Chemical Analysis Report

NE-DIST-2021-03-18-03

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

Event Description: **Nassau West 1 2021**
Request ID: **RQ-2021-01-11-29**
Customer: **NE-DIST**
Project ID: **SMP**

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8800 Baymeadows Way West
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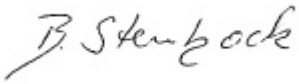
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 08-APR-2021 11:14



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: Unnamed Drain to Brandy Branch at US301 **Collection Date/Time: 03/17/2021 13:30**

Field ID: G4NE0302 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2232399	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P395168	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P395465	
		Sulfate	0.46	I	mg SO4/L	P395467	
	SM 2120 B-2011	Color (true)	370		PCU	P395172	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P395361	
	SM 2540 C-2011	TDS	101		mg/L	P395618	
	SM 2540 D-2011	TSS	2	I	mg/L	P395622	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P395362	
2232400	EPA 350.1 Rev. 2.0	Ammonia-N	0.035		mg N/L	P395766	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.90		mg N/L	P395533	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P395287	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P395325	
	SM 5310 B-2011	Organic Carbon	37		mg C/L	P395581	
2232401	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.011		mg P/L	P395166	
2232403	EPA 200.7 Rev. 4.4	Barium	13.5		ug/L	P395294	
		Calcium	2.42		mg/L	P395294	
		Iron	1.34E+03		ug/L	P395294	
		Magnesium	0.79		mg/L	P395294	
		Manganese	9.7		ug/L	P395294	
		Potassium	0.30	U	mg/L	P395294	
		Sodium	6.5		mg/L	P395294	
		Zinc	5.0	U	ug/L	P395294	
	EPA 200.8 Rev. 5.4	Aluminum	546		ug/L	P395294	
		Antimony	0.050	U	ug/L	P395294	
		Arsenic	0.30		ug/L	P395294	
		Beryllium	0.055		ug/L	P395294	
		Boron**	14.1		ug/L	P395294	
		Cadmium	0.020	U	ug/L	P395294	
		Chromium	0.63	I	ug/L	P395294	
		Copper	0.40	U	ug/L	P395294	
		Lead	0.46		ug/L	P395294	
		Nickel	0.76	I	ug/L	P395294	
		Selenium	0.20	U	ug/L	P395294	
		Silver	0.010	U	ug/L	P395294	
		Thallium	0.10	U	ug/L	P395294	
	SM 2340B	Hardness	9.3		mg/L	P395294	

Ref. Method and Comment:
SM 2120 B-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P395168

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P395294

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: P395294

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: P395465

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395467

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395766

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: P395533

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P395287

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395325

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P395166

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

Reference Method: SM 2120 B-2011
Batch ID: P395172

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P395361

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

Reference Method: SM 2540 C-2011
Batch ID: P395618

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P395622

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P395362

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: P395581

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: P395294

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	94.9		P	85 - 115
Calcium	104		P	85 - 115
Iron	102		P	85 - 115
Magnesium	101		P	85 - 115
Manganese	98.3		P	85 - 115
Potassium	101		P	85 - 115
Sodium	100		P	85 - 115
Zinc	92.9		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P395294

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	94.4		P	85 - 115
Antimony	96.3		P	85 - 115
Arsenic	97.4		P	85 - 115
Beryllium	91.7		P	85 - 115
Boron	96.9		P	85 - 115
Cadmium	96.5		P	85 - 115
Chromium	93.7		P	85 - 115
Copper	99.1		P	85 - 115
Lead	99.2		P	85 - 115
Nickel	96.7		P	85 - 115
Selenium	94.8		P	85 - 115
Silver	99.1		P	85 - 115
Thallium	103		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395465

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395467

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395766

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395533

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	108		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P395287

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: P395325

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P395166

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.2		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P395172

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.1		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P395361

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.8		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P395362

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P395581

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P395294

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232332	Barium	98.9	96.2	P/P	80 - 120
2232332	Calcium	107	103	P/P	80 - 120
2232332	Iron	107	102	P/P	80 - 120
2232332	Magnesium	106	101	P/P	80 - 120
2232332	Manganese	102	98.9	P/P	80 - 120
2232332	Potassium	110	104	P/P	80 - 120
2232332	Sodium	105	100	P/P	80 - 120
2232332	Zinc	95.6	93.6	P/P	80 - 120
2232774	Barium	98.6		P	80 - 120
2232774	Calcium	108		P	80 - 120
2232774	Iron	107		P	80 - 120
2232774	Magnesium	106		P	80 - 120
2232774	Manganese	102		P	80 - 120
2232774	Potassium	105		P	80 - 120
2232774	Sodium	106		P	80 - 120
2232774	Zinc	95.0		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P395294

