

Chemical Analysis Report

NE-DIST-2020-03-19-01

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

Event Description: **Nassau East Boat 2020**
Request ID: **RQ-2020-03-16-11**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
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8800 Baymeadows Way West
Suite 100
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Date Certified: 09-APR-2020 09:33



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: Thomas Creek 5 miles Down from Ethel

Collection Date/Time: 03/18/2020 10:40

Field ID: G4NE0298

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2166936	EPA 180.1 Rev. 2.0	Turbidity	7.5		NTU	P381001	
	EPA 300.0 Rev. 2.1	Bromide	0.18		mg Br/L	P381201	
	SM 2320 B-2011	Total Alkalinity	27		mg CaCO3/L	P381413	
	SM 2540 D-2011	TSS	6	I	mg/L	P381253	
	SM 4500 F-C-2011	Fluoride	0.063	I	mg F/L	P381456	
2166938	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P381238	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P381285	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.021		mg N/L	P381545	
	EPA 365.1 Rev. 2.0	Total-P	0.24		mg P/L	P381337	
	SM 5310 B-2011	Organic Carbon	35		mg C/L	P381090	
2166940	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.20		mg P/L	P381026	
2166964	EPA 200.7 Rev. 4.4	Iron	770		ug/L	P381219	
		Manganese	16.4		ug/L	P381219	
		Zinc	5.0	U	ug/L	P381219	
	EPA 200.8 Rev. 5.4	Aluminum	430		ug/L	P381219	
		Antimony	0.050	U	ug/L	P381219	
		Arsenic	0.91		ug/L	P381219	
		Cadmium	0.020	U	ug/L	P381219	
		Chromium	0.88	I	ug/L	P381219	
		Copper	0.82		ug/L	P381219	
		Lead	0.63		ug/L	P381219	
		Nickel	0.79	I	ug/L	P381219	
		Selenium	0.20	U	ug/L	P381219	
		Silver	0.010	U	ug/L	P381219	
		Thallium	0.10	U	ug/L	P381219	

Sample Location: THOMAS CR 4 MI BELOW CITY PRISON

Collection Date/Time: 03/18/2020 11:10

Field ID: 19020033

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2166937	EPA 180.1 Rev. 2.0	Turbidity	7.4		NTU	P381001	
	EPA 300.0 Rev. 2.1	Bromide	0.14		mg Br/L	P381201	
	SM 2320 B-2011	Total Alkalinity	26	A	mg CaCO3/L	P381413	
	SM 2540 D-2011	TSS	5	I	mg/L	P381253	
	SM 4500 F-C-2011	Fluoride	0.062	I	mg F/L	P381456	
2166939	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P381238	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P381285	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.019		mg N/L	P381545	
	EPA 365.1 Rev. 2.0	Total-P	0.23		mg P/L	P381337	
	SM 5310 B-2011	Organic Carbon	36		mg C/L	P381090	
2166941	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.20		mg P/L	P381026	
2166965	EPA 200.7 Rev. 4.4	Iron	790		ug/L	P381219	
		Manganese	14.8		ug/L	P381219	
		Zinc	5.0	U	ug/L	P381219	
	EPA 200.8 Rev. 5.4	Aluminum	459		ug/L	P381219	
		Antimony	0.053	I	ug/L	P381219	
		Arsenic	0.87		ug/L	P381219	
		Cadmium	0.020	U	ug/L	P381219	
		Chromium	0.90	I	ug/L	P381219	
		Copper	0.68	I	ug/L	P381219	
		Lead	0.66		ug/L	P381219	
		Nickel	0.78	I	ug/L	P381219	
		Selenium	0.20	U	ug/L	P381219	
		Silver	0.010	U	ug/L	P381219	
		Thallium	0.10	U	ug/L	P381219	

