

Chemical Analysis Report

NE-DIST-2023-02-23-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Nassau North 2023**
Request ID: **RQ-2023-02-20-14**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
Attn: Jeremy Parrish

For additional information please contact
Colin Wright, Ph.D.
Chris Bowen, B.S.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 15-MAR-2023 10:02



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: PIGEON CREEK @ ANDREWS RD

Collection Date/Time: 02/22/2023 09:45

Field ID: 19010098

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2389669	EPA 200.7 Rev. 4.4	Calcium	3.27		mg/L	P426398	
		Iron	1.29E+03		ug/L	P426398	
		Magnesium	1.09		mg/L	P426398	
		Potassium	1.6		mg/L	P426398	
		Sodium	8.8		mg/L	P426398	
		Strontium	15.6		ug/L	P426398	
		Tin	3.0	U	ug/L	P426398	
		Titanium	1.3	I	ug/L	P426398	
		Vanadium	2.0	U	ug/L	P426398	
		Zinc	5.0	U	ug/L	P426398	
	EPA 200.8 Rev. 5.4	Aluminum	223		ug/L	P426398	
		Antimony	0.050	U	ug/L	P426398	
		Arsenic	0.49		ug/L	P426398	
		Barium	13.1		ug/L	P426398	
		Beryllium	0.016	I	ug/L	P426398	
		Boron	19.2		ug/L	P426398	
		Cadmium	0.020	U	ug/L	P426398	
		Chromium	0.40	U	ug/L	P426398	
		Cobalt	0.157		ug/L	P426398	
		Copper	0.40	U	ug/L	P426398	
	SM 2340 B-2011	Lead	0.39	I	ug/L	P426398	
		Manganese	13.1		ug/L	P426398	
		Molybdenum	0.15	U	ug/L	P426398	
		Nickel	0.50	U	ug/L	P426398	
		Selenium	0.20	U	ug/L	P426398	
		Silver	0.010	U	ug/L	P426398	
		Thallium	0.10	U	ug/L	P426398	
		Hardness	12.6		mg/L	P426398	

Sample Location: Alligator CR at SR200

Collection Date/Time: 02/22/2023 10:20

Field ID: 19021007

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2389657	DEP SOP: NU-094-1	Color (true)	220		PCU	P426303	
	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P426309	
	EPA 300.0 Rev. 2.1	Chloride	29		mg Cl/L	P426693	
		Sulfate	23		mg SO4/L	P426696	
	SM 2320 B-2011	Total Alkalinity	64		mg CaCO3/L	P426594	
	SM 2540 C-2015	TDS	213		mg/L	P426801	
	SM 2540 D-2015	TSS	2	U	mg/L	P426740	
	SM 4500-F- C-2011	Fluoride	0.13		mg F/L	P426598	
2389658	EPA 350.1 Rev. 2.0	Ammonia-N	0.041		mg N/L	P426544	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.90		mg N/L	P426718	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.078		mg N/L	P426580	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P426451	
	SM 5310 B-2011	Organic Carbon	25		mg C/L	P426788	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Unnamed Branch above Alligator cr.