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232332	Aluminum	93.2	96.8	P/P	80 - 120
2232332	Antimony	95.7	98.4	P/P	80 - 120
2232332	Arsenic	95.0	97.7	P/P	80 - 120
2232332	Beryllium	93.1	93.8	P/P	80 - 120
2232332	Boron	96.2	98.0	P/P	80 - 120
2232332	Cadmium	97.8	100	P/P	80 - 120
2232332	Chromium	92.3	94.8	P/P	80 - 120
2232332	Copper	96.6	99.9	P/P	80 - 120
2232332	Lead	98.1	99.6	P/P	80 - 120
2232332	Nickel	94.9	97.6	P/P	80 - 120
2232332	Selenium	93.4	95.4	P/P	80 - 120
2232332	Silver	98.1	100	P/P	80 - 120
2232332	Thallium	102	105	P/P	80 - 120
2232774	Aluminum	95.5		P	80 - 120
2232774	Antimony	98.2		P	80 - 120
2232774	Arsenic	95.8		P	80 - 120
2232774	Beryllium	88.4		P	80 - 120
2232774	Boron	99.6		P	80 - 120
2232774	Cadmium	98.3		P	80 - 120
2232774	Chromium	95.0		P	80 - 120
2232774	Copper	97.4		P	80 - 120
2232774	Lead	100		P	80 - 120
2232774	Nickel	96.1		P	80 - 120
2232774	Selenium	94.2		P	80 - 120
2232774	Silver	99.6		P	80 - 120
2232774	Thallium	103		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395465

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: P395465

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232292	Chloride	101		P	90 - 110
2232383	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395467

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232292	Sulfate	100		P	90 - 110
2232383	Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395766

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232421	Ammonia-N	97.8	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395533

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232384	Kjeldahl Nitrogen	113	112	F/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P395287

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232349	NO2NO3-N	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395325

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232400	Total-P	108	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P395166

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232319	O-Phosphate-P	98.5	98.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P395362

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232503	Fluoride	101	98.8	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P395581

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2232673	Organic Carbon	95.6	95.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P395168

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232361	Turbidity	3.65	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P395294

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232332	Barium	2.79	Spike	P	0 - 20
2232332	Calcium	2.80	Spike	P	0 - 20
2232332	Iron	4.65	Spike	P	0 - 20
2232332	Magnesium	4.27	Spike	P	0 - 20
2232332	Manganese	2.88	Spike	P	0 - 20
2232332	Potassium	4.92	Spike	P	0 - 20
2232332	Sodium	3.64	Spike	P	0 - 20
2232332	Zinc	2.09	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P395294

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232332	Aluminum	3.67	Spike	P	0 - 20
2232332	Antimony	2.74	Spike	P	0 - 20
2232332	Arsenic	2.88	Spike	P	0 - 20
2232332	Beryllium	0.732	Spike	P	0 - 20
2232332	Boron	1.75	Spike	P	0 - 20
2232332	Cadmium	2.50	Spike	P	0 - 20
2232332	Chromium	2.45	Spike	P	0 - 20
2232332	Copper	3.05	Spike	P	0 - 20
2232332	Lead	1.50	Spike	P	0 - 20
2232332	Nickel	2.82	Spike	P	0 - 20
2232332	Selenium	2.11	Spike	P	0 - 20
2232332	Silver	2.16	Spike	P	0 - 20
2232332	Thallium	3.67	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395465

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232292	Chloride	0.346	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P395467

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232292	Sulfate	1.50	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P395766

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232421	Ammonia-N	1.52	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P395533

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232384	Kjeldahl Nitrogen	1.39	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P395287

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232349	NO2NO3-N	0.496	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P395325

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232400	Total-P	1.46	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P395166

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232319	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P395361

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232503	Total Alkalinity	0.780	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P395618

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232292	TDS	7.59	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P395362

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232503	Fluoride	1.88	Spike	P	0 - 2.8

Quality Assurance Report
Precision

Reference Method: SM 5310 B-2011
Batch ID: P395581

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2232673	Organic Carbon	0.0820	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: A104138
Included Lab Sample IDs: 2232401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	98.1	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A104139
Included Lab Sample IDs: 2232399

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	102	P/P	95 - 105

Reference Method: SM 2120 B-2011
Run ID: A104141
Included Lab Sample IDs: 2232399

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	99.0	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A104195
Included Lab Sample IDs: 2232400

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A104216
Included Lab Sample IDs: 2232399

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.9	99.5	P/P	90 - 110
Sulfate	99.6	99.4	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A104224
Included Lab Sample IDs: 2232399

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.1	97.9	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A104224
Included Lab Sample IDs: 2232399

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A104230
Included Lab Sample IDs: 2232403

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.5	99.9	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A104230
Included Lab Sample IDs: 2232403

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	97.5	96.9	P/P	90 - 110
Arsenic	100	98.8	P/P	90 - 110
Beryllium	98.5	96.2	P/P	90 - 110
Boron	99.3	103	P/P	90 - 110
Cadmium	99.8	99.3	P/P	90 - 110
Chromium	100	99.9	P/P	90 - 110
Copper	99.7	96.4	P/P	90 - 110
Lead	102	99.9	P/P	90 - 110
Nickel	101	99.2	P/P	90 - 110
Selenium	98.4	97.6	P/P	90 - 110
Silver	99.0	98.4	P/P	90 - 110
Thallium	107	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A104247
Included Lab Sample IDs: 2232400

