Chemical Analysis Report

WQAP-2023-08-23-02

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

Event Description: **Algal Bloom Response - SE ROC**
Request ID: **RQ-2023-07-24-36**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
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2199 South Rock Road
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Certified by: Colin Wright, Program Administrator

Date Certified: 12-SEP-2023 09:50

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: C44 Canal - Timer Powers Park **Collection Date/Time: 08/22/2023 09:00**

Field ID: SEHAB0046 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2433064	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P434220	
		Cylindrospermopsin	0.10	U	ug/L	P434219	
		Desmethyl microcystin LR	0.25	U	ug/L	P434219	
		Microcystin HilR	0.25	U	ug/L	P434219	
		Microcystin HtyR	0.25	U	ug/L	P434219	
		Microcystin LA	0.10	U	ug/L	P434219	
		Microcystin LF	0.10	U	ug/L	P434219	
		Microcystin LR	0.25	U	ug/L	P434219	
		Microcystin LW	0.25	U	ug/L	P434219	
		Microcystin LY	0.10	U	ug/L	P434219	
		Microcystin RR	0.10	U	ug/L	P434219	
		Microcystin WR	0.50	U	ug/L	P434219	
		Neosaxitoxin	0.50	U	ug/L	P434220	
		Microcystin YR	0.25	U	ug/L	P434219	
		Saxitoxin	0.50	U	ug/L	P434220	
		Nodularin-R	0.10	U	ug/L	P434219	
2433071	EPA 350.1 Rev. 2.0	Ammonia-N	0.13		mg N/L	P434577	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P434650	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.093		mg N/L	P434742	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P434360	
2433072	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.092		mg P/L	P434237	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434577

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434650

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434742

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434360

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P434237

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

Reference Method: EPA 8321B
Batch ID: P434219

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: P434220

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: EPA 350.1 Rev. 2.0
Batch ID: P434577

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434650

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434742

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434360

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P434237

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

Reference Method: EPA 8321B
Batch ID: P434219

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	101		P	40 - 160
Desmethyl microcystin LR	96.1		P	40 - 160
Microcystin HilR	89.5		P	40 - 160
Microcystin HtyR	91.3		P	40 - 160
Microcystin LA	96.0		P	40 - 160
Microcystin LF	113		P	40 - 160
Microcystin LR	90.9		P	40 - 160
Microcystin LW	101		P	40 - 160
Microcystin LY	97.4		P	40 - 160
Microcystin RR	95.2		P	40 - 160
Microcystin WR	102		P	40 - 160
Microcystin YR	93.4		P	40 - 160
Nodularin-R	95.1		P	40 - 160

Reference Method: EPA 8321B
Batch ID: P434220

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	103		P	40 - 150
Neosaxitoxin	90.1		P	40 - 150
Saxitoxin	86.1		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434577

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432992	Ammonia-N	97.6	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434650

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432778	Kjeldahl Nitrogen	91.1	98.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434742

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432875	NO2NO3-N	101		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434360

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2433097	Total-P	107	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P434237

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2433072	O-Phosphate-P	97.9	98.0	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P434219

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432872	Cylindrospermopsin	92.7	102	P/P	40 - 160
2432872	Desmethyl microcystin LR	103	117	P/P	40 - 160
2432872	Microcystin HilR	89.2	97.9	P/P	40 - 160
2432872	Microcystin HtyR	95.6	100	P/P	40 - 160
2432872	Microcystin LA	98.5	112	P/P	40 - 160
2432872	Microcystin LF	112	109	P/P	40 - 160
2432872	Microcystin LR	88.7	102	P/P	40 - 160
2432872	Microcystin LW	104	104	P/P	40 - 160
2432872	Microcystin LY	98.4	104	P/P	40 - 160
2432872	Microcystin RR	95.3	98.0	P/P	40 - 160
2432872	Microcystin WR	92.3	106	P/P	40 - 160
2432872	Microcystin YR	88.2	97.3	P/P	40 - 160
2432872	Nodularin-R	92.1	103	P/P	40 - 160

Reference Method: EPA 8321B
Batch ID: P434220

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432872	Anatoxin-a	93.4	92.6	P/P	40 - 150
2432872	Neosaxitoxin	50.2	50.3	P/P	40 - 150
2432872	Saxitoxin	55.1	58.2	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434577

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432992	Ammonia-N	1.90	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432778	Kjeldahl Nitrogen	4.48	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434742

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432875	NO2NO3-N	0.362	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434360

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2433097	Total-P	0.446	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P434237

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2433072	O-Phosphate-P	0.0526	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P434219

