

Chemical Analysis Report

NE-DIST-2020-06-04-02

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

Event Description: **Nassau North 2020**
Request ID: **RQ-2020-04-06-57**
Customer: **NE-DIST**
Project ID: **SMP**

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

Date Certified: 23-JUN-2020 11:10



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: St.Marys at Tracy Ferry Bt.Rmp

Collection Date/Time: 06/03/2020 12:30

Field ID: G4NE0296

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2174766	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P382818	
	EPA 300.0 Rev. 2.1	Chloride	10		mg Cl/L	P383134	
		Sulfate	3.6		mg SO4/L	P383137	
		Color (true)	220		PCU	P382823	
	SM 2320 B-2011	Total Alkalinity	17		mg CaCO3/L	P383005	
	SM 2540 C-2011	TDS	78		mg/L	P383269	
	SM 2540 D-2011	TSS	2	U	mg/L	P383236	
	SM 4500 F-C-2011	Fluoride	0.083	I	mg F/L	P382910	
2174767	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P382882	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.63		mg N/L	P383055	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P382848	
	EPA 365.1 Rev. 2.0	Total-P	0.046		mg P/L	P382937	
	SM 5310 B-2011	Organic Carbon	21		mg C/L	P382890	
2174768	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.029		mg P/L	P382821	
2174782	EPA 200.7 Rev. 4.4	Barium	24.2		ug/L	P382927	
		Calcium	7.92		mg/L	P382927	
		Iron	700		ug/L	P382927	
		Magnesium	3.19		mg/L	P382927	
		Potassium	0.87	I	mg/L	P382927	
		Sodium	6.9		mg/L	P382927	
		Zinc	5.0	U	ug/L	P382927	
	EPA 200.8 Rev. 5.4	Aluminum	287		ug/L	P382927	
		Antimony	0.050	U	ug/L	P382927	
		Arsenic	0.47		ug/L	P382927	
		Boron**	18.1		ug/L	P382927	
		Cadmium	0.020	U	ug/L	P382927	
		Chromium	0.62	I	ug/L	P382927	
		Copper	0.40	U	ug/L	P382927	
		Lead	0.39	I	ug/L	P382927	
		Nickel	0.54	I	ug/L	P382927	
		Selenium	0.20	U	ug/L	P382927	
		Silver	0.010	U	ug/L	P382927	
		Thallium	0.10	U	ug/L	P382927	
		Hardness	32.9		mg/L	P382927	
	SM 2340B						

Ref. Method and Comment:

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

Sample Location: Creek Draining former Hampton Lake 100m above Rd

Collection Date/Time: 06/03/2020 13:00

Field ID: G4NE0292

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2174769	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P382818	
	EPA 300.0 Rev. 2.1	Chloride	8.9		mg Cl/L	P383134	
		Sulfate	2.2		mg SO4/L	P383137	
	SM 2120 B-2011	Color (true)	260		PCU	P382823	
	SM 2320 B-2011	Total Alkalinity	3.3		mg CaCO3/L	P383005	
	SM 2540 C-2011	TDS	72		mg/L	P383269	
	SM 2540 D-2011	TSS	2	I	mg/L	P383236	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P382910	
2174771	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P382882	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P382835	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P382848	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P382937	
	SM 5310 B-2011	Organic Carbon	25		mg C/L	P382890	
2174773	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P382821	

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.