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	98.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A104262
Included Lab Sample IDs: 2232403

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	98.9	97.6	P/P	90 - 110
Calcium	101	101	P/P	90 - 110
Iron	102	102	P/P	90 - 110
Magnesium	99.6	99.6	P/P	90 - 110
Manganese	101	101	P/P	90 - 110
Potassium	103	103	P/P	90 - 110
Sodium	100	99.4	P/P	90 - 110
Zinc	99.2	98.5	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A104316
Included Lab Sample IDs: 2232400

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.2	97.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A104367
Included Lab Sample IDs: 2232400

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.5	94.2	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A104401
Included Lab Sample IDs: 2232400

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.7	98.4	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						3.65	
EPA 200.7 Rev. 4.4	Barium	94.9	98.9	96.2	98.6			2.79
	Calcium	104	107	103	108			2.80
	Iron	102	107	102	107			4.65
	Magnesium	101	106	101	106			4.27
	Manganese	98.3	102	98.9	102			2.88
	Potassium	101	110	104	105			4.92
	Sodium	100	105	100	106			3.64
	Zinc	92.9	95.6	93.6	95.0			2.09
EPA 200.8 Rev. 5.4	Aluminum	94.4	93.2	96.8	95.5			3.67
	Antimony	96.3	95.7	98.4	98.2			2.74
	Arsenic	97.4	95.0	97.7	95.8			2.88
	Beryllium	91.7	93.1	93.8	88.4			0.732
	Boron	96.9	96.2	98.0	99.6			1.75
	Cadmium	96.5	97.8	100	98.3			2.50
	Chromium	93.7	92.3	94.8	95.0			2.45
	Copper	99.1	96.6	99.9	97.4			3.05
	Lead	99.2	98.1	99.6	100			1.50
	Nickel	96.7	94.9	97.6	96.1			2.82
	Selenium	94.8	93.4	95.4	94.2			2.11
	Silver	99.1	98.1	100	99.6			2.16
	Thallium	103	102	105	103			3.67
EPA 300.0 Rev. 2.1	Chloride	101	101	101			0.346	
	Sulfate	100	100	98.2			1.50	
EPA 350.1 Rev. 2.0	Ammonia-N	100	97.8	99.4				1.52
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108	113	112				1.39
EPA 353.2 Rev. 2.0	NO2NO3-N	100	101	100				0.496
EPA 365.1 Rev. 2.0	Total-P	105	108	106				1.46
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.2	98.5	98.5				0.0
SM 2120 B-2011	Color (true)	98.1						
SM 2320 B-2011	Total Alkalinity	99.8					0.780	
SM 2540 C-2011	TDS						7.59	
SM 4500 F-C-2011	Fluoride	100	101	98.8				1.88
SM 5310 B-2011	Organic Carbon	95.0	95.6	95.8				0.0820

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2232399
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2232403
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2232403
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2232399
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2232399
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2232400
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2232400
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2232400
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2232400
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2232401
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2232399
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2232399

Reference Method Descriptions

Method	Description	Associated Samples
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2232403
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2232399
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2232399
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2232399
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2232400

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	03/18/2021			03/18/2021 15:47	Yen Ta	2232399
EPA 200.7 Rev. 4.4	03/18/2021	03/22/2021 15:05	Elliott D. Healy	03/24/2021 14:01	Betina Topolski	2232403
EPA 200.8 Rev. 5.4	03/18/2021	03/22/2021 15:05	Elliott D. Healy	03/23/2021 20:13	Alexander Thompson	2232403
EPA 300.0 Rev. 2.1	03/18/2021			03/24/2021 18:09	Lipi Saha	2232399
EPA 350.1 Rev. 2.0	03/18/2021			03/31/2021 18:55	Ping Hua	2232400
EPA 351.2 Rev. 2.0	03/18/2021	03/26/2021 13:02	Benjamin T. Nordmann	03/30/2021 10:57	Virginia P. Brown	2232400
EPA 353.2 Rev. 2.0	03/18/2021			03/22/2021 11:37	Beverly Y. Sanders	2232400
EPA 365.1 Rev. 2.0	03/18/2021	03/23/2021 09:29	Yen Ta	03/24/2021 11:22	Shengyu Ding	2232400
EPA 365.1 Rev. 2.0 dissolved	03/18/2021			03/18/2021 15:16	Patrick M. Roche	2232401
SM 2120 B-2011	03/18/2021			03/18/2021 17:11	Benjamin T. Nordmann	2232399
SM 2320 B-2011	03/18/2021			03/19/2021 22:16	Dale L. Simmons	2232399
SM 2340B	03/18/2021			03/24/2021 14:01	Betina Topolski	2232403
SM 2540 C-2011	03/18/2021			03/22/2021 14:26	Yijie Li	2232399
SM 2540 D-2011	03/18/2021			03/22/2021 14:26	Yijie Li	2232399
SM 4500 F-C-2011	03/18/2021			03/19/2021 22:16	Dale L. Simmons	2232399
SM 5310 B-2011	03/18/2021			03/27/2021 03:23	Madeline Gruver	2232400