Collection Date/Time: 02/22/2023 10:35

Field ID: G4NE0288

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2389655	DEP SOP: NU-094-1	Color (true)	190		PCU	P426303	
	EPA 180.1 Rev. 2.0	Turbidity	4.6		NTU	P426309	
	EPA 300.0 Rev. 2.1	Chloride	34		mg Cl/L	P426693	
		Sulfate	16		mg SO4/L	P426696	
	SM 2320 B-2011	Total Alkalinity	91		mg CaCO3/L	P426594	
	SM 2540 C-2015	TDS	209		mg/L	P426801	
	SM 2540 D-2015	TSS	3	I	mg/L	P426740	
	SM 4500-F- C-2011	Fluoride	0.13		mg F/L	P426598	
2389656	EPA 350.1 Rev. 2.0	Ammonia-N	0.032		mg N/L	P426544	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P426844	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P426580	
	EPA 365.1 Rev. 2.0	Total-P	0.25		mg P/L	P426451	
	SM 5310 B-2011	Organic Carbon	30		mg C/L	P426788	
2389668	EPA 200.7 Rev. 4.4	Calcium	29.6		mg/L	P426398	
		Iron	790		ug/L	P426398	
		Magnesium	12.8		mg/L	P426398	
		Potassium	6.4		mg/L	P426398	
		Sodium	19.7		mg/L	P426398	
		Strontium	127		ug/L	P426398	
		Tin	3.0	U	ug/L	P426398	
		Titanium	8.6		ug/L	P426398	
	EPA 200.8 Rev. 5.4	Vanadium	2.0	U	ug/L	P426398	
		Zinc	5.0	U	ug/L	P426398	
		Aluminum	285		ug/L	P426398	
		Antimony	0.054	I	ug/L	P426398	
		Arsenic	0.89		ug/L	P426398	
		Barium	32.6		ug/L	P426398	
		Beryllium	0.027	I	ug/L	P426398	
		Boron	19.9		ug/L	P426398	
		Cadmium	0.020	U	ug/L	P426398	
		Chromium	0.65	I	ug/L	P426398	
		Cobalt	0.457		ug/L	P426398	
		Copper	0.40	U	ug/L	P426398	
		Lead	0.23	I	ug/L	P426398	
		Manganese	187		ug/L	P426398	
		Molybdenum	0.32	I	ug/L	P426398	
		Nickel	0.89	I	ug/L	P426398	
		Selenium	0.27	I	ug/L	P426398	
		Silver	0.010	U	ug/L	P426398	
		Thallium	0.10	U	ug/L	P426398	
	SM 2340 B-2011	Hardness	126		mg/L	P426398	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: PLUMMER CR @ WILDWOOD RD (FKA YULEE RD) **Collection Date/Time: 02/22/2023 11:15**

Field ID: 19020063

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2389659	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P426309	
	SM 2320 B-2011	Total Alkalinity	3.4		mg CaCO3/L	P426594	
	SM 2540 D-2015	TSS	2	I	mg/L	P426741	
	SM 4500-F- C-2011	Fluoride	0.045	I	mg F/L	P426598	
2389660	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P426544	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P426718	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P426580	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P426823	
	SM 5310 B-2011	Organic Carbon	43		mg C/L	P426788	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P426303

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P426309

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P426398

Component	Result	Code	Units
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
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P426398

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	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: P426693

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P426696

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P426544

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P426718

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P426844

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P426580

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P426451

Component	Result	Code	Units
Total-P	0.010	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P426823

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

Reference Method: SM 2320 B-2011
Batch ID: P426594

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

Reference Method: SM 2540 C-2015
Batch ID: P426801

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-2015
Batch ID: P426740

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P426741

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P426598

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P426788

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P426303

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P426309

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	99.8		P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P426398

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	107		P	85 - 115
Magnesium	109		P	85 - 115
Potassium	101		P	85 - 115
Sodium	101		P	85 - 115
Strontium	102		P	85 - 115
Tin	99.5		P	85 - 115
Titanium	103		P	85 - 115
Vanadium	101		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P426398

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.5		P	85 - 115
Antimony	96.8		P	85 - 115
Arsenic	96.3		P	85 - 115
Barium	98.8		P	85 - 115
Beryllium	95.7		P	85 - 115
Boron	100		P	85 - 115
Cadmium	98.0		P	85 - 115
Chromium	97.2		P	85 - 115
Cobalt	97.1		P	85 - 115
Copper	94.5		P	85 - 115
Lead	91.9		P	85 - 115
Manganese	95.6		P	85 - 115
Molybdenum	96.4		P	85 - 115
Nickel	97.6		P	85 - 115
Selenium	96.0		P	85 - 115
Silver	97.8		P	85 - 115
Thallium	96.3		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P426693

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	94.5		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P426696

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P426544

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P426718

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P426844

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.1		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P426580

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P426451

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P426823

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.9		P	90 - 110

Reference Method: SM 2320 B-2011
Batch ID: P426594

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.8		P	94 - 106

Reference Method: SM 2540 C-2015
Batch ID: P426801

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	94.2		P	90 - 110

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2540 D-2015
Batch ID: P426740

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	93.3		P	85 - 106

Reference Method: SM 2540 D-2015
Batch ID: P426741

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	96.9		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P426598

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P426788

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.1		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P426398