Sample Location: Pigeon Creek at US 1

Collection Date/Time: 06/03/2020 13:15

Field ID: 19010099

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2174770	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P382818	
	EPA 300.0 Rev. 2.1	Chloride	9.4		mg Cl/L	P383134	
		Sulfate	1.9		mg SO4/L	P383137	
	SM 2120 B-2011	Color (true)	300		PCU	P382824	
	SM 2320 B-2011	Total Alkalinity	2.9		mg CaCO3/L	P383005	
	SM 2540 C-2011	TDS	62		mg/L	P383269	
	SM 2540 D-2011	TSS	3	I	mg/L	P383236	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P382910	
2174772	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P382882	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P382889	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.053		mg N/L	P382848	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P382937	
	SM 5310 B-2011	Organic Carbon	26		mg C/L	P382890	
2174774	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P382821	

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: P382818

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P382927

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: P382927

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	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: P383134

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383137

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P382882

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: P382835

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P382889

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383055

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P382848

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P382937

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382821

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

Reference Method: SM 2120 B-2011
Batch ID: P382823

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B-2011
Batch ID: P382824

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P383005

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2011
Batch ID: P383269

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P383236

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P382910

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P382890

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: P382927

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	95.2		P	85 - 115
Calcium	102		P	85 - 115
Iron	101		P	85 - 115
Magnesium	100		P	85 - 115
Potassium	95.9		P	85 - 115
Sodium	99.5		P	85 - 115
Zinc	96.7		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P382927

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	100		P	85 - 115
Antimony	105		P	85 - 115
Arsenic	100		P	85 - 115
Boron	104		P	85 - 115
Cadmium	106		P	85 - 115
Chromium	109		P	85 - 115
Copper	102		P	85 - 115
Lead	100		P	85 - 115
Nickel	100		P	85 - 115
Selenium	96.4		P	85 - 115
Silver	105		P	85 - 115
Thallium	95.7		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383134

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383137

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P382882

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: P382835

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P382889

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383055

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P382848

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: P382937

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: P382821

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.6		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P382823

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2120 B-2011
Batch ID: P382824

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

Reference Method: SM 2320 B-2011
Batch ID: P383005

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.4		P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P382910

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.7		P	90 - 106

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P382890

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P382927

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174678	Barium	95.0	95.2	P/P	80 - 120
2174678	Calcium	102		P	80 - 120
2174678	Iron	104	106	P/P	80 - 120
2174678	Magnesium	101		P	80 - 120
2174678	Potassium	96.8		P	80 - 120
2174678	Sodium	98.6		P	80 - 120
2174678	Zinc	99.7	100	P/P	80 - 120
2174928	Barium	94.4		P	80 - 120
2174928	Calcium	103		P	80 - 120
2174928	Iron	100		P	80 - 120
2174928	Magnesium	103		P	80 - 120
2174928	Potassium	88.2		P	80 - 120
2174928	Sodium	99.7		P	80 - 120
2174928	Zinc	99.7		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P382927

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174678	Aluminum	100	99.5	P/P	80 - 120
2174678	Antimony	110	107	P/P	80 - 120
2174678	Arsenic	99.4	98.1	P/P	80 - 120
2174678	Boron	101	103	P/P	80 - 120
2174678	Cadmium	105	103	P/P	80 - 120
2174678	Chromium	107	107	P/P	80 - 120
2174678	Copper	102	102	P/P	80 - 120
2174678	Lead	106	104	P/P	80 - 120
2174678	Nickel	101	101	P/P	80 - 120
2174678	Selenium	103	103	P/P	80 - 120
2174678	Silver	99.7	99.2	P/P	80 - 120
2174678	Thallium	105	106	P/P	80 - 120
2174928	Aluminum	101		P	80 - 120
2174928	Antimony	108		P	80 - 120
2174928	Arsenic	100		P	80 - 120
2174928	Boron	105		P	80 - 120
2174928	Cadmium	106		P	80 - 120
2174928	Chromium	107		P	80 - 120
2174928	Copper	101		P	80 - 120
2174928	Lead	106		P	80 - 120
2174928	Nickel	102		P	80 - 120
2174928	Selenium	100		P	80 - 120
2174928	Silver	101		P	80 - 120
2174928	Thallium	110		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383134

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174739	Chloride	104		P	90 - 110
2174811	Chloride	105		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383137

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174739	Sulfate	103		P	90 - 110
2174811	Sulfate	105		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P382882

