

Chemical Analysis Report

NE-DIST-2017-11-30-01

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

Event Description: **LSJR Lakes**
Request ID: **RQ-2017-11-13-13**
Customer: **NE-DIST**
Project ID: **SMP**

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 18-DEC-2017 15:57



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 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: Lake Como center

Collection Date/Time: 11/29/2017 10:20

Field ID: G2NE0634 11292017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1949460	EPA 180.1 Rev. 2.0	Turbidity	1.3	A	NTU	P336147	
	EPA 300.0 Rev. 2.1	Chloride	16		mg Cl/L	P336267	
		Sulfate	12		mg SO4/L	P336271	
	SM 2120 B	Color (true)	7.0		PCU	P336140	
	SM 2320 B-97	Total Alkalinity	1.2	I	mg CaCO3/L	P336617	
	SM 2540 C-97	TDS	56		mg/L	P336441	
	SM 2540 D-97	TSS	2	U	mg/L	P336303	
	SM 4500 F-C-97	Fluoride	0.038	I	mg F/L	P336620	
1949464	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P336628	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.35		mg N/L	P336473	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P336320	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P336375	
	SM 5310 B-00	Organic Carbon	3.5		mg C/L	P336335	
1949468	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P336133	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Silver Lake center

Collection Date/Time: 11/29/2017 10:45

Field ID: G2NE1132 11292017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1949461	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P336147	
	EPA 300.0 Rev. 2.1	Chloride	16		mg Cl/L	P336267	
		Sulfate	11		mg SO4/L	P336271	
	SM 2120 B	Color (true)	87		PCU	P336140	
	SM 2320 B-97	Total Alkalinity	1.1	I	mg CaCO3/L	P336617	
	SM 2540 C-97	TDS	90		mg/L	P336441	
	SM 2540 D-97	TSS	2	I	mg/L	P336303	
	SM 4500 F-C-97	Fluoride	0.047	I	mg F/L	P336620	
1949465	EPA 350.1 Rev. 2.0	Ammonia-N	0.13		mg N/L	P336628	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P336473	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P336320	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P336375	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P336335	
1949469	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P336132	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Clear Lake center

Collection Date/Time: 11/29/2017 11:20

Field ID: G2NE113411292017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1949462	EPA 180.1 Rev. 2.0	Turbidity	0.40		NTU	P336147	
	EPA 300.0 Rev. 2.1	Chloride	18	A	mg Cl/L	P336267	
		Sulfate	20	A	mg SO4/L	P336271	

Field ID: G2NE113411292017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1949462	SM 2120 B	Color (true)	2.5	U	PCU	P336140	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P336617	
	SM 2540 C-97	TDS	66		mg/L	P336441	
	SM 2540 D-97	TSS	2	U	mg/L	P336303	
	SM 4500 F-C-97	Fluoride	0.059	I	mg F/L	P336620	
1949466	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P336628	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.10	I	mg N/L	P336474	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P336320	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P336375	
	SM 5310 B-00	Organic Carbon	1.6		mg C/L	P336335	
1949470	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P336134	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Lake Lillie center

Collection Date/Time: 11/29/2017 12:00

Field ID: G2NE1133 11292017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1949463	EPA 180.1 Rev. 2.0	Turbidity	0.85		NTU	P336147	
	EPA 300.0 Rev. 2.1	Chloride	16		mg Cl/L	P336267	
		Sulfate	22		mg SO4/L	P336271	
	SM 2120 B	Color (true)	71		PCU	P336140	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P336617	
	SM 2540 C-97	TDS	108	A	mg/L	P336441	
	SM 2540 D-97	TSS	2	U	mg/L	P336303	
	SM 4500 F-C-97	Fluoride	0.084	I	mg F/L	P336620	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.036		mg N/L	P336628	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P336474	
1949467	EPA 353.2 Rev. 2.0	NO2NO3-N	0.044		mg N/L	P336320	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P336376	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P336335	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P336133	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Lake Lillie

Collection Date/Time: 11/29/2017 12:05

Field ID: Lake Lillie

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1949522	EPA 8321B	Microcystin LR**	1.0	U	ug/L	P336108	
		Microcystin LA**	4.4		ug/L	P336108	
		Microcystin RR**	1.0	U	ug/L	P336108	
		Microcystin YR**	1.0	U	ug/L	P336108	
		Anatoxin-a**	1.0	UJ	ug/L	P336108	LCS, MS
		Cylindrospermopsin**	1.0	U	ug/L	P336108	
		Microcystin LF**	1.0	U	ug/L	P336108	

Field ID: Lake Lillie

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1949522	EPA 8321B	Microcystin LY**	1.0	U	ug/L	P336108	

Ref. Method and Comment:
EPA 8321B: Refer to the narrative for an explanation of QC Codes.