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432872	Cylindrospermopsin	9.25	Spike	P	0 - 30
2432872	Desmethyl microcystin LR	12.7	Spike	P	0 - 30
2432872	Microcystin HilR	9.27	Spike	P	0 - 30
2432872	Microcystin HtyR	4.58	Spike	P	0 - 30
2432872	Microcystin LA	12.9	Spike	P	0 - 30
2432872	Microcystin LF	2.61	Spike	P	0 - 30
2432872	Microcystin LR	13.5	Spike	P	0 - 30
2432872	Microcystin LW	0.0570	Spike	P	0 - 30
2432872	Microcystin LY	5.71	Spike	P	0 - 30
2432872	Microcystin RR	2.79	Spike	P	0 - 30
2432872	Microcystin WR	13.4	Spike	P	0 - 30
2432872	Microcystin YR	9.86	Spike	P	0 - 30
2432872	Nodularin-R	11.2	Spike	P	0 - 30

Quality Assurance Report
Precision

Reference Method: EPA 8321B
Batch ID: P434220

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432872	Anatoxin-a	0.808	Spike	P	0 - 30
2432872	Neosaxitoxin	0.180	Spike	P	0 - 30
2432872	Saxitoxin	5.52	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2433064
Field Sample ID: SEHAB0046

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	88.4	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	64.6	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A121203
Included Lab Sample IDs: 2433072

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

Reference Method: EPA 8321B
Run ID: A121235
Included Lab Sample IDs: 2433064

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	98.9	94.6	P/P	50 - 160
Neosaxitoxin	99.4	95.5	P/P	50 - 160
Saxitoxin	96.4	94.1	P/P	50 - 160

Reference Method: EPA 8321B
Run ID: A121236
Included Lab Sample IDs: 2433064

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	107	101	P/P	60 - 160
Desmethyl microcystin LR	104	99.7	P/P	50 - 160
Microcystin HilR	103	88.3	P/P	60 - 160
Microcystin HtyR	98.5	102	P/P	60 - 160
Microcystin LA	101	104	P/P	50 - 160
Microcystin LF	110	100	P/P	60 - 160
Microcystin LR	93.3	84.3	P/P	60 - 160
Microcystin LW	111	101	P/P	60 - 160
Microcystin LY	111	97.6	P/P	60 - 160
Microcystin RR	108	99.5	P/P	60 - 160
Microcystin WR	104	109	P/P	60 - 160
Microcystin YR	110	97.7	P/P	60 - 160
Nodularin-R	109	90.9	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A121286
Included Lab Sample IDs: 2433071

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A121360
Included Lab Sample IDs: 2433071

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.9	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A121424
Included Lab Sample IDs: 2433071

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	105	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A121429
Included Lab Sample IDs: 2433071

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

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 350.1 Rev. 2.0	Ammonia-N	98.2	97.6	99.8			1.90
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	91.1	98.4			4.48
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101				0.362
EPA 365.1 Rev. 2.0	Total-P	107	107	108			0.446
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.8	97.9	98.0			0.0526
EPA 8321B	Anatoxin-a	103	93.4	92.6			0.808
	Cylindrospermopsin	101	92.7	102			9.25
	Desmethyl microcystin LR	96.1	103	117			12.7
	Microcystin HilR	89.5	89.2	97.9			9.27
	Microcystin HtyR	91.3	95.6	100			4.58
	Microcystin LA	96.0	98.5	112			12.9
	Microcystin LF	113	112	109			2.61
	Microcystin LR	90.9	88.7	102			13.5
	Microcystin LW	101	104	104			0.0570
	Microcystin LY	97.4	98.4	104			5.71
	Microcystin RR	95.2	95.3	98.0			2.79
	Microcystin WR	102	92.3	106			13.4
	Microcystin YR	93.4	88.2	97.3			9.86
	Neosaxitoxin	90.1	50.2	50.3			0.180
	Nodularin-R	95.1	92.1	103			11.2
	Saxitoxin	86.1	55.1	58.2			5.52

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2433071
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2433071
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2433071
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2433071
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2433072
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2433064
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2433064

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	08/23/2023			09/05/2023 12:27	Ping Hua	2433071
EPA 351.2 Rev. 2.0	08/23/2023	09/08/2023 10:05	Simonne.V. Calhoun	09/08/2023 15:38	Samantha L Bates	2433071
EPA 353.2 Rev. 2.0	08/23/2023			09/07/2023 13:58	Anna M. Plaviak	2433071
EPA 365.1 Rev. 2.0	08/23/2023	08/25/2023 14:35	Adam P Silver	08/28/2023 12:28	Chandler E Cox	2433071
EPA 365.1 Rev. 2.0 dissolved	08/23/2023			08/23/2023 14:27	Elise M. Gillis	2433072
EPA 8321B	08/23/2023	08/24/2023 12:00	Hana Lee	08/24/2023 15:02	Tae K Lee	2433064
	08/23/2023	08/24/2023 12:00	Hana Lee	08/24/2023 15:50	Tae K Lee	2433064