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174662	Ammonia-N	100	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174913	Kjeldahl Nitrogen	104	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P382848

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174784	NO2NO3-N	97.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P382937

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174741	Total-P	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382821

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174653	O-Phosphate-P	91.9	92.4	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P382910

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174661	Fluoride	97.0	97.7	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P382890

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174784	Organic Carbon	98.4	100	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P382818

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174739	Turbidity	0.930	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P382927

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174678	Barium	0.186	Spike	P	0 - 20
2174678	Calcium	2.69	Spike	P	0 - 20
2174678	Iron	2.24	Spike	P	0 - 20
2174678	Magnesium	2.45	Spike	P	0 - 20
2174678	Potassium	1.26	Spike	P	0 - 20
2174678	Sodium	3.54	Spike	P	0 - 20
2174678	Zinc	0.692	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P382927

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174678	Aluminum	0.459	Spike	P	0 - 20
2174678	Antimony	2.64	Spike	P	0 - 20
2174678	Arsenic	1.21	Spike	P	0 - 20
2174678	Boron	1.27	Spike	P	0 - 20
2174678	Cadmium	1.37	Spike	P	0 - 20
2174678	Chromium	0.634	Spike	P	0 - 20
2174678	Copper	0.363	Spike	P	0 - 20
2174678	Lead	1.49	Spike	P	0 - 20
2174678	Nickel	0.337	Spike	P	0 - 20
2174678	Selenium	0.0585	Spike	P	0 - 20
2174678	Silver	0.588	Spike	P	0 - 20
2174678	Thallium	0.911	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383134

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174739	Chloride	1.03	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383137

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174739	Sulfate	0.125	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P382882

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174662	Ammonia-N	0.704	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P382835

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174741	Kjeldahl Nitrogen	7.45	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P382889

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174796	Kjeldahl Nitrogen	0.380	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174913	Kjeldahl Nitrogen	0.752	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P382848

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174784	NO2NO3-N	1.47	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P382937

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174741	Total-P	0.186	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382821

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174653	O-Phosphate-P	0.485	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P382823

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174783	Color (true)	0.962	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
 Batch ID: P382824

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174812	Color (true)	0.746	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
 Batch ID: P383005

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174661	Total Alkalinity	0.986	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
 Batch ID: P383269

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174661	TDS	7.11	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
 Batch ID: P382910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174661	Fluoride	0.476	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
 Batch ID: P382890

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174784	Organic Carbon	0.936	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: A99168

Included Lab Sample IDs: 2174766, 2174769, 2174770

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	102	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A99169

Included Lab Sample IDs: 2174768, 2174773, 2174774

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.7	97.2	P/P	90 - 110
O-Phosphate-P	97.8	97.7	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A99170

Included Lab Sample IDs: 2174766, 2174769, 2174770

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	103	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A99180

Included Lab Sample IDs: 2174767, 2174771, 2174772

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A99193

Included Lab Sample IDs: 2174767, 2174771, 2174772

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

Reference Method: SM 5310 B-2011

Run ID: A99196

Included Lab Sample IDs: 2174767, 2174771, 2174772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A99203

Included Lab Sample IDs: 2174771, 2174772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.6	98.8	P/P	90 - 110
Kjeldahl Nitrogen	98.8	97.1	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A99205

Included Lab Sample IDs: 2174766, 2174769, 2174770

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-2011

Run ID: A99205

Included Lab Sample IDs: 2174766, 2174769, 2174770

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	102	98.1	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A99231

Included Lab Sample IDs: 2174782

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	98.9	97.3	P/P	90 - 110
Calcium	99.7	102	P/P	90 - 110
Iron	99.2	102	P/P	90 - 110
Magnesium	99.4	102	P/P	90 - 110
Potassium	96.1	97.4	P/P	90 - 110
Sodium	97.7	99.2	P/P	90 - 110
Zinc	100	98.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A99234