Sample Location: Lake Lillie

Collection Date/Time: 11/29/2017 12:05

Field ID: Lake Lillie

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1949472	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P336628	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.4		mg N/L	P336642	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.025		mg N/L	P336320	
	EPA 365.1 Rev. 2.0	Total-P	0.18		mg P/L	P336376	

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.

Sample Location: Lake Lillie

Collection Date/Time: 11/29/2017 12:05

Field ID: Lake Lillie

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1949567	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P336133	

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P336147

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336267

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336271

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336628

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336473

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336473

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336474

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336642

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336320

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336375

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336376

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336132

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336133

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336134

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
Batch ID: P336108

Component	Result	Code	Units
Anatoxin-a	1.0	U	ug/L
Cylindrospermopsin	1.0	U	ug/L
Microcystin LA	1.0	U	ug/L
Microcystin LF	1.0	U	ug/L
Microcystin LR	1.0	U	ug/L
Microcystin LY	1.0	U	ug/L
Microcystin RR	1.0	U	ug/L
Microcystin YR	1.0	U	ug/L

Reference Method: SM 2120 B
Batch ID: P336140

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P336617

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2540 C-97
Batch ID: P336441

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P336303

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P336620

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P336335

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report Laboratory Control Sample Accuracy

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336267

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	94.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336271

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	95.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336628

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336473

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: P336474

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336642

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: P336320

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336375

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336376

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336132

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336133

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336134

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.6		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P336108

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	204		F	50 - 150
Cylindrospermopsin	108		P	50 - 160
Microcystin LA	106		P	40 - 160
Microcystin LF	98.5		P	40 - 150
Microcystin LR	85.5		P	40 - 160
Microcystin LY	115		P	40 - 150
Microcystin RR	85.2		P	40 - 160
Microcystin YR	106		P	50 - 160

Reference Method: SM 2320 B-97
Batch ID: P336617

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P336620

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P336335

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336267

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949462	Chloride	94.9		P	90 - 110
1949482	Chloride	93.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336271

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949462	Sulfate	95.6		P	90 - 110
1949482	Sulfate	94.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336628

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949358	Ammonia-N	97.5	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336473

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949357	Kjeldahl Nitrogen	102	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336474

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949467	Kjeldahl Nitrogen	90.3	96.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336320

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949356	NO2NO3-N	106	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336375

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949354	Total-P	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336376

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949467	Total-P	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336132

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949359	O-Phosphate-P	96.4	97.0	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336133

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949468	O-Phosphate-P	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336134

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949470	O-Phosphate-P	98.4	98.2	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P336108

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949245	Anatoxin-a	256	234	F/F	50 - 150
1949245	Cylindrospermopsin	103	95.4	P/P	50 - 160
1949245	Microcystin LA	107	103	P/P	40 - 160
1949245	Microcystin LF	102	97.3	P/P	40 - 150
1949245	Microcystin LR	101	117	P/P	40 - 160
1949245	Microcystin LY	108	103	P/P	40 - 150
1949245	Microcystin RR	84.3	99.5	P/P	40 - 160
1949245	Microcystin YR	100	98.0	P/P	50 - 160

Reference Method: SM 4500 F-C-97
Batch ID: P336620

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949722	Fluoride	98.2	97.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P336335

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949464	Organic Carbon	97.2	96.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P336147

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949460	Turbidity	11.8	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336267

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949462	Chloride	0.576	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336271

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949462	Sulfate	0.649	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336628

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949358	Ammonia-N	5.92	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336473

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949357	Kjeldahl Nitrogen	0.566	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336474

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949467	Kjeldahl Nitrogen	3.92	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336642

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949963	Kjeldahl Nitrogen	1.46	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336320

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949356	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336375

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949354	Total-P	0.396	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336376

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949467	Total-P	0.869	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336132

