Chemical Analysis Report

CEN-DIST-2021-05-05-03

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

Event Description: **Nutrient Kit + Metals + Phytoplankton**
Request ID: **RQ-2021-05-10-14**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 25-MAY-2021 18:23

B. Steinbock

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 Lotta at Center of Southern Lobe **Collection Date/Time: 05/04/2021 12:58**

Field ID: G2CE0093 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2245372	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P397700	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P398560	
		Sulfate	13		mg SO4/L	P398563	
	SM 2120 B-2011	Color (true)	51	A	PCU	P397708	
	SM 2320 B-2011	Total Alkalinity	51		mg CaCO3/L	P398174	
	SM 2540 C-2011	TDS	124		mg/L	P398145	
	SM 2540 D-2011	TSS	5	I	mg/L	P397945	
	SM 4500 F-C-2011	Fluoride	0.12		mg F/L	P397859	
2245373	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P398218	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P398001	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P397815	
	EPA 365.1 Rev. 2.0	Total-P	0.046		mg P/L	P398132	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P397942	
2245374	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P397689	
2245376	EPA 200.7 Rev. 4.4	Barium	16.0		ug/L	P398159	
		Calcium	23.8		mg/L	P398159	
		Iron	30	U	ug/L	P398159	
		Magnesium	3.53		mg/L	P398159	
		Manganese	17.0		ug/L	P398159	
		Potassium	1.8		mg/L	P398159	
		Sodium	8.8		mg/L	P398159	
		Zinc	5.4	I	ug/L	P398159	
	EPA 200.8 Rev. 5.4	Aluminum	7.0	I	ug/L	P398159	
		Antimony	0.20	I	ug/L	P398159	
		Arsenic	0.70		ug/L	P398159	
		Beryllium	0.010	U	ug/L	P398159	
		Boron**	30.6		ug/L	P398159	
		Cadmium	0.020	U	ug/L	P398159	
		Chromium	0.40	U	ug/L	P398159	
		Copper	0.40	U	ug/L	P398159	
		Lead	0.20	U	ug/L	P398159	
		Nickel	0.50	U	ug/L	P398159	
		Selenium	0.20	U	ug/L	P398159	
		Silver	0.010	U	ug/L	P398159	
		Thallium	0.10	U	ug/L	P398159	
	SM 2340B	Hardness	74.0		mg/L	P398159	

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: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P397700

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P398159

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/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: P398159

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	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
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398560

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398563

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398218

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: P398001

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397815

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398132

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P397689

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

Reference Method: SM 2120 B-2011
Batch ID: P397708

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P398174

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

Reference Method: SM 2540 C-2011
Batch ID: P398145

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P397945

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P397859

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P397942

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P398159

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	102		P	85 - 115
Calcium	106		P	85 - 115
Iron	105		P	85 - 115
Magnesium	102		P	85 - 115
Manganese	104		P	85 - 115
Potassium	99.4		P	85 - 115
Sodium	101		P	85 - 115
Zinc	106		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398159

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.9		P	85 - 115
Antimony	100		P	85 - 115
Arsenic	101		P	85 - 115
Beryllium	95.4		P	85 - 115
Boron	103		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	95.0		P	85 - 115
Copper	103		P	85 - 115
Lead	99.1		P	85 - 115
Nickel	102		P	85 - 115
Selenium	101		P	85 - 115
Silver	102		P	85 - 115
Thallium	106		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398560

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398563

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398218

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398001

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.4		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397815

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: P398132

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: P397689

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

Reference Method: SM 2120 B-2011
Batch ID: P397708

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P398174

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.7		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P397859

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.6		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P397942

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P398159

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2244973	Barium	101		P	80 - 120
2244973	Calcium	105		P	80 - 120
2244973	Iron	106		P	80 - 120
2244973	Magnesium	107		P	80 - 120
2244973	Manganese	104		P	80 - 120
2244973	Potassium	100		P	80 - 120
2244973	Sodium	101		P	80 - 120
2244973	Zinc	107		P	80 - 120
2245713	Barium	99.6	101	P/P	80 - 120
2245713	Calcium	102		P	80 - 120
2245713	Iron	107	105	P/P	80 - 120
2245713	Magnesium	100		P	80 - 120
2245713	Manganese	102	104	P/P	80 - 120
2245713	Potassium	99.8	101	P/P	80 - 120
2245713	Sodium	100		P	80 - 120
2245713	Zinc	106	106	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398159

