

Chemical Analysis Report

WQAP-2019-07-09-03

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

Event Description: **Algal Bloom Response - SWD**
Request ID: **RQ-2019-07-08-79**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637
Attn: Matthew Bearden

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 17-JUL-2019 10:00



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: BAYSHORE NEAR ROME

Collection Date/Time: 07/08/2019 11:00

Field ID: BAYSHORE NEAR ROME

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100851	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P366825	
		Cylindrospermopsin**	0.25	U	ug/L	P366825	
		Microcystin LA**	0.25	U	ug/L	P366825	
		Microcystin LF**	0.25	U	ug/L	P366825	
		Microcystin LR**	0.25	U	ug/L	P366825	
		Microcystin LY**	0.25	U	ug/L	P366825	
		Microcystin RR**	0.25	U	ug/L	P366825	
		Microcystin YR**	0.25	U	ug/L	P366825	

Sample Location: BAYSHORE NEAR ROME

Collection Date/Time: 07/08/2019 11:00

Field ID: BAYSHORE NEAR ROME

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100852	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P367006	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P367063	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P367203	
	EPA 365.1 Rev. 2.0	Total-P	0.30		mg P/L	P367057	
2100853	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.22		mg P/L	P366907	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367006

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367063

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367203

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P367057

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366907

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

Reference Method: EPA 8321B
Batch ID: P366825

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Cylindrospermopsin	0.25	U	ug/L
Microcystin LA	0.25	U	ug/L
Microcystin LF	0.25	U	ug/L
Microcystin LR	0.25	U	ug/L
Microcystin LY	0.25	U	ug/L
Microcystin RR	0.25	U	ug/L
Microcystin YR	0.25	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367006

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367063

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367203

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P367057

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366907

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.1		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P366825

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	104		P	40 - 140
Cylindrospermopsin	93.2		P	40 - 140
Microcystin LA	98.1		P	40 - 140
Microcystin LF	87.7		P	40 - 140
Microcystin LR	99.9		P	40 - 140
Microcystin LY	92.4		P	40 - 140
Microcystin RR	98.7		P	40 - 140
Microcystin YR	105		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367006

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100712	Ammonia-N	104	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367063

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100703	Kjeldahl Nitrogen	101	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367203

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100702	NO2NO3-N	101	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P367057

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100852	Total-P	97.2	98.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366907

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100845	O-Phosphate-P	93.8	95.0	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P366825

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100769	Anatoxin-a	100	107	P/P	40 - 140
2100769	Cylindrospermopsin	89.4	94.0	P/P	40 - 140
2100769	Microcystin LA	84.7	88.9	P/P	40 - 140
2100769	Microcystin LF	71.1	81.5	P/P	40 - 140
2100769	Microcystin LR	90.3	94.1	P/P	40 - 140
2100769	Microcystin LY	77.7	81.2	P/P	40 - 140
2100769	Microcystin RR	93.0	92.3	P/P	40 - 140
2100769	Microcystin YR	91.4	91.3	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367006

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100712	Ammonia-N	0.146	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367063

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100703	Kjeldahl Nitrogen	1.74	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367203

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100702	NO2NO3-N	0.855	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P367057

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100852	Total-P	1.13	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366907

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100845	O-Phosphate-P	1.10	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P366825

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100769	Anatoxin-a	6.21	Spike	P	0 - 30
2100769	Cylindrospermopsin	5.04	Spike	P	0 - 30
2100769	Microcystin LA	4.86	Spike	P	0 - 30
2100769	Microcystin LF	13.6	Spike	P	0 - 30
2100769	Microcystin LR	4.17	Spike	P	0 - 30
2100769	Microcystin LY	4.44	Spike	P	0 - 30
2100769	Microcystin RR	0.733	Spike	P	0 - 30
2100769	Microcystin YR	0.123	Spike	P	0 - 30

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Surrogates

Lab Sample ID: 2100851

Field Sample ID: BAYSHORE NEAR ROME

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Carbamazepine-d10	110	P	30 - 165

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A92655

Included Lab Sample IDs: 2100853

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.0	96.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A92688

Included Lab Sample IDs: 2100852

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	104	105	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A92690

Included Lab Sample IDs: 2100851

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	105	103	P/P	50 - 160
Cylindrospermopsin	100	99.9	P/P	60 - 160
Microcystin LA	91.1	88.7	P/P	50 - 160
Microcystin LF	77.8	84.9	P/P	60 - 160
Microcystin LR	99.8	93.8	P/P	60 - 160
Microcystin LY	92.9	92.5	P/P	60 - 160
Microcystin RR	97.3	96.5	P/P	60 - 160
Microcystin YR	93.6	91.7	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A92722

Included Lab Sample IDs: 2100852

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A92729

Included Lab Sample IDs: 2100852

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.6	95.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A92760

Included Lab Sample IDs: 2100852

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	99.0	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		LCS	Precision	MS
						SMP	
EPA 350.1 Rev. 2.0	Ammonia-N	105	104	104			0.146
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	101	103			1.74
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	98.5	101	99.8			0.855
EPA 365.1 Rev. 2.0	Total-P	102	97.2	98.7			1.13
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.1	93.8	95.0			1.10
EPA 8321B	Anatoxin-a	104	100	107			6.21
	Cylindrospermopsin	93.2	89.4	94.0			5.04
	Microcystin LA	98.1	84.7	88.9			4.86
	Microcystin LF	87.7	71.1	81.5			13.6
	Microcystin LR	99.9	90.3	94.1			4.17
	Microcystin LY	92.4	77.7	81.2			4.44
	Microcystin RR	98.7	93.0	92.3			0.733
	Microcystin YR	105	91.4	91.3			0.123

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2100852
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2100852
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2100852
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2100852
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2100853
EPA 8321B / E31780	Microcystins in water matrices by HPLC/MS/MS	2100851

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	07/09/2019			07/10/2019 17:12	Ping Hua	2100852
EPA 351.2 Rev. 2.0	07/09/2019	07/11/2019 12:15	Adrian Shelby	07/12/2019 11:54	Joseph Suarez	2100852
EPA 353.2 Rev. 2.0	07/09/2019			07/15/2019 10:45	Beverly Y. Sanders	2100852
EPA 365.1 Rev. 2.0	07/09/2019	07/11/2019 13:05	Sima Feizi	07/12/2019 09:27	Lipi Saha	2100852
EPA 365.1 Rev. 2.0 dissolved	07/09/2019			07/09/2019 16:07	Jhamieka S. Greenwood	2100853
EPA 8321B	07/09/2019	07/10/2019 09:00	Juyoung Kim	07/10/2019 16:40	Juyoung Kim	2100851