Sample Location: Thomas Creek 5 miles Down from Ethel

Collection Date/Time: 03/18/2020 10:45

Field ID: G4NE0298 DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2166933	EPA 180.1 Rev. 2.0	Turbidity	7.5		NTU	P381001	
	EPA 300.0 Rev. 2.1	Bromide	0.18		mg Br/L	P381201	
	SM 2320 B-2011	Total Alkalinity	27		mg CaCO3/L	P381413	
	SM 2540 D-2011	TSS	6	I	mg/L	P381253	
	SM 4500 F-C-2011	Fluoride	0.063	I	mg F/L	P381456	
2166934	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P381238	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P381285	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.022		mg N/L	P381545	
	EPA 365.1 Rev. 2.0	Total-P	0.23		mg P/L	P381337	
	SM 5310 B-2011	Organic Carbon	35		mg C/L	P381090	
2166935	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.20		mg P/L	P381026	
2166963	EPA 200.7 Rev. 4.4	Iron	810		ug/L	P381219	
		Manganese	16.4		ug/L	P381219	
		Zinc	5.0	U	ug/L	P381219	
		Aluminum	460		ug/L	P381219	
	EPA 200.8 Rev. 5.4	Antimony	0.052	I	ug/L	P381219	
		Arsenic	0.92		ug/L	P381219	
		Cadmium	0.020	U	ug/L	P381219	
		Chromium	0.92	I	ug/L	P381219	
		Copper	0.92		ug/L	P381219	
		Lead	0.66		ug/L	P381219	
		Nickel	0.84	I	ug/L	P381219	
		Selenium	0.20	U	ug/L	P381219	
		Silver	0.010	U	ug/L	P381219	
		Thallium	0.10	U	ug/L	P381219	

Sample Location: Thomas Creek 5 miles Down from Ethel

Collection Date/Time: 03/18/2020 10:50

Field ID: FB 03172020

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2166942	EPA 300.0 Rev. 2.1	Bromide	0.013	U	mg Br/L	P381201	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P381413	
	SM 2540 D-2011	TSS	2	U	mg/L	P381253	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P381456	
2166943	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P381238	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P381285	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P381545	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P381337	
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P381090	
2166944	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P381026	
2166966	EPA 200.7 Rev. 4.4	Iron	30	U	ug/L	P381219	
		Manganese	1.0	U	ug/L	P381219	
		Zinc	5.0	U	ug/L	P381219	
	EPA 200.8 Rev. 5.4	Aluminum	5.0	U	ug/L	P381219	
		Antimony	0.050	U	ug/L	P381219	
		Arsenic	0.050	U	ug/L	P381219	
		Cadmium	0.020	U	ug/L	P381219	
		Chromium	0.40	U	ug/L	P381219	
		Copper	0.40	U	ug/L	P381219	
		Lead	0.20	U	ug/L	P381219	
		Nickel	0.50	U	ug/L	P381219	
		Selenium	0.20	U	ug/L	P381219	
		Silver	0.010	U	ug/L	P381219	
		Thallium	0.10	U	ug/L	P381219	

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: The result was confirmed on 03/28/2020.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The result was confirmed on 03/19/2020.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P381001

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P381219

Component	Result	Code	Units
Iron	30	U	ug/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P381219

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
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: P381201

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P381238

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P381285

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P381545

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P381337

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P381026

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

Reference Method: SM 2320 B-2011
Batch ID: P381413

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

Reference Method: SM 2540 D-2011
Batch ID: P381253

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P381456

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P381090

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: P381219

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	104		P	85 - 115
Manganese	100		P	85 - 115
Zinc	99.9		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P381219

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	95.2		P	85 - 115
Antimony	93.3		P	85 - 115
Arsenic	101		P	85 - 115
Cadmium	97.1		P	85 - 115
Chromium	96.5		P	85 - 115
Copper	96.2		P	85 - 115
Lead	99.9		P	85 - 115
Nickel	101		P	85 - 115
Selenium	95.5		P	85 - 115
Silver	102		P	85 - 115
Thallium	104		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381201

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P381238

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P381285

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P381545

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P381337

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P381026

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

Reference Method: SM 2320 B-2011
Batch ID: P381413

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P381456

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.9		P	92 - 104

Reference Method: SM 5310 B-2011
Batch ID: P381090

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P381219

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166729	Iron	104		P	80 - 120
2166729	Manganese	98.6		P	80 - 120
2166729	Zinc	100		P	80 - 120
2167130	Iron	104	102	P/P	80 - 120
2167130	Manganese	99.5	99.5	P/P	80 - 120
2167130	Zinc	100	101	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P381219

