

Chemical Analysis Report

CEN-DIST-2020-10-27-04

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

Event Description: **Gum Lake**
Request ID: **RQ-2020-10-26-51**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Kalina Warren

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: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 18-NOV-2020 13:37



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: Gum Lake @ Center

Collection Date/Time: 10/26/2020 13:10

Field ID: G3CE0033

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2204883	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P389348	
	EPA 300.0 Rev. 2.1	Chloride	26		mg Cl/L	P389804	
		Sulfate	20		mg SO4/L	P389807	
		Color (true)	220		PCU	P389355	
	SM 2320 B-2011	Total Alkalinity	55		mg CaCO3/L	P389620	
	SM 2540 C-2011	TDS	155		mg/L	P389855	
	SM 2540 D-2011	TSS	3	I	mg/L	P389870	
	SM 4500 F-C-2011	Fluoride	0.22		mg F/L	P389624	
2204884	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P389580	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P389493	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.014		mg N/L	P389369	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P389541	
	SM 5310 B-2011	Organic Carbon	19		mg C/L	P389444	
2204885	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.076		mg P/L	P389359	
2204891	EPA 200.7 Rev. 4.4	Barium	14.7		ug/L	P389489	
		Calcium	7.55		mg/L	P389489	
		Iron	280		ug/L	P389489	
		Magnesium	4.54		mg/L	P389489	
		Potassium	14.4		mg/L	P389489	
		Sodium	29.5		mg/L	P389489	
		Zinc	5.0	U	ug/L	P389489	
	EPA 200.8 Rev. 5.4	Aluminum	129		ug/L	P389489	
		Antimony	0.15	I	ug/L	P389489	
		Arsenic	2.33		ug/L	P389489	
		Beryllium	0.020	I	ug/L	P389489	
		Boron**	44.2		ug/L	P389489	
		Cadmium	0.020	U	ug/L	P389489	
		Chromium	0.45	I	ug/L	P389489	
		Copper	1.86		ug/L	P389489	
		Lead	0.81		ug/L	P389489	
		Nickel	0.50	U	ug/L	P389489	
		Selenium	0.23	I	ug/L	P389489	
		Silver	0.010	U	ug/L	P389489	
		Thallium	0.10	U	ug/L	P389489	
		Hardness	37.5		mg/L	P389489	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: 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: P389348

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P389489

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
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: P389489

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: P389804

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389807

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389580

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: P389493

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389369

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389541

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389359

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

Reference Method: SM 2120 B-2011
Batch ID: P389355

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P389620

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

Reference Method: SM 2540 C-2011
Batch ID: P389855

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P389870

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P389624

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: P389444

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: P389489

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	93.9		P	85 - 115
Calcium	95.4		P	85 - 115
Iron	99.0		P	85 - 115
Magnesium	99.1		P	85 - 115
Potassium	97.7		P	85 - 115
Sodium	93.5		P	85 - 115
Zinc	92.1		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P389489

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	104		P	85 - 115
Antimony	104		P	85 - 115
Arsenic	103		P	85 - 115
Beryllium	100		P	85 - 115
Boron	103		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	103		P	85 - 115
Copper	103		P	85 - 115
Lead	95.8		P	85 - 115
Nickel	102		P	85 - 115
Selenium	102		P	85 - 115
Silver	97.2		P	85 - 115
Thallium	103		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389804

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389807

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389580

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: P389493

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389369

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: P389541

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389359

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

Reference Method: SM 2120 B-2011
Batch ID: P389355

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

Reference Method: SM 2320 B-2011
Batch ID: P389620

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.8		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P389624

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P389444

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P389489

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205025	Barium	100		P	80 - 120
2205025	Calcium	103		P	80 - 120
2205025	Iron	108		P	80 - 120
2205025	Magnesium	107		P	80 - 120
2205025	Potassium	103		P	80 - 120
2205025	Sodium	97.8		P	80 - 120
2205025	Zinc	99.0		P	80 - 120
2205246	Barium	101	102	P/P	80 - 120
2205246	Calcium	99.9		P	80 - 120
2205246	Iron	108	106	P/P	80 - 120
2205246	Magnesium	106	104	P/P	80 - 120
2205246	Potassium	111	109	P/P	80 - 120
2205246	Sodium	98.9		P	80 - 120
2205246	Zinc	97.5	98.2	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P389489