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949359	O-Phosphate-P	0.620	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336133

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949468	O-Phosphate-P	0.199	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336134

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949470	O-Phosphate-P	0.203	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P336108

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949245	Anatoxin-a	8.93	Spike	P	0 - 30
1949245	Cylindrospermopsin	7.20	Spike	P	0 - 30
1949245	Microcystin LA	3.57	Spike	P	0 - 30
1949245	Microcystin LF	4.29	Spike	P	0 - 30
1949245	Microcystin LR	12.4	Spike	P	0 - 30
1949245	Microcystin LY	4.03	Spike	P	0 - 30
1949245	Microcystin RR	16.5	Spike	P	0 - 30
1949245	Microcystin YR	2.35	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P336140

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949650	Color (true)	3.48	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P336617

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949722	Total Alkalinity	1.19	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P336441

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949463	TDS	6.51	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P336620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949722	Fluoride	0.474	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P336335

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949464	Organic Carbon	0.262	Spike	P	0 - 20

* 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: 1949522
Field Sample ID: Lake Lillie

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Carbamazepine-d10	94.0	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A80611
Included Lab Sample IDs: 1949468, 1949469, 1949470, 1949471, 1949567

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.3	99.4	P/P	90 - 110
O-Phosphate-P	99.4	99.3	P/P	90 - 110
O-Phosphate-P	99.6	99.4	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A80612
Included Lab Sample IDs: 1949460, 1949461, 1949462, 1949463

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A80613
Included Lab Sample IDs: 1949460, 1949461, 1949462, 1949463

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	100	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A80632

Included Lab Sample IDs: 1949460, 1949461, 1949462, 1949463

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Chloride	101	100	P/P	90 - 110
Sulfate	100	99.7	P/P	90 - 110
Sulfate	99.9	100	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A80636

Included Lab Sample IDs: 1949522

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	119	116	P/P	50 - 160
Cylindrospermopsin	99.6	101	P/P	60 - 160
Microcystin LA	106	109	P/P	50 - 160
Microcystin LF	102	107	P/P	60 - 160
Microcystin LR	103	104	P/P	60 - 160
Microcystin LY	108	116	P/P	60 - 160
Microcystin RR	100	102	P/P	60 - 160
Microcystin YR	106	105	P/P	60 - 160

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A80683

Included Lab Sample IDs: 1949464, 1949465, 1949466, 1949467, 1949472

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

Reference Method: SM 5310 B-00

Run ID: A80692

Included Lab Sample IDs: 1949464, 1949465, 1949466, 1949467

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.6	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A80725

Included Lab Sample IDs: 1949472

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A80765

Included Lab Sample IDs: 1949464, 1949465, 1949466, 1949467

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A80770

Included Lab Sample IDs: 1949460, 1949461, 1949462, 1949463

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A80770

Included Lab Sample IDs: 1949460, 1949461, 1949462, 1949463

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A80773

Included Lab Sample IDs: 1949464, 1949465, 1949466, 1949467, 1949472

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	105	109	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A80787

Included Lab Sample IDs: 1949464, 1949465, 1949466, 1949467

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	104	P/P	90 - 110
Total-P	104	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A80815

Included Lab Sample IDs: 1949472

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	107	107	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 SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				11.8	
EPA 300.0 Rev. 2.1	Chloride	94.7	94.9 93.1		0.576	
	Sulfate	95.5	95.6 94.8		0.649	
EPA 350.1 Rev. 2.0	Ammonia-N	103	97.5 105			5.92
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	102 101			0.566
	Kjeldahl Nitrogen	105	90.3 96.4			3.92
	Kjeldahl Nitrogen	106				1.46
EPA 353.2 Rev. 2.0	NO2NO3-N	106	106 106			0.0
EPA 365.1 Rev. 2.0	Total-P	102	101 102			0.396
	Total-P	101	101 102			0.869

