Chemical Analysis Report

SO-DIST-2022-09-26-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Lake Annie Lake Reference**
Request ID: **RQ-2022-08-22-12**
Customer: **SO-DIST**
Project ID: **LAKESREF**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Thomas Baker

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant Date Certified: 17-OCT-2022 10:03

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: Metals and Nutrients.

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: Lake Annie **Collection Date/Time: 09/22/2022 09:25**

Field ID: 26011159 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2359280	DEP SOP: NU-094-1	Color (true)	110	YQ	PCU	P420176	
	EPA 180.1 Rev. 2.0	Turbidity	0.80	I YQ	NTU	P420184	
	EPA 300.0 Rev. 2.1	Chloride	6.2		mg Cl/L	P420331	
		Sulfate	2.6	Y	mg SO4/L	P420334	
	SM 2320 B-2011	Total Alkalinity	1.5	I Y	mg CaCO3/L	P420428	
	SM 4500-F- C-2011	Fluoride	0.035	U	mg F/L	P420430	
2359281	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I Y	mg N/L	P420587	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44	Y	mg N/L	P420203	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	UY	mg N/L	P420440	
	EPA 365.1 Rev. 2.0	Total-P	0.01	Y	mg P/L	P420303	
2359282	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	UYQ	mg P/L	P420185	
2359284	EPA 200.7 Rev. 4.4	Calcium	2.43		mg/L	P420197	
		Iron	73	I	ug/L	P420197	
		Magnesium	0.75		mg/L	P420197	
		Potassium	0.63	I	mg/L	P420197	
		Sodium	3.4		mg/L	P420197	
		Zinc	5.0	U	ug/L	P420197	
	EPA 200.8 Rev. 5.4	Arsenic	0.21		ug/L	P420197	
		Cadmium	0.020	U	ug/L	P420197	
		Chromium	0.51	I	ug/L	P420197	
		Copper	0.49	I	ug/L	P420197	
		Lead	0.20	U	ug/L	P420197	
		Nickel	0.50	U	ug/L	P420197	
		Silver	0.010	U	ug/L	P420197	

Ref. Method and Comment:
DEP SOP: NU-094-1: The sample expired prior to receipt. Sample received outside of the acceptable temperature range. Please see NCR.
EPA 180.1 Rev. 2.0: The sample expired prior to receipt. Sample received outside of the acceptable temperature range. Please see NCR.
EPA 300.0 Rev. 2.1: Sulfate: Sample received outside of the acceptable temperature range. Please see NCR.
SM 2320 B-2011: Sample received outside of the acceptable temperature range. Please see NCR.
EPA 350.1 Rev. 2.0: Sample received outside of the acceptable temperature range. Please see NCR.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample. Sample received outside of the acceptable temperature range. Please see NCR.
EPA 353.2 Rev. 2.0: Sample received outside of the acceptable temperature range. Please see NCR.
EPA 365.1 Rev. 2.0: Total-P: Sample received outside of the acceptable temperature range. Please see NCR.
EPA 365.1 Rev. 2.0 dissolved: The sample expired prior to receipt. Sample received outside of the acceptable temperature range. Please see NCR.

Non-Conformance Report

NCR ID: 9565

Event(s)	Job(s)	Sample(s)	Test(s)
SO-DIST-2022-09-26-01			

NCR Type: SHIPPING/RECEIVING **NCR Category: Samples arrived late**

Observation: Samples arrived late, samples received outside the acceptable temperature range.

Resolution: Samples will be qualified as appropriate.
Customer contacted, email correspondence attached to sample submittal forms.
Biology and Chemistry supervisors were notified by email.

Authorized by/Date: Kyle Klug 10/3/2022

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: DEP SOP: NU-094-1
Batch ID: P420176

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P420184

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P420197

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P420197

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P420331

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P420334

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420587

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420203

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420440

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420303

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P420185

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

Reference Method: SM 2320 B-2011
Batch ID: P420428

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

Reference Method: SM 4500-F- C-2011
Batch ID: P420430

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P420176

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P420184

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P420197

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	105		P	85 - 115
Magnesium	102		P	85 - 115
Potassium	98.6		P	85 - 115
Sodium	104		P	85 - 115
Zinc	96.2		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P420197