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2205025	Aluminum	108		P	80 - 120
2205025	Antimony	104		P	80 - 120
2205025	Arsenic	102		P	80 - 120
2205025	Beryllium	95.2		P	80 - 120
2205025	Boron	104		P	80 - 120
2205025	Cadmium	104		P	80 - 120
2205025	Chromium	101		P	80 - 120
2205025	Copper	101		P	80 - 120
2205025	Lead	96.7		P	80 - 120
2205025	Nickel	97.8		P	80 - 120
2205025	Selenium	96.7		P	80 - 120
2205025	Silver	96.4		P	80 - 120
2205025	Thallium	105		P	80 - 120
2205246	Aluminum	100	101	P/P	80 - 120
2205246	Antimony	104	104	P/P	80 - 120
2205246	Arsenic	103	103	P/P	80 - 120
2205246	Beryllium	97.6	97.4	P/P	80 - 120
2205246	Boron	100	102	P/P	80 - 120
2205246	Cadmium	103	103	P/P	80 - 120
2205246	Chromium	101	99.8	P/P	80 - 120
2205246	Copper	101	100	P/P	80 - 120
2205246	Lead	94.6	95.5	P/P	80 - 120
2205246	Nickel	101	99.7	P/P	80 - 120
2205246	Selenium	80.8	80.4	P/P	80 - 120
2205246	Silver	95.5	97.4	P/P	80 - 120
2205246	Thallium	103	104	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389804

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204853	Chloride	99.6		P	90 - 110
2205048	Chloride	101		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389807

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204853	Sulfate	99.4		P	90 - 110
2205048	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389580

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204980	Ammonia-N	103	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389369

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204835	NO2NO3-N	98.0	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389541

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204835	Total-P	105	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389359

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204845	O-Phosphate-P	99.9	99.1	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P389624

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204843	Fluoride	102	102	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P389444

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2204856	Organic Carbon	96.1	93.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P389348

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204893	Turbidity	13.4	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P389489

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205246	Barium	1.07	Spike	P	0 - 20
2205246	Calcium	0.916	Spike	P	0 - 20
2205246	Iron	2.00	Spike	P	0 - 20
2205246	Magnesium	1.57	Spike	P	0 - 20
2205246	Potassium	1.61	Spike	P	0 - 20
2205246	Sodium	0.917	Spike	P	0 - 20
2205246	Zinc	0.646	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P389489

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2205246	Aluminum	0.517	Spike	P	0 - 20
2205246	Antimony	0.390	Spike	P	0 - 20
2205246	Arsenic	0.411	Spike	P	0 - 20
2205246	Beryllium	0.213	Spike	P	0 - 20
2205246	Boron	1.16	Spike	P	0 - 20
2205246	Cadmium	0.106	Spike	P	0 - 20
2205246	Chromium	1.28	Spike	P	0 - 20
2205246	Copper	1.14	Spike	P	0 - 20
2205246	Lead	0.955	Spike	P	0 - 20
2205246	Nickel	1.05	Spike	P	0 - 20
2205246	Selenium	0.491	Spike	P	0 - 20
2205246	Silver	2.02	Spike	P	0 - 20
2205246	Thallium	1.79	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389804

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204853	Chloride	0.605	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P389807

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204853	Sulfate	0.810	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P389580

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204980	Ammonia-N	0.186	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P389493

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204856	Kjeldahl Nitrogen	4.90	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P389369

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204835	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P389541

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204835	Total-P	0.138	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P389359

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204845	O-Phosphate-P	0.685	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P389355

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204852	Color (true)	2.21	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P389620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204843	Total Alkalinity	0.970	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P389855

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204802	TDS	2.47	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P389624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204843	Fluoride	0.509	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P389444

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2204856	Organic Carbon	1.37	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A101802

Included Lab Sample IDs: 2204883

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: SM 2120 B-2011

Run ID: A101804

Included Lab Sample IDs: 2204883

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A101806

Included Lab Sample IDs: 2204885

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A101812

Included Lab Sample IDs: 2204884

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

Reference Method: SM 5310 B-2011

Run ID: A101846

Included Lab Sample IDs: 2204884

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.0	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A101882

Included Lab Sample IDs: 2204884

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.7	95.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A101890

Included Lab Sample IDs: 2204884

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A101892

Included Lab Sample IDs: 2204891

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.6	99.6	P/P	90 - 110
Antimony	102	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A101892

Included Lab Sample IDs: 2204891

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	100	P/P	90 - 110
Boron	101	104	P/P	90 - 110
Cadmium	102	101	P/P	90 - 110
Chromium	99.4	96.3	P/P	90 - 110
Copper	99.0	97.2	P/P	90 - 110
Lead	95.3	94.8	P/P	90 - 110
Nickel	99.5	96.4	P/P	90 - 110
Selenium	101	99.2	P/P	90 - 110
Silver	98.7	99.1	P/P	90 - 110
Thallium	97.5	97.9	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A101895

Included Lab Sample IDs: 2204891

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	95.0	96.8	P/P	90 - 110
Calcium	98.3	99.9	P/P	90 - 110
Iron	100	102	P/P	90 - 110
Magnesium	99.6	101	P/P	90 - 110
Potassium	98.9	99.4	P/P	90 - 110
Sodium	96.5	96.8	P/P	90 - 110
Zinc	97.2	98.3	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A101909

