

Chemical Analysis Report

NE-DIST-2020-03-06-02

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

Event Description: **Nassau West 1 2020**

Request ID: **RQ-2020-03-02-23**

Customer: **NE-DIST**

Project ID: **SMP**

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Date Certified: 27-MAR-2020 12:32



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: Deep Creek at CR 121

Collection Date/Time: 03/05/2020 09:50

Field ID: 19010048

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2162961	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P380219	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P380495	
		Sulfate	2.8		mg SO4/L	P380497	
	SM 2120 B-2011	Color (true)	350		PCU	P380215	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P380749	
	SM 2540 C-2011	TDS	124		mg/L	P380816	
	SM 2540 D-2011	TSS	2	U	mg/L	P380805	
	SM 4500 F-C-2011	Fluoride	0.046	I	mg F/L	P380714	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P380638	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P380382	
2162963	EPA 353.2 Rev. 2.0	NO2NO3-N	0.021		mg N/L	P380600	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P380492	
	SM 5310 B-2011	Organic Carbon	43		mg C/L	P380561	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.006	I	mg P/L	P380221	
2162965	EPA 365.1 Rev. 2.0 dissolved						

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: Unnamed Stream @ CR 121

Collection Date/Time: 03/05/2020 10:10

Field ID: 19010127

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2162962	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P380219	
	EPA 300.0 Rev. 2.1	Chloride	9.9		mg Cl/L	P380495	
		Sulfate	1.1		mg SO4/L	P380497	
	SM 2120 B-2011	Color (true)	310		PCU	P380216	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P380749	
	SM 2540 C-2011	TDS	95		mg/L	P380817	
	SM 2540 D-2011	TSS	4	I	mg/L	P380806	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P380714	
2162964	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P380638	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.76		mg N/L	P380382	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P380600	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P380492	
	SM 5310 B-2011	Organic Carbon	27		mg C/L	P380561	
2162966	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P380221	

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: St Marys R SR 2 East

Collection Date/Time: 03/05/2020 10:35

Field ID: 19010027

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2162958	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P380219	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P380495	
		Sulfate	1.9		mg SO4/L	P380497	
		Color (true)	360		PCU	P380215	
	SM 2120 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P380749	
	SM 2540 C-2011	TDS	113		mg/L	P380816	
	SM 2540 D-2011	TSS	2	U	mg/L	P380805	
	SM 4500 F-C-2011	Fluoride	0.038	I	mg F/L	P380714	
2162959	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P380638	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.96		mg N/L	P380382	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P380600	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P380492	
	SM 5310 B-2011	Organic Carbon	40		mg C/L	P380561	
2162960	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.025		mg P/L	P380221	
2162982	EPA 200.7 Rev. 4.4	Barium	18.3		ug/L	P380369	
		Calcium	3.51		mg/L	P380369	
		Iron	690		ug/L	P380369	
		Magnesium	1.44		mg/L	P380369	
		Potassium	0.46	I	mg/L	P380369	
		Sodium	6.2		mg/L	P380369	
		Zinc	5.0	U	ug/L	P380369	
	EPA 200.8 Rev. 5.4	Aluminum	663		ug/L	P380369	
		Antimony	0.059	I	ug/L	P380369	
		Arsenic	0.42		ug/L	P380369	
		Boron**	16.8		ug/L	P380369	
		Cadmium	0.025	I	ug/L	P380369	
		Chromium	0.87	I	ug/L	P380369	
		Copper	0.59	I	ug/L	P380369	
		Lead	0.66		ug/L	P380369	
		Nickel	0.69	I	ug/L	P380369	
		Selenium	0.20	U	ug/L	P380369	
		Silver	0.010	U	ug/L	P380369	
		Thallium	0.10	U	ug/L	P380369	
		Hardness	14.7		mg/L	P380369	

Ref. Method and Comment:

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

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 03/14/2020.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P380219

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P380369

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: P380369

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: P380495

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380497

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P380638

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: P380382

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380600

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380492

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P380221

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

Reference Method: SM 2120 B-2011
Batch ID: P380215

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B-2011
Batch ID: P380216

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P380749

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

Reference Method: SM 2540 C-2011
Batch ID: P380816

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2011
Batch ID: P380817

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P380805

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P380806

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P380714

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P380561

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: P380369

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	102		P	85 - 115
Calcium	101		P	85 - 115
Iron	102		P	85 - 115
Magnesium	99.2		P	85 - 115
Potassium	96.8		P	85 - 115
Sodium	99.2		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P380369