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2389778	Calcium	101		P	80 - 120
2389778	Iron	104	103	P/P	80 - 120
2389778	Magnesium	106	104	P/P	80 - 120
2389778	Potassium	98.0	96.9	P/P	80 - 120
2389778	Sodium	99.1	95.7	P/P	80 - 120
2389778	Strontium	99.5	98.0	P/P	80 - 120
2389778	Tin	99.0	97.7	P/P	80 - 120
2389778	Titanium	105	104	P/P	80 - 120
2389778	Vanadium	105	104	P/P	80 - 120
2389778	Zinc	102	99.9	P/P	80 - 120
2389975	Calcium	102		P	80 - 120
2389975	Iron	107		P	80 - 120
2389975	Magnesium	99.8		P	80 - 120
2389975	Potassium	100		P	80 - 120
2389975	Sodium	98.3		P	80 - 120
2389975	Strontium	103		P	80 - 120
2389975	Tin	103		P	80 - 120
2389975	Titanium	107		P	80 - 120
2389975	Vanadium	105		P	80 - 120
2389975	Zinc	107		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P426398

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2389778	Aluminum	92.8	95.4	P/P	80 - 120
2389778	Antimony	96.9	99.3	P/P	80 - 120
2389778	Arsenic	95.5	96.4	P/P	80 - 120
2389778	Barium	97.7	99.0	P/P	80 - 120
2389778	Beryllium	93.9	93.4	P/P	80 - 120
2389778	Boron	96.3	99.7	P/P	80 - 120
2389778	Cadmium	97.5	99.4	P/P	80 - 120
2389778	Chromium	99.4	100	P/P	80 - 120
2389778	Cobalt	94.0	95.1	P/P	80 - 120
2389778	Copper	94.4	94.8	P/P	80 - 120
2389778	Lead	90.3	92.0	P/P	80 - 120
2389778	Manganese	94.4	97.2	P/P	80 - 120
2389778	Molybdenum	97.8	101	P/P	80 - 120
2389778	Nickel	96.0	97.7	P/P	80 - 120
2389778	Selenium	93.8	96.2	P/P	80 - 120
2389778	Silver	96.3	98.1	P/P	80 - 120
2389778	Thallium	96.3	99.0	P/P	80 - 120
2389975	Aluminum	97.9		P	80 - 120
2389975	Antimony	99.9		P	80 - 120
2389975	Arsenic	97.1		P	80 - 120
2389975	Barium	99.3		P	80 - 120
2389975	Beryllium	94.4		P	80 - 120
2389975	Boron	103		P	80 - 120
2389975	Cadmium	99.8		P	80 - 120
2389975	Chromium	98.2		P	80 - 120
2389975	Cobalt	95.1		P	80 - 120
2389975	Copper	94.4		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P426398

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2389975	Lead	92.7		P	80 - 120
2389975	Manganese	98.4		P	80 - 120
2389975	Molybdenum	99.0		P	80 - 120
2389975	Nickel	96.0		P	80 - 120
2389975	Selenium	94.8		P	80 - 120
2389975	Silver	100		P	80 - 120
2389975	Thallium	97.8		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P426693

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2389573	Chloride	94.4		P	90 - 110
2389625	Chloride	93.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P426696

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2389573	Sulfate	98.7		P	90 - 110
2389625	Sulfate	96.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P426544

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2389656	Ammonia-N	101	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P426718

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2389633	Kjeldahl Nitrogen	104	111	P/F	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P426844

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2390090	Kjeldahl Nitrogen	100	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P426580

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2389656	NO2NO3-N	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P426451

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2389728	Total-P	102	100	P/P	90 - 110

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P426823

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2389545	Total-P	100	99.4	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P426598

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2389872	Fluoride	99.9	99.3	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P426788

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2389629	Organic Carbon	94.5	95.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P426303

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2389624	Color (true)	1.97	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P426309

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2389573	Turbidity	11.0	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P426398

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2389778	Calcium	1.86	Spike	P	0 - 20
2389778	Iron	0.698	Spike	P	0 - 20
2389778	Magnesium	1.38	Spike	P	0 - 20
2389778	Potassium	1.02	Spike	P	0 - 20
2389778	Sodium	1.83	Spike	P	0 - 20
2389778	Strontium	1.50	Spike	P	0 - 20
2389778	Tin	1.35	Spike	P	0 - 20
2389778	Titanium	1.02	Spike	P	0 - 20
2389778	Vanadium	1.17	Spike	P	0 - 20
2389778	Zinc	1.66	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P426398