Included Lab Sample IDs: 2174782

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.3	100	P/P	90 - 110
Antimony	103	104	P/P	90 - 110
Boron	102	97.9	P/P	90 - 110
Chromium	104	103	P/P	90 - 110
Copper	100	99.1	P/P	90 - 110
Lead	99.1	101	P/P	90 - 110
Nickel	100	99.4	P/P	90 - 110
Selenium	102	104	P/P	90 - 110
Thallium	97.2	97.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A99235

Included Lab Sample IDs: 2174767, 2174771, 2174772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	97.5	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A99239

Included Lab Sample IDs: 2174766, 2174769, 2174770

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.0	96.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A99247

Included Lab Sample IDs: 2174782

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	91.4	92.4	P/P	90 - 110
Cadmium	99.0	98.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A99247

Included Lab Sample IDs: 2174782

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A99295

Included Lab Sample IDs: 2174766, 2174769, 2174770

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.5	99.7	P/P	90 - 110
Sulfate	99.8	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A99330

Included Lab Sample IDs: 2174767

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	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 SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					0.930	
EPA 200.7 Rev. 4.4	Barium	95.2	95.0	95.2	94.4		0.186
	Calcium	102	102	103			2.69
	Iron	101	104	106	100		2.24
	Magnesium	100	101	103			2.45
	Potassium	95.9	96.8	88.2			1.26
	Sodium	99.5	98.6	99.7			3.54
	Zinc	96.7	99.7	100	99.7		0.692
EPA 200.8 Rev. 5.4	Aluminum	100	100	99.5	101		0.459
	Antimony	105	110	107	108		2.64
	Arsenic	100	99.4	98.1	100		1.21
	Boron	104	101	103	105		1.27
	Cadmium	106	105	103	106		1.37
	Chromium	109	107	107	107		0.634
	Copper	102	102	102	101		0.363
	Lead	100	106	104	106		1.49
	Nickel	100	101	101	102		0.337
	Selenium	96.4	103	103	100		0.0585
	Silver	105	99.7	99.2	101		0.588
	Thallium	95.7	105	106	110		0.911
EPA 300.0 Rev. 2.1	Chloride	100	104	105		1.03	
	Sulfate	103	103	105		0.125	
EPA 350.1 Rev. 2.0	Ammonia-N	100	100	101			0.704
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102					7.45
	Kjeldahl Nitrogen	103					0.380
	Kjeldahl Nitrogen	105	104	105			0.752
EPA 353.2 Rev. 2.0	NO2NO3-N	100	97.5	99.0			1.47
EPA 365.1 Rev. 2.0	Total-P	105	104	104			0.186
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.6	91.9	92.4			0.485
SM 2120 B-2011	Color (true)	101				0.962	
	Color (true)	102				0.746	
SM 2320 B-2011	Total Alkalinity	98.4				0.986	
SM 2540 C-2011	TDS					7.11	
SM 4500 F-C-2011	Fluoride	97.7	97.0	97.7			0.476
SM 5310 B-2011	Organic Carbon	98.6	98.4	100			0.936

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2174766, 2174769, 2174770
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2174782
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2174782
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2174766, 2174769, 2174770
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2174766, 2174769, 2174770
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2174767, 2174771, 2174772
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2174767, 2174771, 2174772
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2174767, 2174771, 2174772
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2174767, 2174771, 2174772
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2174768, 2174773, 2174774
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2174766, 2174769, 2174770

Reference Method Descriptions

Method	Description	Associated Samples
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2174766, 2174769, 2174770
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2174782
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2174766, 2174769, 2174770
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2174766, 2174769, 2174770
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2174766, 2174769, 2174770
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2174767, 2174771, 2174772