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	102		P	85 - 115
Cadmium	99.6		P	85 - 115
Chromium	98.5		P	85 - 115
Copper	99.3		P	85 - 115
Lead	94.5		P	85 - 115
Nickel	99.6		P	85 - 115
Silver	113		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P420331

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P420334

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420587

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.0		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420203

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420440

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420303

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P420185

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

Reference Method: SM 2320 B-2011
Batch ID: P420428

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.5		P	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P420430

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	96 - 104

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P420197

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2359311	Calcium	105		P	80 - 120
2359311	Iron	108	107	P/P	80 - 120
2359311	Magnesium	106	105	P/P	80 - 120
2359311	Potassium	103	102	P/P	80 - 120
2359311	Sodium	105		P	80 - 120
2359311	Zinc	98.4	98.4	P/P	80 - 120
2359312	Calcium	99.1		P	80 - 120
2359312	Iron	104		P	80 - 120
2359312	Magnesium	99.2		P	80 - 120
2359312	Potassium	98.8		P	80 - 120
2359312	Sodium	101		P	80 - 120
2359312	Zinc	96.9		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P420197

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2359311	Arsenic	103	103	P/P	80 - 120
2359311	Cadmium	102	99.6	P/P	80 - 120
2359311	Chromium	103	104	P/P	80 - 120
2359311	Copper	101	99.4	P/P	80 - 120
2359311	Lead	95.8	96.3	P/P	80 - 120
2359311	Nickel	101	101	P/P	80 - 120
2359311	Silver	113	115	P/P	80 - 120
2359312	Arsenic	103		P	80 - 120
2359312	Cadmium	103		P	80 - 120
2359312	Chromium	102		P	80 - 120
2359312	Copper	98.5		P	80 - 120
2359312	Lead	95.2		P	80 - 120
2359312	Nickel	100		P	80 - 120
2359312	Silver	116		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P420331

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2359164	Chloride	96.9		P	90 - 110
2359550	Chloride	96.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P420334

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2359164	Sulfate	94.9		P	90 - 110
2359550	Sulfate	94.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420587

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2359281	Ammonia-N	98.4	98.6	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420440

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2359165	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420303

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2359165	Total-P	104	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P420185

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2359386	O-Phosphate-P	104	102	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P420430

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2359300	Fluoride	99.5	99.5	P/P	94 - 104

Quality Assurance Report
Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P420176

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2359566	Color (true)	0.701	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P420184

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2359743	Turbidity	2.96	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P420197

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2359311	Calcium	2.42	Spike	P	0 - 20
2359311	Iron	1.03	Spike	P	0 - 20
2359311	Magnesium	0.704	Spike	P	0 - 20
2359311	Potassium	0.209	Spike	P	0 - 20
2359311	Sodium	0.394	Spike	P	0 - 20
2359311	Zinc	0.0564	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P420197

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2359311	Arsenic	0.00455	Spike	P	0 - 20
2359311	Cadmium	1.93	Spike	P	0 - 20
2359311	Chromium	0.342	Spike	P	0 - 20
2359311	Copper	2.07	Spike	P	0 - 20
2359311	Lead	0.569	Spike	P	0 - 20
2359311	Nickel	0.570	Spike	P	0 - 20
2359311	Silver	2.18	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P420331

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2359164	Chloride	0.235	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P420334

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2359164	Sulfate	0.333	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420587

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2359281	Ammonia-N	0.192	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420203

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2359128	Kjeldahl Nitrogen	1.26	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420440

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2359165	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420303

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2359165	Total-P	3.63	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P420185

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2359386	O-Phosphate-P	1.46	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P420428

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2359300	Total Alkalinity	0.806	Sample	P	0 - 3.8

Reference Method: SM 4500-F- C-2011
Batch ID: P420430

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2359300	Fluoride	0.0	Spike	P	0 - 1.6

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

Quality Assurance Report
Calibration Verification

Reference Method: DEP SOP: NU-094-1
Run ID: A114965
Included Lab Sample IDs: 2359280

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A114966
Included Lab Sample IDs: 2359282

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	102	95.0	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A114967
Included Lab Sample IDs: 2359280

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A114999
Included Lab Sample IDs: 2359280

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A115038
Included Lab Sample IDs: 2359284