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	100		P	85 - 115
Antimony	101		P	80 - 120
Arsenic	96.6		P	85 - 115
Boron	98.3		P	85 - 115
Cadmium	96.7		P	85 - 115
Chromium	100		P	85 - 115
Copper	103		P	85 - 115
Lead	94.2		P	85 - 115
Nickel	98.6		P	85 - 115
Selenium	95.9		P	85 - 115
Silver	97.7		P	85 - 115
Thallium	97.6		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380495

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380497

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P380638

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P380382

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: P380600

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380492

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P380221

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

Reference Method: SM 2120 B-2011
Batch ID: P380215

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

Reference Method: SM 2120 B-2011
Batch ID: P380216

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.8		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P380749

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P380714

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.7		P	92 - 103

Reference Method: SM 5310 B-2011
Batch ID: P380561

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: P380369

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163050	Barium	103	101	P/P	80 - 120
2163050	Calcium	99.5		P	80 - 120
2163050	Iron	104	102	P/P	80 - 120
2163050	Magnesium	97.9		P	80 - 120
2163050	Potassium	95.8	96.5	P/P	80 - 120
2163050	Sodium	99.1		P	80 - 120
2163050	Zinc	104	102	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P380369

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163050	Aluminum	95.1	95.5	P/P	80 - 120
2163050	Antimony	107	103	P/P	80 - 120
2163050	Arsenic	98.2	100	P/P	80 - 120
2163050	Boron	99.6	100	P/P	80 - 120
2163050	Cadmium	96.5	97.3	P/P	80 - 120
2163050	Chromium	97.9	101	P/P	80 - 120
2163050	Copper	97.9	99.0	P/P	80 - 120
2163050	Lead	93.8	94.0	P/P	80 - 120
2163050	Nickel	97.2	99.2	P/P	80 - 120
2163050	Selenium	98.1	97.8	P/P	80 - 120
2163050	Silver	93.0	97.9	P/P	80 - 120
2163050	Thallium	98.4	99.9	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380495

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2162902	Chloride	96.5		P	90 - 110
2163042	Chloride	97.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380497

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2162902	Sulfate	98.2		P	90 - 110
2163042	Sulfate	97.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P380638

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2162884	Ammonia-N	102	95.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P380382

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2162906	Kjeldahl Nitrogen	95.3	95.1	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380600

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2162906	NO2NO3-N	100	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380492

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2162871	Total-P	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P380221

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2162885	O-Phosphate-P	96.9	93.7	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P380714

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2162882	Fluoride	101	102	P/P	89 - 106

Reference Method: SM 5310 B-2011
Batch ID: P380561

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163096	Organic Carbon	89.6	98.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P380219

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2162903	Turbidity	7.24	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P380369

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163050	Barium	1.60	Spike	P	0 - 20
2163050	Calcium	0.108	Spike	P	0 - 20
2163050	Iron	2.27	Spike	P	0 - 20
2163050	Magnesium	3.11	Spike	P	0 - 20
2163050	Potassium	0.357	Spike	P	0 - 20
2163050	Sodium	0.162	Spike	P	0 - 20
2163050	Zinc	1.86	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P380369

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163050	Aluminum	0.396	Spike	P	0 - 20
2163050	Antimony	3.91	Spike	P	0 - 20
2163050	Arsenic	2.10	Spike	P	0 - 20
2163050	Boron	0.493	Spike	P	0 - 20
2163050	Cadmium	0.835	Spike	P	0 - 20
2163050	Chromium	2.86	Spike	P	0 - 20
2163050	Copper	1.00	Spike	P	0 - 20
2163050	Lead	0.312	Spike	P	0 - 20
2163050	Nickel	2.00	Spike	P	0 - 20
2163050	Selenium	0.295	Spike	P	0 - 20
2163050	Silver	5.12	Spike	P	0 - 20
2163050	Thallium	1.52	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380495

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2162902	Chloride	0.397	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380497

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2162902	Sulfate	0.0556	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P380638

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2162884	Ammonia-N	3.74	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P380382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2162906	Kjeldahl Nitrogen	0.197	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380600

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2162906	NO2NO3-N	0.501	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380492

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2162871	Total-P	1.25	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P380221

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2162885	O-Phosphate-P	3.22	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P380215

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2162881	Color (true)	0.497	Sample	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P380216

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163095	Color (true)	5.52	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P380749

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163041	Total Alkalinity	0.206	Sample	P	0 - 2.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-2011
Batch ID: P380816

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2162870	TDS	0.0	Sample	P	0 - 10