Included Lab Sample IDs: 2204891

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	95.5	96.1	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A101910

Included Lab Sample IDs: 2204883

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.7	95.4	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A101910

Included Lab Sample IDs: 2204883

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A101933

Included Lab Sample IDs: 2204884

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A101949

Included Lab Sample IDs: 2204883

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.2	99.4	P/P	90 - 110
Sulfate	98.2	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 SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					13.4	
EPA 200.7 Rev. 4.4	Barium	93.9	100	101	102		1.07
	Calcium	95.4	103	99.9			0.916
	Iron	99.0	108	108	106		2.00
	Magnesium	99.1	107	106	104		1.57
	Potassium	97.7	103	111	109		1.61
	Sodium	93.5	97.8	98.9			0.917
	Zinc	92.1	99.0	97.5	98.2		0.646
EPA 200.8 Rev. 5.4	Aluminum	104	100	101	108		0.517
	Antimony	104	104	104	104		0.390
	Arsenic	103	103	103	102		0.411
	Beryllium	100	95.2	97.6	97.4		0.213
	Boron	103	100	102	104		1.16
	Cadmium	103	103	103	104		0.106
	Chromium	103	101	99.8	101		1.28
	Copper	103	101	100	101		1.14
	Lead	95.8	94.6	95.5	96.7		0.955
	Nickel	102	101	99.7	97.8		1.05
	Selenium	102	80.8	80.4	96.7		0.491
	Silver	97.2	95.5	97.4	96.4		2.02
	Thallium	103	103	104	105		1.79
EPA 300.0 Rev. 2.1	Chloride	100	99.6	101		0.605	
	Sulfate	99.5	100	99.4		0.810	
EPA 350.1 Rev. 2.0	Ammonia-N	103	103	103			0.186
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101					4.90
EPA 353.2 Rev. 2.0	NO2NO3-N	100	98.0	98.0			0.0
EPA 365.1 Rev. 2.0	Total-P	104	105	105			0.138
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	99.9	99.1			0.685
SM 2120 B-2011	Color (true)	100				2.21	
SM 2320 B-2011	Total Alkalinity	98.8				0.970	
SM 2540 C-2011	TDS					2.47	
SM 4500 F-C-2011	Fluoride	101	102	102			0.509
SM 5310 B-2011	Organic Carbon	97.5	96.1	93.6			1.37

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2204883
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2204891
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2204891
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2204883
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2204883
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2204884
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2204884
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2204884
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2204884
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2204885
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2204883
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2204883
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2204891

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2204883
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2204883
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2204883
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2204884

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	10/27/2020			10/27/2020 15:30	Yen Ta	2204883
EPA 200.7 Rev. 4.4	10/27/2020	10/29/2020 16:05	Elliott D. Healy	10/30/2020 17:51	Betina Topolski	2204891
EPA 200.8 Rev. 5.4	10/27/2020	10/29/2020 16:05	Elliott D. Healy	10/30/2020 19:13	Alexander Thompson	2204891
	10/27/2020	10/29/2020 16:05	Elliott D. Healy	11/02/2020 11:40	Alexander Thompson	2204891
EPA 300.0 Rev. 2.1	10/27/2020			11/04/2020 22:37	Lipi Saha	2204883
EPA 350.1 Rev. 2.0	10/27/2020			10/31/2020 15:47	Ping Hua	2204884
EPA 351.2 Rev. 2.0	10/27/2020	10/29/2020 13:45	David Boose	10/30/2020 13:26	Elliott Rodriguez	2204884
EPA 353.2 Rev. 2.0	10/27/2020			10/28/2020 09:56	Beverly Y. Sanders	2204884
EPA 365.1 Rev. 2.0	10/27/2020	10/30/2020 16:48	Yen Ta	11/03/2020 12:16	Benjamin T. Nordmann	2204884
EPA 365.1 Rev. 2.0 dissolved	10/27/2020			10/27/2020 17:00	Blanca Fach	2204885
SM 2120 B-2011	10/27/2020			10/27/2020 16:49	Benjamin T. Nordmann	2204883
SM 2320 B-2011	10/27/2020			10/31/2020 05:15	Samantha Davila	2204883
SM 2340B	10/27/2020			10/30/2020 17:51	Betina Topolski	2204891
SM 2540 C-2011	10/27/2020			10/29/2020 15:08	Yijie Li	2204883
SM 2540 D-2011	10/27/2020			10/29/2020 15:08	Yijie Li	2204883
SM 4500 F-C-2011	10/27/2020			10/31/2020 05:15	Samantha Davila	2204883
SM 5310 B-2011	10/27/2020			10/29/2020 00:25	Touraj Touran	2204884