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166729	Aluminum	92.1		P	80 - 120
2166729	Antimony	94.2		P	80 - 120
2166729	Arsenic	100		P	80 - 120
2166729	Cadmium	98.3		P	80 - 120
2166729	Chromium	97.6		P	80 - 120
2166729	Copper	95.0		P	80 - 120
2166729	Lead	98.4		P	80 - 120
2166729	Nickel	98.1		P	80 - 120
2166729	Selenium	92.0		P	80 - 120
2166729	Silver	101		P	80 - 120
2166729	Thallium	103		P	80 - 120
2167130	Aluminum	93.6	93.0	P/P	80 - 120
2167130	Antimony	95.3	97.0	P/P	80 - 120
2167130	Arsenic	99.9	104	P/P	80 - 120
2167130	Cadmium	98.9	102	P/P	80 - 120
2167130	Chromium	99.1	99.5	P/P	80 - 120
2167130	Copper	95.3	97.5	P/P	80 - 120
2167130	Lead	99.9	99.9	P/P	80 - 120
2167130	Nickel	97.7	99.7	P/P	80 - 120
2167130	Selenium	93.5	99.3	P/P	80 - 120
2167130	Silver	102	101	P/P	80 - 120
2167130	Thallium	104	98.8	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381201

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166933	Bromide	103	101	P/P	90 - 110
2166937	Bromide	99.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P381238

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166912	Ammonia-N	100	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P381285

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166921	Kjeldahl Nitrogen	98.0	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P381545

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166783	NO2NO3-N	98.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P381337

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166783	Total-P	106	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P381026

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166913	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P381456

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166472	Fluoride	98.9	99.5	P/P	91 - 105

Reference Method: SM 5310 B-2011
Batch ID: P381090

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2166912	Organic Carbon	101	102	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P381001

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166886	Turbidity	2.81	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P381219

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2167130	Iron	1.91	Spike	P	0 - 20
2167130	Manganese	0.0297	Spike	P	0 - 20
2167130	Zinc	0.424	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P381219

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2167130	Aluminum	0.550	Spike	P	0 - 20
2167130	Antimony	1.78	Spike	P	0 - 20
2167130	Arsenic	3.94	Spike	P	0 - 20
2167130	Cadmium	3.57	Spike	P	0 - 20
2167130	Chromium	0.341	Spike	P	0 - 20
2167130	Copper	2.23	Spike	P	0 - 20
2167130	Lead	0.0336	Spike	P	0 - 20
2167130	Nickel	2.00	Spike	P	0 - 20
2167130	Selenium	6.02	Spike	P	0 - 20
2167130	Silver	0.556	Spike	P	0 - 20
2167130	Thallium	4.91	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381201

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166933	Bromide	0.919	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P381238

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166912	Ammonia-N	0.0220	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P381285

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166921	Kjeldahl Nitrogen	3.08	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P381545

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166783	NO2NO3-N	1.51	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P381337

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166783	Total-P	0.0706	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P381026

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166913	O-Phosphate-P	0.176	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
 Batch ID: P381413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166937	Total Alkalinity	0.0452	Sample	P	0 - 3.3

Reference Method: SM 2540 D-2011
 Batch ID: P381253

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2167027	TSS	6.06	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
 Batch ID: P381456

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166472	Fluoride	0.533	Spike	P	0 - 2.0

Reference Method: SM 5310 B-2011
 Batch ID: P381090

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2166912	Organic Carbon	1.12	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: A98316

Included Lab Sample IDs: 2166933, 2166936, 2166937

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A98329

Included Lab Sample IDs: 2166935, 2166940, 2166941, 2166944

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

Reference Method: SM 5310 B-2011

Run ID: A98371

Included Lab Sample IDs: 2166934, 2166938, 2166939, 2166943

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A98406

Included Lab Sample IDs: 2166933, 2166936, 2166937, 2166942

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	102	104	P/P	90 - 110
Bromide	103	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A98413

Included Lab Sample IDs: 2166934, 2166938, 2166939, 2166943

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A98451

Included Lab Sample IDs: 2166934, 2166938, 2166939, 2166943

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.6	94.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A98480

Included Lab Sample IDs: 2166943

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.5	97.5	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A98490

