Chemical Analysis Report

WQAP-2019-07-03-01

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-2019-07-01-60**
Customer: **WQAP**
Project ID: **BLOOM-RESP**

Send Reports to:
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
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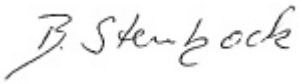
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 19-JUL-2019 15:59



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: Bradenton River off St Rd 64 **Collection Date/Time: 07/02/2019 09:15**

Field ID: Bradenton River off St Rd 64 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100351	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P366591	
		Cylindrospermopsin**	0.25	U	ug/L	P366591	
		Microcystin LA**	0.25	U	ug/L	P366591	RPD
		Microcystin LF**	0.25	U	ug/L	P366591	
		Microcystin LR**	0.25	U	ug/L	P366591	
		Microcystin LY**	0.25	U	ug/L	P366591	RPD
		Microcystin RR**	0.25	U	ug/L	P366591	
		Microcystin YR**	0.25	U	ug/L	P366591	

Sample Location: Bradenton River off St Rd 64 **Collection Date/Time: 07/02/2019 09:15**

Field ID: Bradenton River off St Rd 64 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100354	EPA 350.1 Rev. 2.0	Ammonia-N	0.40		mg N/L	P367001	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P366888	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.038		mg N/L	P366881	
	EPA 365.1 Rev. 2.0	Total-P	0.44		mg P/L	P366791	
2100357	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.29		mg P/L	P366715	

Sample Location: Perico Bayou **Collection Date/Time: 07/02/2019 10:20**

Field ID: Perico Bayou Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100352	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P366591	
		Cylindrospermopsin**	0.25	U	ug/L	P366591	
		Microcystin LA**	0.25	U	ug/L	P366591	RPD
		Microcystin LF**	0.25	U	ug/L	P366591	
		Microcystin LR**	0.25	U	ug/L	P366591	
		Microcystin LY**	0.25	U	ug/L	P366591	RPD
		Microcystin RR**	0.25	U	ug/L	P366591	
		Microcystin YR**	0.25	U	ug/L	P366591	

Sample Location: Perico Bayou **Collection Date/Time: 07/02/2019 10:20**

Field ID: Perico Bayou Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100355	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P367001	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P366969	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P366882	
	EPA 365.1 Rev. 2.0	Total-P	0.039		mg P/L	P366791	
2100358	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P366715	

Sample Location: Flint Creek Knights Griffin **Collection Date/Time: 07/02/2019 13:10**

Field ID: Flint Creek Knights Griffin Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100353	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P366591	
		Cylindrospermopsin**	0.25	U	ug/L	P366591	
		Microcystin LA**	0.25	U	ug/L	P366591	RPD
		Microcystin LF**	0.25	U	ug/L	P366591	
		Microcystin LR**	0.49	I	ug/L	P366591	
		Microcystin LY**	0.25	U	ug/L	P366591	RPD
		Microcystin RR**	0.25	U	ug/L	P366591	
		Microcystin YR**	0.25	U	ug/L	P366591	

Sample Location: Flint Creek Knights Griffin **Collection Date/Time: 07/02/2019 13:10**

Field ID: Flint Creek Knights Griffin Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100356	EPA 350.1 Rev. 2.0	Ammonia-N	0.034		mg N/L	P366811	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.5		mg N/L	P366968	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P366831	
	EPA 365.1 Rev. 2.0	Total-P	0.63		mg P/L	P366790	
2100359	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.41		mg P/L	P366714	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366811

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367001

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366888

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366968

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366969

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366831

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366881

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366882

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366790

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366791

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366714

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366715

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

Reference Method: EPA 8321B
Batch ID: P366591

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: P366811

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367001

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: P366888

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366968

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366969

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: P366831

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: P366881

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: P366882

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366790

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366791

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366714

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366715

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

Reference Method: EPA 8321B
Batch ID: P366591

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	99.4		P	40 - 140
Cylindrospermopsin	99.7		P	40 - 140
Microcystin LA	81.5		P	40 - 140
Microcystin LF	86.1		P	40 - 140
Microcystin LR	82.2		P	40 - 140
Microcystin LY	78.0		P	40 - 140
Microcystin RR	92.3		P	40 - 140
Microcystin YR	83.2		P	40 - 140

