50 - 160
Microcystin RR	103	105	P/P	50 - 160
Microcystin WR	124	124	P/P	50 - 160
Microcystin YR	116	125	P/P	50 - 160
Nodularin-R	102	100	P/P	50 - 160

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108264

Included Lab Sample IDs: 2281324

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108278

Included Lab Sample IDs: 2281325

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108304

Included Lab Sample IDs: 2281324

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A108307

Included Lab Sample IDs: 2281325

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A108332

Included Lab Sample IDs: 2281325

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	97.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A108343

Included Lab Sample IDs: 2281324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.9	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A108354

Included Lab Sample IDs: 2281324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108400

Included Lab Sample IDs: 2281325

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	99.5	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	Precision SMP	MS
EPA 350.1 Rev. 2.0	Ammonia-N	101	102	103			0.508
	Ammonia-N	98.4	96.6	97.4			0.638
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.2	102	94.5			6.02
	Kjeldahl Nitrogen	99.8	101	101			0.441
EPA 353.2 Rev. 2.0	NO2NO3-N	102	97.5				0.242
	NO2NO3-N	101	101	102			0.948
EPA 365.1 Rev. 2.0	Total-P	104	105	103			1.70
	Total-P	105	108	108			0.333
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.5	96.5	96.0			0.461
	O-Phosphate-P	98.4	97.8	98.6			0.608
EPA 8321B	Anatoxin-a	123	129	127			1.58
	Cylindrospermopsin	110	95.3	98.3			3.11
	Desmethyl microcystin LR	119	109	108			1.23
	Microcystin HiLR	131	123	117			4.95
	Microcystin HtyR	134	123	117			4.62
	Microcystin LA	110	96.4	93.9			2.53
	Microcystin LF	96.8	85.3	88.4			3.58
	Microcystin LR	123	112	115			2.94
	Microcystin LW	110	92.7	101			8.21
	Microcystin LY	119	103	107			3.88
	Microcystin RR	112	102	101			1.07
	Microcystin WR	127	111	115			4.01
	Microcystin YR	130	124	115			7.47
	Nodularin-R	106	101	97.3			3.40

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2281324, 2281325
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2281324, 2281325
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2281324, 2281325
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2281324, 2281325
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2281326, 2281327
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2281322, 2281323

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 350.1 Rev. 2.0	10/07/2021			10/12/2021 12:41	Ping Hua	2281325
	10/07/2021			10/14/2021 12:35	Ping Hua	2281324
EPA 351.2 Rev. 2.0	10/07/2021	10/13/2021 10:35	Benjamin T. Nordmann	10/14/2021 10:15	Alexandra J Mattheus	2281325
	10/07/2021	10/14/2021 12:45	Benjamin T. Nordmann	10/15/2021 11:29	Alexandra J Mattheus	2281324
EPA 353.2 Rev. 2.0	10/07/2021			10/11/2021 11:06	Beverly Y. Sanders	2281324
	10/07/2021			10/12/2021 09:17	Beverly Y. Sanders	2281325
EPA 365.1 Rev. 2.0	10/07/2021	10/12/2021 18:10	Simonne.V. Calhoun	10/13/2021 11:16	Lipi Saha	2281324
	10/07/2021	10/15/2021 15:22	Simonne.V. Calhoun	10/19/2021 10:53	Lipi Saha	2281325
EPA 365.1 Rev. 2.0 dissolved	10/07/2021			10/07/2021 11:15	James L Waggeberby	2281326
	10/07/2021			10/07/2021 14:51	James L Waggeberby	2281327
EPA 8321B	10/07/2021	10/07/2021 11:00	Manjita Shrestha	10/07/2021 21:50	Manjita Shrestha	2281322
	10/07/2021	10/07/2021 11:00	Manjita Shrestha	10/07/2021 22:06	Manjita Shrestha	2281323