Included Lab Sample IDs: 2166933, 2166936, 2166937, 2166942

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-2011

Run ID: A98490

Included Lab Sample IDs: 2166933, 2166936, 2166937, 2166942

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A98493

Included Lab Sample IDs: 2166963, 2166964, 2166965, 2166966

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	94.4	97.5	P/P	90 - 110
Aluminum	95.6	95.5	P/P	90 - 110
Antimony	93.7	96.0	P/P	90 - 110
Antimony	94.5	92.7	P/P	90 - 110
Arsenic	102	100	P/P	90 - 110
Arsenic	99.3	99.8	P/P	90 - 110
Cadmium	97.9	98.4	P/P	90 - 110
Cadmium	97.9	97.5	P/P	90 - 110
Chromium	95.3	95.3	P/P	90 - 110
Chromium	95.7	95.6	P/P	90 - 110
Copper	93.5	98.8	P/P	90 - 110
Copper	98.0	94.9	P/P	90 - 110
Lead	101	99.4	P/P	90 - 110
Lead	98.7	99.3	P/P	90 - 110
Nickel	101	97.9	P/P	90 - 110
Nickel	102	102	P/P	90 - 110
Selenium	95.8	97.9	P/P	90 - 110
Selenium	97.3	97.5	P/P	90 - 110
Silver	97.9	97.2	P/P	90 - 110
Silver	98.4	97.7	P/P	90 - 110
Thallium	96.5	96.9	P/P	90 - 110
Thallium	98.6	95.9	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A98495

Included Lab Sample IDs: 2166933, 2166936, 2166937, 2166942

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	99.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A98517

Included Lab Sample IDs: 2166934, 2166938, 2166939, 2166943

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A98525

Included Lab Sample IDs: 2166934, 2166938, 2166939

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	105	104	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A98530

Included Lab Sample IDs: 2166963, 2166964, 2166965, 2166966

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	101	102	P/P	90 - 110
Iron	102	103	P/P	90 - 110
Iron	103	103	P/P	90 - 110
Manganese	103	104	P/P	90 - 110
Manganese	104	104	P/P	90 - 110
Manganese	104	103	P/P	90 - 110
Zinc	100	101	P/P	90 - 110
Zinc	100	98.2	P/P	90 - 110
Zinc	101	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					2.81	
EPA 200.7 Rev. 4.4	Iron	104	104	104	102		1.91
	Manganese	100	98.6	99.5	99.5		0.0297
	Zinc	99.9	100	100	101		0.424
EPA 200.8 Rev. 5.4	Aluminum	95.2	92.1	93.6	93.0		0.550
	Antimony	93.3	94.2	95.3	97.0		1.78
	Arsenic	101	100	99.9	104		3.94
	Cadmium	97.1	98.3	98.9	102		3.57
	Chromium	96.5	97.6	99.1	99.5		0.341
	Copper	96.2	95.0	95.3	97.5		2.23
	Lead	99.9	98.4	99.9	99.9		0.0336
	Nickel	101	98.1	97.7	99.7		2.00
	Selenium	95.5	92.0	93.5	99.3		6.02
	Silver	102	101	102	101		0.556
	Thallium	104	103	104	98.8		4.91
EPA 300.0 Rev. 2.1	Bromide	104	103	101	99.9		0.919
EPA 350.1 Rev. 2.0	Ammonia-N	98.8	100	100			0.0220
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.0	98.0	103			3.08
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.0	98.5	100			1.51
EPA 365.1 Rev. 2.0	Total-P	104	106	106			0.0706
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	101	102			0.176
SM 2320 B-2011	Total Alkalinity	104				0.0452	
SM 2540 D-2011	TSS					6.06	
SM 4500 F-C-2011	Fluoride	95.9	98.9	99.5			0.533
SM 5310 B-2011	Organic Carbon	102	101	102			1.12

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2166933, 2166936, 2166937
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2166963, 2166964, 2166965, 2166966
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2166963, 2166964, 2166965, 2166966
EPA 300.0 Rev. 2.1	Bromide in aqueous matrices	2166933, 2166936, 2166937, 2166942
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2166934, 2166938, 2166939, 2166943
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2166934, 2166938, 2166939, 2166943
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2166934, 2166938, 2166939, 2166943
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2166934, 2166938, 2166939, 2166943
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2166935, 2166940, 2166941, 2166944
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2166933, 2166936, 2166937, 2166942
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2166933, 2166936, 2166937, 2166942
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2166933, 2166936, 2166937, 2166942
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2166934, 2166938, 2166939, 2166943

