Chemical Analysis Report

WQAP-2020-11-13-02

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

Event Description: **Lake O Release SD**
Request ID: **RQ-2020-10-19-58**
Customer: **WQAP**
Project ID: **LKORELEASE**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399-2400
Attn: Dave Whiting

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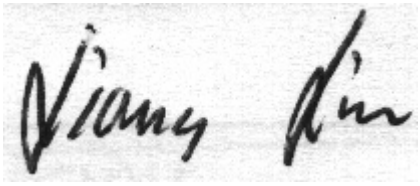
Certified by: Liang Lin, Environmental Administrator

Date Certified: 24-NOV-2020 09:51



NON-CONFORMANCE REPORT INCLUDED

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: S-77 Lock **Collection Date/Time: 11/12/2020 09:55**

Field ID: G3SD0171 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2207664	EPA 8321B	Anatoxin-a**	0.25	U	ug/L	P390239	
		Cylindrospermopsin**	0.25	U	ug/L	P390239	
		Desmethyl microcystin LR**	0.25	U	ug/L	P390239	
		Microcystin LA**	0.25	U	ug/L	P390239	
		Microcystin LF**	0.25	U	ug/L	P390239	
		Microcystin LR**	0.25	U	ug/L	P390239	
		Microcystin LW**	0.25	U	ug/L	P390239	
		Microcystin LY**	0.25	U	ug/L	P390239	
		Microcystin RR**	0.25	U	ug/L	P390239	
		Microcystin WR**	0.50	U	ug/L	P390239	
		Microcystin YR**	0.25	U	ug/L	P390239	
2207671	EPA 350.1 Rev. 2.0	Ammonia-N	0.093		mg N/L	P390291	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.7		mg N/L	P390125	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.17		mg N/L	P390278	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P390108	
2207672	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.071	Y	mg P/L	P390073	

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.
EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Sample was received un-filtered. It was filtered in the laboratory prior to analysis.

Non-Conformance Report

NCR ID: 8514

Event(s)	Job(s)	Sample(s)	Test(s)
WQAP-2020-11-13-02	TLH-2020-11-13-35	2207672	

NCR Type: SHIPPING/RECEIVING **NCR Category: Sample not field-filtered**

Observation: Field sheet indicated that sample was not field filtered.

Resolution: Data will be qualified as appropriate.

Authorized by/Date: Joshua Ayres 11/17/2020

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P390291

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P390125

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P390278

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P390108

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P390073

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

Reference Method: EPA 8321B
Batch ID: P390239

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Cylindrospermopsin	0.25	U	ug/L
Desmethyl microcystin LR	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 LW	0.25	U	ug/L
Microcystin LY	0.25	U	ug/L
Microcystin RR	0.25	U	ug/L
Microcystin WR	0.50	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: P390291

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: P390125

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P390278

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P390108

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: P390073

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

Reference Method: EPA 8321B
Batch ID: P390239

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	83.9		P	40 - 140
Cylindrospermopsin	97.1		P	40 - 140
Desmethyl microcystin LR	89.4		P	40 - 140
Microcystin LA	101		P	40 - 140
Microcystin LF	102		P	40 - 140
Microcystin LR	84.0		P	40 - 140
Microcystin LW	98.4		P	40 - 140
Microcystin LY	106		P	40 - 140
Microcystin RR	100		P	40 - 140
Microcystin WR	92.3		P	40 - 140
Microcystin YR	90.4		P	40 - 140

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P390291

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2207524	Ammonia-N	99.4	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P390278

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2207596	NO2NO3-N	97.0	96.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P390108

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2207610	Total-P	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P390073

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2207667	O-Phosphate-P	100	99.9	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P390239

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2207595	Anatoxin-a	88.0	87.8	P/P	40 - 140
2207595	Cylindrospermopsin	91.5	88.4	P/P	40 - 140
2207595	Desmethyl microcystin LR	85.6	74.5	P/P	40 - 140
2207595	Microcystin LA	89.9	99.4	P/P	40 - 140
2207595	Microcystin LF	98.1	102	P/P	40 - 140
2207595	Microcystin LR	81.1	86.5	P/P	40 - 140
2207595	Microcystin LW	93.7	84.7	P/P	40 - 140
2207595	Microcystin LY	95.4	101	P/P	40 - 140
2207595	Microcystin RR	94.7	97.8	P/P	40 - 140
2207595	Microcystin WR	87.7	83.9	P/P	40 - 140
2207595	Microcystin YR	92.6	83.9	P/P	40 - 140