Reference Method: SM 2540 C-2011
Batch ID: P380817

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163095	TDS	0.910	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P380714

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2162882	Fluoride	0.516	Spike	P	0 - 2.5

Reference Method: SM 5310 B-2011
Batch ID: P380561

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163096	Organic Carbon	5.44	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B-2011

Run ID: A98042

Included Lab Sample IDs: 2162958, 2162961, 2162962

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: A98043

Included Lab Sample IDs: 2162960, 2162965, 2162966

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.3	98.8	P/P	90 - 110
O-Phosphate-P	98.8	98.2	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A98044

Included Lab Sample IDs: 2162958, 2162961, 2162962

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	98.0	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A98096

Included Lab Sample IDs: 2162958, 2162961, 2162962

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.5	99.5	P/P	90 - 110
Sulfate	100	99.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A98137

Included Lab Sample IDs: 2162982

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.8	101	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Boron	102	102	P/P	90 - 110
Cadmium	97.8	98.9	P/P	90 - 110
Chromium	97.6	98.3	P/P	90 - 110
Lead	96.8	96.8	P/P	90 - 110
Nickel	100	99.3	P/P	90 - 110
Selenium	99.0	98.1	P/P	90 - 110
Silver	94.6	96.8	P/P	90 - 110
Thallium	94.6	93.4	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A98138

Included Lab Sample IDs: 2162982

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	100	P/P	90 - 110
Calcium	101	101	P/P	90 - 110
Iron	99.5	99.1	P/P	90 - 110
Magnesium	99.5	98.8	P/P	90 - 110
Potassium	97.0	96.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A98138

Included Lab Sample IDs: 2162982

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sodium	99.6	98.8	P/P	90 - 110
Zinc	99.9	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A98141

Included Lab Sample IDs: 2162959, 2162963, 2162964

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.6	100	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A98163

Included Lab Sample IDs: 2162959, 2162963, 2162964

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	103	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A98172

Included Lab Sample IDs: 2162982

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	97.6	98.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A98176

Included Lab Sample IDs: 2162959, 2162963, 2162964

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A98182

Included Lab Sample IDs: 2162959, 2162963, 2162964

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A98211

Included Lab Sample IDs: 2162959, 2162963, 2162964

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	99.2	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A98215

Included Lab Sample IDs: 2162958, 2162961, 2162962

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-2011

Run ID: A98231

Included Lab Sample IDs: 2162958, 2162961, 2162962

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A98232

Included Lab Sample IDs: 2162982

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	105	101	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		LCS	Precision	
						SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					7.24	
EPA 200.7 Rev. 4.4	Barium	102	103	101			1.60
	Calcium	101	99.5				0.108
	Iron	102	104	102			2.27
	Magnesium	99.2	97.9				3.11
	Potassium	96.8	95.8	96.5			0.357
	Sodium	99.2	99.1				0.162
	Zinc	103	104	102			1.86
EPA 200.8 Rev. 5.4	Aluminum	100	95.1	95.5			0.396
	Antimony	101	107	103			3.91
	Arsenic	96.6	98.2	100			2.10
	Boron	98.3	99.6	100			0.493
	Cadmium	96.7	96.5	97.3			0.835
	Chromium	100	97.9	101			2.86
	Copper	103	97.9	99.0			1.00
	Lead	94.2	93.8	94.0			0.312
	Nickel	98.6	97.2	99.2			2.00
	Selenium	95.9	98.1	97.8			0.295
	Silver	97.7	93.0	97.9			5.12
	Thallium	97.6	98.4	99.9			1.52
EPA 300.0 Rev. 2.1	Chloride	98.8	96.5	97.9		0.397	
	Sulfate	99.1	98.2	97.2		0.0556	
EPA 350.1 Rev. 2.0	Ammonia-N	98.4	102	95.7			3.74
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	95.3	95.1			0.197
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	100	99.5			0.501
EPA 365.1 Rev. 2.0	Total-P	103	102	104			1.25
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.4	96.9	93.7			3.22
SM 2120 B-2011	Color (true)	100				0.497	
	Color (true)	99.8				5.52	
SM 2320 B-2011	Total Alkalinity	103				0.206	
SM 2540 C-2011	TDS					0.0	
	TDS					0.910	
SM 4500 F-C-2011	Fluoride	96.7	101	102			0.516
SM 5310 B-2011	Organic Carbon	98.6	89.6	98.2			5.44