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	03/19/2020			03/19/2020 17:42	Julia Storbeck	2166933, 2166936, 2166937
EPA 200.7 Rev. 4.4	03/19/2020	03/24/2020 15:25	Elliott D. Healy	03/30/2020 14:10	Betina Topolski	2166966
	03/19/2020	03/24/2020 15:25	Elliott D. Healy	03/30/2020 16:19	Betina Topolski	2166963
	03/19/2020	03/24/2020 15:25	Elliott D. Healy	03/30/2020 16:50	Betina Topolski	2166964
	03/19/2020	03/24/2020 15:25	Elliott D. Healy	03/30/2020 17:05	Betina Topolski	2166965
EPA 200.8 Rev. 5.4	03/19/2020	03/24/2020 15:25	Elliott D. Healy	03/27/2020 14:56	Alexander Thompson	2166966
	03/19/2020	03/24/2020 15:25	Elliott D. Healy	03/27/2020 18:52	Alexander Thompson	2166963
	03/19/2020	03/24/2020 15:25	Elliott D. Healy	03/27/2020 19:02	Alexander Thompson	2166964
	03/19/2020	03/24/2020 15:25	Elliott D. Healy	03/27/2020 19:11	Alexander Thompson	2166965
EPA 300.0 Rev. 2.1	03/19/2020			03/24/2020 05:44	Elliott Rodriguez	2166933
	03/19/2020			03/24/2020 06:36	Elliott Rodriguez	2166937
	03/19/2020			03/24/2020 09:10	Elliott Rodriguez	2166936
	03/19/2020			03/24/2020 09:27	Elliott Rodriguez	2166942
EPA 350.1 Rev. 2.0	03/19/2020			03/24/2020 18:41	Ping Hua	2166934
	03/19/2020			03/24/2020 18:42	Ping Hua	2166938
	03/19/2020			03/24/2020 18:44	Ping Hua	2166939
	03/19/2020			03/24/2020 18:50	Ping Hua	2166943
EPA 351.2 Rev. 2.0	03/19/2020	03/25/2020 10:40	Sima Feizi	03/26/2020 09:10	Jhamieka S. Greenwood	2166934
	03/19/2020	03/25/2020 10:40	Sima Feizi	03/26/2020 09:12	Jhamieka S. Greenwood	2166938
	03/19/2020	03/25/2020 10:40	Sima Feizi	03/26/2020 09:14	Jhamieka S. Greenwood	2166939
	03/19/2020	03/25/2020 10:40	Sima Feizi	03/26/2020 09:15	Jhamieka S. Greenwood	2166943
EPA 353.2 Rev. 2.0	03/19/2020			03/30/2020 16:58	Lauren Lees	2166934
	03/19/2020			03/30/2020 16:59	Lauren Lees	2166938
	03/19/2020			03/30/2020 17:00	Lauren Lees	2166939
	03/19/2020			03/30/2020 17:01	Lauren Lees	2166943
EPA 365.1 Rev. 2.0	03/19/2020	03/26/2020 12:10	Lipi Saha	03/27/2020 09:16	Lipi Saha	2166934
	03/19/2020	03/26/2020 12:10	Lipi Saha	03/27/2020 09:17	Lipi Saha	2166938
	03/19/2020	03/26/2020 12:10	Lipi Saha	03/27/2020 09:18	Lipi Saha	2166939
	03/19/2020	03/26/2020 12:10	Lipi Saha	03/27/2020 10:57	Lipi Saha	2166943
EPA 365.1 Rev. 2.0 dissolved	03/19/2020			03/19/2020 15:45	Carlos Miranda	2166935, 2166940
	03/19/2020			03/19/2020 15:46	Carlos Miranda	2166941
	03/19/2020			03/19/2020 15:47	Carlos Miranda	2166944
SM 2320 B-2011	03/19/2020			03/27/2020 11:31	Dale L. Simmons	2166937
	03/19/2020			03/27/2020 11:50	Dale L. Simmons	2166933
	03/19/2020			03/27/2020 12:00	Dale L. Simmons	2166936
	03/19/2020			03/27/2020 12:24	Dale L. Simmons	2166942
SM 2540 D-2011	03/19/2020			03/23/2020 15:22	Yijie Li	2166933, 2166936, 2166937, 2166942
SM 4500 F-C-2011	03/19/2020			03/28/2020 01:48	Dale L. Simmons	2166933
	03/19/2020			03/28/2020 01:53	Dale L. Simmons	2166936
	03/19/2020			03/28/2020 01:58	Dale L. Simmons	2166937

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-2011	03/19/2020			03/28/2020 02:03	Dale L. Simmons	2166942
SM 5310 B-2011	03/19/2020			03/21/2020 02:46	Lauren Lees	2166934
	03/19/2020			03/21/2020 02:59	Lauren Lees	2166938
	03/19/2020			03/21/2020 03:12	Lauren Lees	2166939
	03/19/2020			03/21/2020 03:25	Lauren Lees	2166943