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2244973	Aluminum	93.1		P	80 - 120
2244973	Antimony	102		P	80 - 120
2244973	Arsenic	102		P	80 - 120
2244973	Beryllium	93.9		P	80 - 120
2244973	Boron	110		P	80 - 120
2244973	Cadmium	105		P	80 - 120
2244973	Chromium	94.4		P	80 - 120
2244973	Copper	100		P	80 - 120
2244973	Lead	101		P	80 - 120
2244973	Nickel	98.4		P	80 - 120
2244973	Selenium	100		P	80 - 120
2244973	Silver	109		P	80 - 120
2244973	Thallium	108		P	80 - 120
2245713	Aluminum	95.6	96.1	P/P	80 - 120
2245713	Antimony	103	104	P/P	80 - 120
2245713	Arsenic	103	103	P/P	80 - 120
2245713	Beryllium	98.2	97.9	P/P	80 - 120
2245713	Boron	102	104	P/P	80 - 120
2245713	Cadmium	106	106	P/P	80 - 120
2245713	Chromium	98.2	100	P/P	80 - 120
2245713	Copper	98.7	99.1	P/P	80 - 120
2245713	Lead	101	102	P/P	80 - 120
2245713	Nickel	100	101	P/P	80 - 120
2245713	Selenium	103	104	P/P	80 - 120
2245713	Silver	103	103	P/P	80 - 120
2245713	Thallium	109	111	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398560

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398560

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2244979	Chloride	100		P	90 - 110
2245380	Chloride	97.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398563

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2244979	Sulfate	100		P	90 - 110
2245380	Sulfate	98.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398218

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2245392	Ammonia-N	96.4	97.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397815

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2245280	NO2NO3-N	98.6	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P397689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2245009	O-Phosphate-P	98.0	98.6	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P397859

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2244969	Fluoride	99.3	99.3	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P397942

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2245373	Organic Carbon	95.5	94.2	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P397700

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245072	Turbidity	2.84	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P398159

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245713	Barium	1.23	Spike	P	0 - 20
2245713	Calcium	1.13	Spike	P	0 - 20
2245713	Iron	1.85	Spike	P	0 - 20
2245713	Magnesium	1.68	Spike	P	0 - 20
2245713	Manganese	1.24	Spike	P	0 - 20
2245713	Potassium	0.796	Spike	P	0 - 20
2245713	Sodium	0.766	Spike	P	0 - 20
2245713	Zinc	0.168	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398159

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245713	Aluminum	0.567	Spike	P	0 - 20
2245713	Antimony	0.671	Spike	P	0 - 20
2245713	Arsenic	0.714	Spike	P	0 - 20
2245713	Beryllium	0.236	Spike	P	0 - 20
2245713	Boron	2.21	Spike	P	0 - 20
2245713	Cadmium	0.00544	Spike	P	0 - 20
2245713	Chromium	2.14	Spike	P	0 - 20
2245713	Copper	0.407	Spike	P	0 - 20
2245713	Lead	1.10	Spike	P	0 - 20
2245713	Nickel	0.870	Spike	P	0 - 20
2245713	Selenium	0.501	Spike	P	0 - 20
2245713	Silver	0.459	Spike	P	0 - 20
2245713	Thallium	1.48	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398560

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244979	Chloride	0.852	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398563

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244979	Sulfate	0.938	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398218

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245392	Ammonia-N	0.789	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398001

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245280	Kjeldahl Nitrogen	0.880	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397815

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245280	NO2NO3-N	0.447	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398132

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245301	Total-P	1.90	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P397689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245009	O-Phosphate-P	0.400	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P397708

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245372	Color (true)	0.00393	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P398174

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245385	Total Alkalinity	1.33	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P398145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245279	TDS	0.813	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 2540 D-2011
Batch ID: P397945

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245279	TSS	2.35	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P397859

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244969	Fluoride	0.0	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P397942

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245373	Organic Carbon	0.809	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A105193
Included Lab Sample IDs: 2245374

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A105195
Included Lab Sample IDs: 2245372

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	98.5	P/P	95 - 105

Reference Method: SM 2120 B-2011
Run ID: A105197
Included Lab Sample IDs: 2245372

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A105247
Included Lab Sample IDs: 2245373

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

Reference Method: SM 4500 F-C-2011
Run ID: A105260
Included Lab Sample IDs: 2245372

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

Reference Method: SM 5310 B-2011
Run ID: A105310
Included Lab Sample IDs: 2245373

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	97.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A105393
Included Lab Sample IDs: 2245373

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.7	97.1	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A105419
Included Lab Sample IDs: 2245372

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.0	97.4	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A105430
Included Lab Sample IDs: 2245373

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.3	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A105437
Included Lab Sample IDs: 2245373

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A105445
Included Lab Sample IDs: 2245376

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	102	P/P	90 - 110
Antimony	102	101	P/P	90 - 110
Arsenic	101	102	P/P	90 - 110
Beryllium	103	101	P/P	90 - 110
Boron	104	106	P/P	90 - 110
Cadmium	101	102	P/P	90 - 110
Chromium	96.7	95.2	P/P	90 - 110
Copper	97.9	100	P/P	90 - 110
Lead	101	102	P/P	90 - 110
Nickel	98.0	99.8	P/P	90 - 110
Selenium	101	101	P/P	90 - 110
Thallium	98.7	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A105451
Included Lab Sample IDs: 2245376

