

Chemical Analysis Report

SW-DIST-2019-02-28-01

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

Event Description: **Algal Bloom Response - as needed**
Request ID: **RQ-2019-03-11-20**
Customer: **SW-DIST**
Project ID: **BLOOM-RESP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Matthew Bearden

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 12-MAR-2019 09:27



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: HARBOR ISLE FOLLOW-UP ALGAL BLOOM
RESPONSE**

Collection Date/Time: 02/27/2019 11:40

Field ID: HARBOR ISLE

Matrix: W-BRACKISH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2065940	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P359678	
		Cylindrospermopsin**	0.25	U	ug/L	P359678	
		Microcystin LA**	1.4		ug/L	P359678	
		Microcystin LF**	0.25	U	ug/L	P359678	
		Microcystin LR**	8.1		ug/L	P359678	
		Microcystin LY**	0.25	U	ug/L	P359678	
		Microcystin RR**	0.25	U	ug/L	P359678	
		Microcystin YR**	0.25	U	ug/L	P359678	

**Sample Location: HARBOR ISLE FOLLOW-UP ALGAL BLOOM
RESPONSE**

Collection Date/Time: 02/27/2019 11:40

Field ID: HARBOR ISLE

Matrix: W-BRACKISH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2065941	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P360053	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	3.1		mg N/L	P359837	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P359826	
	EPA 365.1 Rev. 2.0	Total-P	0.33		mg P/L	P359754	
2065942	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.081		mg P/L	P359719	

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360053

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359837

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359826

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359754

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359719

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

Reference Method: EPA 8321B
Batch ID: P359678

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: P360053

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359837

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: P359826

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: P359754

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359719

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

Reference Method: EPA 8321B
Batch ID: P359678

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	88.9		P	40 - 140
Cylindrospermopsin	91.7		P	40 - 140
Microcystin LA	83.4		P	40 - 140
Microcystin LF	80.8		P	40 - 140
Microcystin LR	101		P	40 - 140
Microcystin LY	109		P	40 - 140
Microcystin RR	92.9		P	40 - 140
Microcystin YR	100		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P360053

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2065941	Ammonia-N	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P359826

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2065863	NO2NO3-N	99.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P359754

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2065924	Total-P	99.6	96.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P359719

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2065885	O-Phosphate-P	97.0	97.4	P/P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P359678

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2065940	Anatoxin-a	78.0	66.7	P/P	40 - 140
2065940	Cylindrospermopsin	76.9	64.8	P/P	40 - 140
2065940	Microcystin LA	91.3	80.3	P/P	40 - 140
2065940	Microcystin LF	67.4	74.8	P/P	40 - 140
2065940	Microcystin LR	96.5	68.0	P/P	40 - 140
2065940	Microcystin LY	58.1	60.2	P/P	40 - 140
2065940	Microcystin RR	79.6	66.5	P/P	40 - 140
2065940	Microcystin YR	74.8	68.4	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360053

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065941	Ammonia-N	0.460	Spike	P	0 - 15

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065923	Kjeldahl Nitrogen	1.51	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359826

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065863	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065924	Total-P	2.71	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359719

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065885	O-Phosphate-P	0.412	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P359678

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2065940	Anatoxin-a	15.6	Spike	P	0 - 30
2065940	Cylindrospermopsin	17.1	Spike	P	0 - 30
2065940	Microcystin LA	10.9	Spike	P	0 - 30
2065940	Microcystin LF	10.4	Spike	P	0 - 30
2065940	Microcystin LR	17.4	Spike	P	0 - 30
2065940	Microcystin LY	3.51	Spike	P	0 - 30
2065940	Microcystin RR	18.0	Spike	P	0 - 30
2065940	Microcystin YR	8.93	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: 2065940
Field Sample ID: HARBOR ISLE

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Carbamazepine-d10	67.2	P	30 - 165

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A89731

Included Lab Sample IDs: 2065942

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.9	97.5	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A89748

Included Lab Sample IDs: 2065940

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	75.8	77.4	P/P	50 - 160
Cylindrospermopsin	90.7	72.9	P/P	60 - 160
Microcystin LA	75.3	77.2	P/P	50 - 160
Microcystin LF	79.6	67.8	P/P	60 - 160
Microcystin LR	80.4	67.6	P/P	60 - 160
Microcystin LY	95.2	78.8	P/P	60 - 160
Microcystin RR	81.9	66.6	P/P	60 - 160
Microcystin YR	95.7	62.3	P/P	60 - 160

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A89771

Included Lab Sample IDs: 2065941

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A89809

Included Lab Sample IDs: 2065941

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	99.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89812

Included Lab Sample IDs: 2065941

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	107	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A89868

Included Lab Sample IDs: 2065941

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	102	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	101	103	102			0.460
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105					1.51
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	98.5	99.5				0.0
EPA 365.1 Rev. 2.0	Total-P	98.7	99.6	96.2			2.71
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.5	97.0	97.4			0.412
EPA 8321B	Anatoxin-a	88.9	78.0	66.7			15.6
	Cylindrospermopsin	91.7	76.9	64.8			17.1
	Microcystin LA	83.4	91.3	80.3			10.9
	Microcystin LF	80.8	67.4	74.8			10.4
	Microcystin LR	101	96.5	68.0			17.4
	Microcystin LY	109	58.1	60.2			3.51
	Microcystin RR	92.9	79.6	66.5			18.0
	Microcystin YR	100	74.8	68.4			8.93

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2065941
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2065941
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2065941
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2065941
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2065942
EPA 8321B / E31780	Microcystins in water matrices by HPLC/MS/MS	2065940

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	02/28/2019			03/06/2019 14:11	Ping Hua	2065941
EPA 351.2 Rev. 2.0	02/28/2019	03/04/2019 16:00	Adrian Shelby	03/05/2019 13:05	Joseph Suarez	2065941
EPA 353.2 Rev. 2.0	02/28/2019			03/04/2019 11:16	Beverly Y. Sanders	2065941
EPA 365.1 Rev. 2.0	02/28/2019	03/01/2019 13:40	Joseph Suarez	03/04/2019 18:50	Rosalyn Ballman	2065941
EPA 365.1 Rev. 2.0 dissolved	02/28/2019			02/28/2019 16:05	Jhamieka S. Greenwood	2065942
EPA 8321B	02/28/2019	03/01/2019 09:00	Juyoung Kim	03/01/2019 14:54	Juyoung Kim	2065940