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366811

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100123	Ammonia-N	102	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367001

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100355	Ammonia-N	101	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366888

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099564	Kjeldahl Nitrogen	92.3	97.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366968

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100375	Kjeldahl Nitrogen	91.0	93.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366969

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100355	Kjeldahl Nitrogen	102	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366831

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100356	NO2NO3-N	99.5	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366881

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100259	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366882

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100355	NO2NO3-N	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366790

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100193	Total-P	99.8	100	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366791

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100261	Total-P	94.8	96.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366714

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100476	O-Phosphate-P	96.0	96.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100417	O-Phosphate-P	94.1	94.6	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P366591

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099732	Anatoxin-a	103	94.3	P/P	40 - 140
2099732	Cylindrospermopsin	92.6	89.3	P/P	40 - 140
2099732	Microcystin LA	74.9	106	P/P	40 - 140
2099732	Microcystin LF	112	106	P/P	40 - 140
2099732	Microcystin LR	119	100	P/P	40 - 140
2099732	Microcystin LY	67.9	103	P/P	40 - 140
2099732	Microcystin RR	91.1	96.0	P/P	40 - 140
2099732	Microcystin YR	109	98.0	P/P	40 - 140

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366811

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100123	Ammonia-N	2.17	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367001

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100355	Ammonia-N	0.198	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366888

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099564	Kjeldahl Nitrogen	4.40	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366968

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100375	Kjeldahl Nitrogen	1.38	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366969

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100355	Kjeldahl Nitrogen	3.53	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366831

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100356	NO2NO3-N	1.50	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366881

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100259	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366882

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100355	NO2NO3-N	0.484	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366790

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100193	Total-P	0.480	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366791

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100261	Total-P	1.49	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366714

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100476	O-Phosphate-P	0.519	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100417	O-Phosphate-P	0.457	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P366591

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099732	Anatoxin-a	8.50	Spike	P	0 - 30
2099732	Cylindrospermopsin	3.66	Spike	P	0 - 30
2099732	Microcystin LA	34.3	Spike	F	0 - 30
2099732	Microcystin LF	5.50	Spike	P	0 - 30
2099732	Microcystin LR	16.9	Spike	P	0 - 30
2099732	Microcystin LY	40.8	Spike	F	0 - 30
2099732	Microcystin RR	5.22	Spike	P	0 - 30
2099732	Microcystin YR	10.3	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: 2100351
Field Sample ID: Bradenton River off St Rd 64

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Carbamazepine-d10	98.6	P	30 - 165

Lab Sample ID: 2100352
Field Sample ID: Perico Bayou

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Carbamazepine-d10	100	P	30 - 165

Lab Sample ID: 2100353
Field Sample ID: Flint Creek Knights Griffin

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Carbamazepine-d10	101	P	30 - 165

Quality Assurance Report
Calibration Verification

Reference Method: EPA 8321B
Run ID: A92536
Included Lab Sample IDs: 2100351, 2100352, 2100353

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	94.8	96.6	P/P	50 - 160
Cylindrospermopsin	106	105	P/P	60 - 160
Microcystin LA	75.8	77.6	P/P	50 - 160
Microcystin LF	82.4	75.5	P/P	60 - 160
Microcystin LR	80.7	78.6	P/P	60 - 160
Microcystin LY	70.1	68.9	P/P	60 - 160
Microcystin RR	90.4	92.4	P/P	60 - 160
Microcystin YR	78.3	72.8	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A92546
Included Lab Sample IDs: 2100357, 2100358, 2100359

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.8	96.8	P/P	90 - 110
O-Phosphate-P	99.2	98.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A92596
Included Lab Sample IDs: 2100356

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A92605
Included Lab Sample IDs: 2100356

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: A92628
Included Lab Sample IDs: 2100354, 2100356

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	99.8	P/P	90 - 110
Total-P	99.8	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A92638
Included Lab Sample IDs: 2100355