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A105478
Included Lab Sample IDs: 2245376

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	101	P/P	90 - 110
Calcium	102	99.8	P/P	90 - 110
Iron	101	100	P/P	90 - 110
Magnesium	102	100	P/P	90 - 110
Manganese	102	101	P/P	90 - 110
Potassium	99.1	97.7	P/P	90 - 110
Sodium	98.6	97.9	P/P	90 - 110
Zinc	104	105	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A105550
Included Lab Sample IDs: 2245372

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Sulfate	100	100	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 180.1 Rev. 2.0	Turbidity						2.84	
EPA 200.7 Rev. 4.4	Barium	102	101	99.6	101			1.23
	Calcium	106	105	102				1.13
	Iron	105	106	107	105			1.85
	Magnesium	102	107	100				1.68
	Manganese	104	104	102	104			1.24
	Potassium	99.4	100	99.8	101			0.796
	Sodium	101	101	100				0.766
	Zinc	106	107	106	106			0.168
EPA 200.8 Rev. 5.4	Aluminum	97.9	95.6	96.1	93.1			0.567
	Antimony	100	103	104	102			0.671
	Arsenic	101	103	103	102			0.714
	Beryllium	95.4	98.2	97.9	93.9			0.236
	Boron	103	102	104	110			2.21
	Cadmium	101	106	106	105			0.0054
	Chromium	95.0	98.2	100	94.4			2.14
	Copper	103	98.7	99.1	100			0.407
	Lead	99.1	101	102	101			1.10
	Nickel	102	100	101	98.4			0.870
	Selenium	101	103	104	100			0.501
	Silver	102	103	103	109			0.459
	Thallium	106	109	111	108			1.48
EPA 300.0 Rev. 2.1	Chloride	101	100	97.9			0.852	
	Sulfate	100	100	98.3			0.938	
EPA 350.1 Rev. 2.0	Ammonia-N	97.4	96.4	97.4				0.789
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.4						0.880
EPA 353.2 Rev. 2.0	NO2NO3-N	100	98.6	98.0				0.447
EPA 365.1 Rev. 2.0	Total-P	102						1.90
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	98.0	98.6				0.400
SM 2120 B-2011	Color (true)	100					0.0039	
SM 2320 B-2011	Total Alkalinity	98.7					1.33	
SM 2540 C-2011	TDS						0.813	
SM 2540 D-2011	TSS						2.35	
SM 4500 F-C-2011	Fluoride	98.6	99.3	99.3				0.0
SM 5310 B-2011	Organic Carbon	96.0	95.5	94.2				0.809

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2245372
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2245376
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2245376
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2245372
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2245372
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2245373
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2245373
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2245373
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2245373
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2245374
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2245372

Reference Method Descriptions

Method	Description	Associated Samples
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2245372
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2245376
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2245372
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2245372
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2245372
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2245373

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	05/05/2021			05/05/2021 16:05	Yen Ta	2245372
EPA 200.7 Rev. 4.4	05/05/2021	05/13/2021 17:25	Elliott D. Healy	05/14/2021 17:24	Betina Topolski	2245376
EPA 200.8 Rev. 5.4	05/05/2021	05/13/2021 17:25	Elliott D. Healy	05/14/2021 23:06	Alexander Thompson	2245376
	05/05/2021	05/13/2021 17:25	Elliott D. Healy	05/16/2021 17:26	Alexander Thompson	2245376
EPA 300.0 Rev. 2.1	05/05/2021			05/20/2021 23:37	Lipi Saha	2245372
EPA 350.1 Rev. 2.0	05/05/2021			05/14/2021 13:03	Ping Hua	2245373
EPA 351.2 Rev. 2.0	05/05/2021	05/11/2021 13:52	Benjamin T. Nordmann	05/12/2021 15:00	Virginia P. Brown	2245373
EPA 353.2 Rev. 2.0	05/05/2021			05/07/2021 09:48	Beverly Y. Sanders	2245373
EPA 365.1 Rev. 2.0	05/05/2021	05/13/2021 14:14	Yen Ta	05/14/2021 13:40	Shengyu Ding	2245373
EPA 365.1 Rev. 2.0 dissolved	05/05/2021			05/05/2021 15:02	Patrick M. Roche	2245374
SM 2120 B-2011	05/05/2021			05/05/2021 17:35	Sarah A Nixon	2245372
SM 2320 B-2011	05/05/2021			05/13/2021 03:46	Dale L. Simmons	2245372
SM 2340B	05/05/2021			05/14/2021 17:24	Betina Topolski	2245376
SM 2540 C-2011	05/05/2021			05/07/2021 14:21	Yijie Li	2245372
SM 2540 D-2011	05/05/2021			05/07/2021 14:21	Yijie Li	2245372
SM 4500 F-C-2011	05/05/2021			05/07/2021 20:45	Samantha Davila	2245372
SM 5310 B-2011	05/05/2021			05/10/2021 19:36	Madeline Gruver	2245373