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2162958, 2162961, 2162962
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2162982
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2162982
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2162958, 2162961, 2162962
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2162958, 2162961, 2162962
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2162959, 2162963, 2162964
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2162959, 2162963, 2162964
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2162959, 2162963, 2162964
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2162959, 2162963, 2162964
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2162960, 2162965, 2162966
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2162958, 2162961, 2162962
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2162958, 2162961, 2162962

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2162982
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2162958, 2162961, 2162962
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2162958, 2162961, 2162962
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2162958, 2162961, 2162962
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2162959, 2162963, 2162964

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	03/06/2020			03/06/2020 15:29	Yen Ta	2162958, 2162961, 2162962
EPA 200.7 Rev. 4.4	03/06/2020	03/10/2020 14:40	Elliott D. Healy	03/11/2020 15:44	Vijayalakshmi Reddy	2162982
EPA 200.8 Rev. 5.4	03/06/2020	03/10/2020 14:40	Elliott D. Healy	03/11/2020 15:41	Alexander Thompson	2162982
	03/06/2020	03/10/2020 14:40	Elliott D. Healy	03/12/2020 19:30	Alexander Thompson	2162982
	03/06/2020	03/10/2020 14:40	Elliott D. Healy	03/16/2020 14:26	Justin Cutchin	2162982
EPA 300.0 Rev. 2.1	03/06/2020			03/11/2020 22:23	Lipi Saha	2162958
	03/06/2020			03/11/2020 22:36	Lipi Saha	2162961
	03/06/2020			03/11/2020 22:48	Lipi Saha	2162962
EPA 350.1 Rev. 2.0	03/06/2020			03/11/2020 14:48	Ping Hua	2162963
	03/06/2020			03/11/2020 14:54	Ping Hua	2162959
	03/06/2020			03/11/2020 14:56	Ping Hua	2162964
EPA 351.2 Rev. 2.0	03/06/2020	03/10/2020 12:43	Sima Feizi	03/11/2020 18:33	Jhamieka S. Greenwood	2162959
	03/06/2020	03/10/2020 12:43	Sima Feizi	03/11/2020 18:34	Jhamieka S. Greenwood	2162963
	03/06/2020	03/10/2020 12:43	Sima Feizi	03/11/2020 18:36	Jhamieka S. Greenwood	2162964
EPA 353.2 Rev. 2.0	03/06/2020			03/11/2020 11:06	Beverly Y. Sanders	2162959
	03/06/2020			03/11/2020 11:07	Beverly Y. Sanders	2162963
	03/06/2020			03/11/2020 11:08	Beverly Y. Sanders	2162964
EPA 365.1 Rev. 2.0	03/06/2020	03/11/2020 14:54	Yen Ta	03/13/2020 15:53	Benjamin T. Nordmann	2162959
	03/06/2020	03/11/2020 14:54	Yen Ta	03/13/2020 15:54	Benjamin T. Nordmann	2162963
	03/06/2020	03/11/2020 14:54	Yen Ta	03/13/2020 15:55	Benjamin T. Nordmann	2162964
EPA 365.1 Rev. 2.0 dissolved	03/06/2020			03/06/2020 16:13	Carlos Miranda	2162960
	03/06/2020			03/06/2020 16:18	Carlos Miranda	2162965
	03/06/2020			03/06/2020 16:19	Carlos Miranda	2162966
SM 2120 B-2011	03/06/2020			03/06/2020 16:16	Madeline Gruver	2162958
	03/06/2020			03/06/2020 16:17	Madeline Gruver	2162961, 2162962
SM 2320 B-2011	03/06/2020			03/16/2020 23:35	Dale L. Simmons	2162958
	03/06/2020			03/16/2020 23:40	Dale L. Simmons	2162961
	03/06/2020			03/16/2020 23:48	Dale L. Simmons	2162962
SM 2340B	03/06/2020			03/11/2020 15:44	Vijayalakshmi Reddy	2162982
SM 2540 C-2011	03/06/2020			03/10/2020 15:32	Yijie Li	2162958, 2162961, 2162962
SM 2540 D-2011	03/06/2020			03/10/2020 15:32	Yijie Li	2162958, 2162961, 2162962
SM 4500 F-C-2011	03/06/2020			03/13/2020 01:43	Dale L. Simmons	2162958
	03/06/2020			03/13/2020 01:50	Dale L. Simmons	2162961
	03/06/2020			03/13/2020 02:00	Dale L. Simmons	2162962
SM 5310 B-2011	03/06/2020			03/11/2020 17:22	Lauren Lees	2162959
	03/06/2020			03/11/2020 17:34	Lauren Lees	2162964
	03/06/2020			03/11/2020 18:32	Lauren Lees	2162963