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	06/04/2020			06/04/2020 15:19	Yen Ta	2174766, 2174769, 2174770
EPA 200.7 Rev. 4.4	06/04/2020	06/08/2020 14:40	Elliott D. Healy	06/09/2020 15:25	Betina Topolski	2174782
EPA 200.8 Rev. 5.4	06/04/2020	06/08/2020 14:40	Elliott D. Healy	06/09/2020 23:07	Justin Cutchin	2174782
	06/04/2020	06/08/2020 14:40	Elliott D. Healy	06/10/2020 14:49	Justin Cutchin	2174782
EPA 300.0 Rev. 2.1	06/04/2020			06/11/2020 04:07	Elliott Rodriguez	2174766
	06/04/2020			06/11/2020 04:20	Elliott Rodriguez	2174769
	06/04/2020			06/11/2020 04:33	Elliott Rodriguez	2174770
EPA 350.1 Rev. 2.0	06/04/2020			06/07/2020 10:52	Ping Hua	2174767
	06/04/2020			06/07/2020 10:54	Ping Hua	2174771
	06/04/2020			06/07/2020 10:55	Ping Hua	2174772
EPA 351.2 Rev. 2.0	06/04/2020	06/05/2020 09:20	Elliott Rodriguez	06/08/2020 10:37	Jhamieka S. Greenwood	2174771
	06/04/2020	06/05/2020 09:20	Elliott Rodriguez	06/08/2020 10:50	Jhamieka S. Greenwood	2174772
	06/04/2020	06/11/2020 09:27	Sima Feizi	06/15/2020 12:11	Jhamieka S. Greenwood	2174767
EPA 353.2 Rev. 2.0	06/04/2020			06/05/2020 10:14	Beverly Y. Sanders	2174767
	06/04/2020			06/05/2020 10:15	Beverly Y. Sanders	2174771
	06/04/2020			06/05/2020 10:17	Beverly Y. Sanders	2174772
EPA 365.1 Rev. 2.0	06/04/2020	06/08/2020 17:04	Yen Ta	06/10/2020 08:55	Lipi Saha	2174767
	06/04/2020	06/08/2020 17:04	Yen Ta	06/10/2020 08:56	Lipi Saha	2174771
	06/04/2020	06/08/2020 17:04	Yen Ta	06/10/2020 08:57	Lipi Saha	2174772
EPA 365.1 Rev. 2.0 dissolved	06/04/2020			06/04/2020 16:07	Carlos Miranda	2174768
	06/04/2020			06/04/2020 16:12	Carlos Miranda	2174773
	06/04/2020			06/04/2020 16:13	Carlos Miranda	2174774
SM 2120 B-2011	06/04/2020			06/04/2020 16:30	Blanca Fach	2174766
	06/04/2020			06/04/2020 16:31	Blanca Fach	2174769
	06/04/2020			06/04/2020 16:32	Blanca Fach	2174770
SM 2320 B-2011	06/04/2020			06/09/2020 16:13	Dale L. Simmons	2174766
	06/04/2020			06/09/2020 16:21	Dale L. Simmons	2174769
	06/04/2020			06/09/2020 16:29	Dale L. Simmons	2174770
SM 2340B	06/04/2020			06/09/2020 15:25	Betina Topolski	2174782
SM 2540 C-2011	06/04/2020			06/09/2020 12:54	Yijie Li	2174766, 2174769, 2174770
SM 2540 D-2011	06/04/2020			06/09/2020 12:54	Yijie Li	2174766, 2174769, 2174770
SM 4500 F-C-2011	06/04/2020			06/05/2020 21:10	Dale L. Simmons	2174766
	06/04/2020			06/05/2020 21:21	Dale L. Simmons	2174769
	06/04/2020			06/05/2020 21:31	Dale L. Simmons	2174770
SM 5310 B-2011	06/04/2020			06/05/2020 18:47	David Boose	2174767
	06/04/2020			06/05/2020 18:59	David Boose	2174771
	06/04/2020			06/05/2020 19:11	David Boose	2174772