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A92647
Included Lab Sample IDs: 2100354, 2100355

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A92647
Included Lab Sample IDs: 2100354, 2100355

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	101	P/P	90 - 110
NO2NO3-N	99.5	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A92675
Included Lab Sample IDs: 2100354

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.1	99.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A92688
Included Lab Sample IDs: 2100354, 2100355

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A92704
Included Lab Sample IDs: 2100355, 2100356

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.2	93.7	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	104	102	104			2.17
	Ammonia-N	101	101	100			0.198
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	92.3	97.6			4.40
	Kjeldahl Nitrogen	104	91.0	93.6			1.38
	Kjeldahl Nitrogen	106	102	107			3.53
EPA 353.2 Rev. 2.0	NO2NO3-N	102	99.5	101			1.50
	NO2NO3-N	102	101	101			0.0
	NO2NO3-N	103	104	103			0.484
EPA 365.1 Rev. 2.0	Total-P	100	99.8	100			0.480
	Total-P	101	94.8	96.3			1.49
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.9	96.0	96.5			0.519
	O-Phosphate-P	102	94.1	94.6			0.457
EPA 8321B	Anatoxin-a	99.4	103	94.3			8.50
	Cylindrospermopsin	99.7	92.6	89.3			3.66
	Microcystin LA	81.5	74.9	106			34.3
	Microcystin LF	86.1	112	106			5.50
	Microcystin LR	82.2	119	100			16.9
	Microcystin LY	78.0	67.9	103			40.8
	Microcystin RR	92.3	91.1	96.0			5.22
	Microcystin YR	83.2	109	98.0			10.3

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2100354, 2100355, 2100356
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2100354, 2100355, 2100356
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2100354, 2100355, 2100356
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2100354, 2100355, 2100356
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2100357, 2100358, 2100359
EPA 8321B / E31780	Microcystins in water matrices by HPLC/MS/MS	2100351, 2100352, 2100353

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	07/03/2019			07/07/2019 13:13	Ping Hua	2100356
	07/03/2019			07/10/2019 14:33	Ping Hua	2100355
	07/03/2019			07/10/2019 14:38	Ping Hua	2100354
EPA 351.2 Rev. 2.0	07/03/2019	07/09/2019 12:45	Adrian Shelby	07/10/2019 10:19	Joseph Suarez	2100354
	07/03/2019	07/10/2019 13:45	Adrian Shelby	07/11/2019 11:13	Joseph Suarez	2100356
	07/03/2019	07/10/2019 13:45	Adrian Shelby	07/11/2019 11:25	Joseph Suarez	2100355
EPA 353.2 Rev. 2.0	07/03/2019			07/08/2019 13:26	Lauren Lees	2100356
	07/03/2019			07/09/2019 12:30	Beverly Y. Sanders	2100354
	07/03/2019			07/09/2019 12:40	Beverly Y. Sanders	2100355
EPA 365.1 Rev. 2.0	07/03/2019	07/08/2019 11:04	Joseph Suarez	07/09/2019 09:01	Lipi Saha	2100356
	07/03/2019	07/08/2019 11:04	Joseph Suarez	07/09/2019 09:18	Lipi Saha	2100354
	07/03/2019	07/08/2019 11:04	Joseph Suarez	07/09/2019 10:47	Lipi Saha	2100355
EPA 365.1 Rev. 2.0 dissolved	07/03/2019			07/03/2019 16:57	Jhamieka S. Greenwood	2100359
	07/03/2019			07/03/2019 17:01	Jhamieka S. Greenwood	2100358
	07/03/2019			07/03/2019 17:06	Jhamieka S. Greenwood	2100357
EPA 8321B	07/03/2019	07/03/2019 12:00	Juyoung Kim	07/03/2019 14:29	Juyoung Kim	2100351
	07/03/2019	07/03/2019 12:00	Juyoung Kim	07/03/2019 14:45	Juyoung Kim	2100352
	07/03/2019	07/03/2019 12:00	Juyoung Kim	07/03/2019 15:02	Juyoung Kim	2100353