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P390291

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2207524	Ammonia-N	0.826	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P390125

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2207752	Kjeldahl Nitrogen	7.60	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P390278

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2207596	NO2NO3-N	0.141	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P390108

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2207610	Total-P	0.109	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P390073

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2207667	O-Phosphate-P	0.599	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P390239

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2207595	Anatoxin-a	0.296	Spike	P	0 - 30
2207595	Cylindrospermopsin	3.44	Spike	P	0 - 30
2207595	Desmethyl microcystin LR	13.8	Spike	P	0 - 30
2207595	Microcystin LA	10.1	Spike	P	0 - 30
2207595	Microcystin LF	3.77	Spike	P	0 - 30
2207595	Microcystin LR	6.41	Spike	P	0 - 30
2207595	Microcystin LW	10.1	Spike	P	0 - 30
2207595	Microcystin LY	5.89	Spike	P	0 - 30
2207595	Microcystin RR	3.25	Spike	P	0 - 30
2207595	Microcystin WR	4.46	Spike	P	0 - 30
2207595	Microcystin YR	9.84	Spike	P	0 - 30

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

Quality Assurance Report
Surrogates

Lab Sample ID: 2207664
Field Sample ID: G3SD0171

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Microcystin LR-d7	91.5	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	85.1	P	30 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A102133
Included Lab Sample IDs: 2207672

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A102172
Included Lab Sample IDs: 2207671

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	109	110	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A102195
Included Lab Sample IDs: 2207671

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	100	P/P	85 - 115

Reference Method: EPA 8321B
Run ID: A102201
Included Lab Sample IDs: 2207664

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	102	102	P/P	50 - 160
Cylindrospermopsin	104	104	P/P	60 - 160
Desmethyl microcystin LR	92.9	102	P/P	60 - 160
Microcystin LA	111	116	P/P	50 - 160
Microcystin LF	117	113	P/P	50 - 160
Microcystin LR	85.1	89.9	P/P	60 - 160
Microcystin LW	99.2	100	P/P	60 - 160
Microcystin LY	99.3	123	P/P	60 - 160
Microcystin RR	108	108	P/P	60 - 160
Microcystin WR	103	90.1	P/P	60 - 160
Microcystin YR	101	97.1	P/P	60 - 160

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A102214
Included Lab Sample IDs: 2207671

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A102217
Included Lab Sample IDs: 2207671

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	101	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	101	99.4	100			0.826
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107					7.60
EPA 353.2 Rev. 2.0	NO2NO3-N	100	97.0	96.8			0.141
EPA 365.1 Rev. 2.0	Total-P	107	102	102			0.109
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	100	99.9			0.599
EPA 8321B	Anatoxin-a	83.9	88.0	87.8			0.296
	Cylindrospermopsin	97.1	91.5	88.4			3.44
	Desmethyl microcystin LR	89.4	85.6	74.5			13.8
	Microcystin LA	101	89.9	99.4			10.1
	Microcystin LF	102	98.1	102			3.77
	Microcystin LR	84.0	81.1	86.5			6.41
	Microcystin LW	98.4	93.7	84.7			10.1
	Microcystin LY	106	95.4	101			5.89
	Microcystin RR	100	94.7	97.8			3.25
	Microcystin WR	92.3	87.7	83.9			4.46
	Microcystin YR	90.4	92.6	83.9			9.84

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2207671
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2207671
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2207671
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2207671
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2207672
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2207664

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	11/13/2020			11/19/2020 15:22	Ping Hua	2207671
EPA 351.2 Rev. 2.0	11/13/2020	11/16/2020 13:44	David Boose	11/17/2020 13:06	Elliott Rodriguez	2207671
EPA 353.2 Rev. 2.0	11/13/2020			11/19/2020 14:02	Lauren Lees	2207671
EPA 365.1 Rev. 2.0	11/13/2020	11/16/2020 13:34	Yen Ta	11/18/2020 13:58	Benjamin T. Nordmann	2207671
EPA 365.1 Rev. 2.0 dissolved	11/13/2020			11/13/2020 13:17	Blanca Fach	2207672
EPA 8321B	11/13/2020	11/18/2020 14:00	Juyoung Kim	11/18/2020 21:20	Pramila Ghimire	2207664