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	102	102	P/P	90 - 110
Cadmium	101	101	P/P	90 - 110
Chromium	98.9	99.4	P/P	90 - 110
Copper	97.9	98.2	P/P	90 - 110
Lead	94.9	95.5	P/P	90 - 110
Nickel	99.2	98.6	P/P	90 - 110
Silver	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A115048
Included Lab Sample IDs: 2359281

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	101	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A115060
Included Lab Sample IDs: 2359284

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	100	103	P/P	90 - 110
Iron	101	103	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A115060
Included Lab Sample IDs: 2359284

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Magnesium	98.8	102	P/P	90 - 110
Potassium	98.9	98.8	P/P	90 - 110
Sodium	102	103	P/P	90 - 110
Zinc	100	97.1	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A115100
Included Lab Sample IDs: 2359280

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.4	96.3	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A115100
Included Lab Sample IDs: 2359280

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A115111
Included Lab Sample IDs: 2359281

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A115115
Included Lab Sample IDs: 2359281

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A115158
Included Lab Sample IDs: 2359281

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.7	98.2	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
DEP SOP: NU-094-1	Color (true)	100					0.701	
EPA 180.1 Rev. 2.0	Turbidity	101					2.96	
EPA 200.7 Rev. 4.4	Calcium	103	105	99.1				2.42
	Iron	105	108	107	104			1.03
	Magnesium	102	106	105	99.2			0.704
	Potassium	98.6	103	102	98.8			0.209
	Sodium	104	105	101				0.394
	Zinc	96.2	98.4	98.4	96.9			0.0564
EPA 200.8 Rev. 5.4	Arsenic	102	103	103	103			0.0045
	Cadmium	99.6	102	99.6	103			1.93
	Chromium	98.5	103	104	102			0.342
	Copper	99.3	101	99.4	98.5			2.07
	Lead	94.5	95.2	95.8	96.3			0.569
	Nickel	99.6	101	101	100			0.570
	Silver	113	113	115	116			2.18
EPA 300.0 Rev. 2.1	Chloride	101	96.9	96.8			0.235	
	Sulfate	99.1	94.9	94.2			0.333	
EPA 350.1 Rev. 2.0	Ammonia-N	97.0	98.4	98.6				0.192
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100						1.26
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104	104				0.0
EPA 365.1 Rev. 2.0	Total-P	102	104	108				3.63
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	104	102				1.46
SM 2320 B-2011	Total Alkalinity	98.5					0.806	
SM 4500-F- C-2011	Fluoride	97.9	99.5	99.5				0.0

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2359280
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2359280
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2359284
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2359284
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2359280
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2359280
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2359281
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2359281
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2359281
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2359281
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2359282
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2359280
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2359280

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	09/26/2022			09/27/2022 15:19	Anna M. Plaviak	2359280
EPA 180.1 Rev. 2.0	09/26/2022			09/27/2022 15:52	Chandler E Cox	2359280
EPA 200.7 Rev. 4.4	09/26/2022	09/28/2022 10:45	Megan Whitefoot	10/01/2022 01:28	McKinley C Carter	2359284
EPA 200.8 Rev. 5.4	09/26/2022	09/28/2022 10:45	Megan Whitefoot	09/29/2022 18:10	Emily M Philpot	2359284
EPA 300.0 Rev. 2.1	09/26/2022			09/29/2022 21:46	Anna M. Plaviak	2359280
EPA 350.1 Rev. 2.0	09/26/2022			10/06/2022 11:37	Ping Hua	2359281
EPA 351.2 Rev. 2.0	09/26/2022	09/28/2022 12:10	Alexandra J Mattheus	10/04/2022 09:55	Samantha L Bates	2359281
EPA 353.2 Rev. 2.0	09/26/2022			10/04/2022 09:55	Beverly Y. Sanders	2359281
EPA 365.1 Rev. 2.0	09/26/2022	09/29/2022 14:45	Adam P Silver	09/30/2022 12:05	James L Waggerby	2359281
EPA 365.1 Rev. 2.0 dissolved	09/26/2022			09/27/2022 15:44	Elise M. Gillis	2359282
SM 2320 B-2011	09/26/2022			10/03/2022 21:57	Dale L. Simmons	2359280
SM 4500-F- C-2011	09/26/2022			10/03/2022 21:57	Dale L. Simmons	2359280