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
			LCS	SMP	MS	
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.9	96.4	97.0		0.620
	O-Phosphate-P	102	101	101		0.199
	O-Phosphate-P	99.6	98.4	98.2		0.203
EPA 8321B	Anatoxin-a	204	256	234		8.93
	Cylindrospermopsin	108	103	95.4		7.20
	Microcystin LA	106	107	103		3.57
	Microcystin LF	98.5	102	97.3		4.29
	Microcystin LR	85.5	101	117		12.4
	Microcystin LY	115	108	103		4.03
	Microcystin RR	85.2	84.3	99.5		16.5
	Microcystin YR	106	100	98.0		2.35
SM 2120 B	Color (true)				3.48	
SM 2320 B-97	Total Alkalinity	103			1.19	
SM 2540 C-97	TDS				6.51	
SM 4500 F-C-97	Fluoride	98.2	98.2	97.6		0.474
SM 5310 B-00	Organic Carbon	98.5	97.2	96.9		0.262

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1949460, 1949461, 1949462, 1949463
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1949460, 1949461, 1949462, 1949463
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1949460, 1949461, 1949462, 1949463
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1949464, 1949465, 1949466, 1949467, 1949472
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1949464, 1949465, 1949466, 1949467, 1949472
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1949464, 1949465, 1949466, 1949467, 1949472
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1949464, 1949465, 1949466, 1949467, 1949472
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1949468, 1949469, 1949470, 1949471, 1949567
EPA 8321B / E31780	Microcystins in water matrices by HPLC/MS/MS	1949522
SM 2120 B / E31780	True Color measured at 450 nm	1949460, 1949461, 1949462, 1949463
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1949460, 1949461, 1949462, 1949463
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1949460, 1949461, 1949462, 1949463
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1949460, 1949461, 1949462, 1949463
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1949460, 1949461, 1949462, 1949463
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1949464, 1949465, 1949466, 1949467

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	11/30/2017			11/30/2017 17:11	Tanya Welborn	1949460, 1949461, 1949462, 1949463
EPA 300.0 Rev. 2.1	11/30/2017			12/02/2017	Julia Storbeck	1949460, 1949461, 1949462, 1949463
EPA 350.1 Rev. 2.0	11/30/2017			12/07/2017	Sofia Elnemr	1949464, 1949465, 1949466, 1949467, 1949472
EPA 351.2 Rev. 2.0	11/30/2017	12/06/2017	Adrian Shelby	12/07/2017	Joseph Suarez	1949464, 1949465, 1949466, 1949467
	11/30/2017	12/08/2017	Adrian Shelby	12/11/2017	Joseph Suarez	1949472
EPA 353.2 Rev. 2.0	11/30/2017			12/04/2017	Lauren Bottorf	1949464, 1949465, 1949466, 1949467, 1949472
EPA 365.1 Rev. 2.0	11/30/2017	12/05/2017	Sima Feizi	12/06/2017	Beverly Y. Sanders	1949472
	11/30/2017	12/05/2017	Sima Feizi	12/08/2017	Beverly Y. Sanders	1949464, 1949465, 1949466, 1949467
EPA 365.1 Rev. 2.0 dissolved	11/30/2017			11/30/2017 13:38	Megan Treadwell	1949468
	11/30/2017			11/30/2017 13:46	Megan Treadwell	1949470
	11/30/2017			11/30/2017 13:58	Megan Treadwell	1949469
	11/30/2017			11/30/2017 13:59	Megan Treadwell	1949471
	11/30/2017			11/30/2017 14:00	Megan Treadwell	1949567
EPA 8321B	11/30/2017	12/01/2017	Juyoung Kim	12/01/2017	Juyoung Kim	1949522
SM 2120 B	11/30/2017			11/30/2017 14:07	Tanya Welborn	1949460, 1949461
	11/30/2017			11/30/2017 14:08	Tanya Welborn	1949462
	11/30/2017			11/30/2017 14:09	Tanya Welborn	1949463
SM 2320 B-97	11/30/2017			12/06/2017	Dale L. Simmons	1949460, 1949461, 1949462
	11/30/2017			12/07/2017	Dale L. Simmons	1949463
SM 2540 C-97	11/30/2017			12/01/2017	DeAsia Armster	1949460, 1949461, 1949462, 1949463
SM 2540 D-97	11/30/2017			12/01/2017	DeAsia Armster	1949460, 1949461, 1949462, 1949463
SM 4500 F-C-97	11/30/2017			12/06/2017	Dale L. Simmons	1949460, 1949461, 1949462
	11/30/2017			12/07/2017	Dale L. Simmons	1949463
SM 5310 B-00	11/30/2017			12/05/2017	Ping Hua	1949464, 1949465, 1949466, 1949467