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2389778	Aluminum	2.76	Spike	P	0 - 20
2389778	Antimony	2.48	Spike	P	0 - 20
2389778	Arsenic	0.946	Spike	P	0 - 20
2389778	Barium	1.32	Spike	P	0 - 20
2389778	Beryllium	0.528	Spike	P	0 - 20
2389778	Boron	3.02	Spike	P	0 - 20
2389778	Cadmium	1.90	Spike	P	0 - 20
2389778	Chromium	0.781	Spike	P	0 - 20
2389778	Cobalt	1.16	Spike	P	0 - 20
2389778	Copper	0.442	Spike	P	0 - 20
2389778	Lead	1.92	Spike	P	0 - 20
2389778	Manganese	2.25	Spike	P	0 - 20
2389778	Molybdenum	2.87	Spike	P	0 - 20
2389778	Nickel	1.70	Spike	P	0 - 20
2389778	Selenium	2.44	Spike	P	0 - 20
2389778	Silver	1.91	Spike	P	0 - 20
2389778	Thallium	2.69	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P426693

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2389573	Chloride	0.153	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P426696

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2389573	Sulfate	0.831	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P426544

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2389656	Ammonia-N	0.0	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P426718

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2389633	Kjeldahl Nitrogen	4.71	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P426844

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2390090	Kjeldahl Nitrogen	2.37	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P426580

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2389656	NO2NO3-N	0.496	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P426451

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2389728	Total-P	1.87	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P426823

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2389545	Total-P	0.776	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P426594

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2389872	Total Alkalinity	0.146	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2015
Batch ID: P426801

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2389380	TDS	4.49	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P426598

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2389872	Fluoride	0.482	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P426788

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2389629	Organic Carbon	0.996	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: DEP SOP: NU-094-1

Run ID: A117629

Included Lab Sample IDs: 2389655, 2389657

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A117632

Included Lab Sample IDs: 2389655, 2389657, 2389659

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A117687

Included Lab Sample IDs: 2389655, 2389657

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	95.6	96.6	P/P	90 - 110
Sulfate	98.0	98.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A117738

Included Lab Sample IDs: 2389656, 2389658, 2389660

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A117742

Included Lab Sample IDs: 2389668, 2389669

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	103	P/P	90 - 110
Iron	102	104	P/P	90 - 110
Magnesium	102	104	P/P	90 - 110
Potassium	102	103	P/P	90 - 110
Sodium	99.3	101	P/P	90 - 110
Strontium	102	99.4	P/P	90 - 110
Tin	101	98.8	P/P	90 - 110
Titanium	101	99.2	P/P	90 - 110
Vanadium	101	98.5	P/P	90 - 110
Zinc	103	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A117755

Included Lab Sample IDs: 2389656, 2389658, 2389660

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	104	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A117757

Included Lab Sample IDs: 2389668, 2389669

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.1	93.9	P/P	90 - 110
Antimony	96.3	95.5	P/P	90 - 110
Arsenic	96.5	94.0	P/P	90 - 110
Barium	96.9	95.9	P/P	90 - 110
Beryllium	96.1	93.8	P/P	90 - 110
Boron	96.1	96.9	P/P	90 - 110
Cadmium	95.9	95.7	P/P	90 - 110
Chromium	97.7	94.7	P/P	90 - 110
Cobalt	96.5	92.5	P/P	90 - 110
Copper	96.2	92.8	P/P	90 - 110
Lead	91.1	90.5	P/P	90 - 110
Manganese	94.6	95.1	P/P	90 - 110
Molybdenum	95.3	94.3	P/P	90 - 110
Nickel	97.4	93.5	P/P	90 - 110
Selenium	96.8	95.2	P/P	90 - 110
Silver	97.2	96.4	P/P	90 - 110
Thallium	97.3	97.5	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A117758

Included Lab Sample IDs: 2389655, 2389657, 2389659

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.0	96.0	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A117758

Included Lab Sample IDs: 2389655, 2389657, 2389659

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A117799

Included Lab Sample IDs: 2389656, 2389658

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

Reference Method: SM 5310 B-2011

Run ID: A117844

Included Lab Sample IDs: 2389656, 2389658, 2389660

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.4	95.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A117914

Included Lab Sample IDs: 2389658, 2389660

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
-----------	---------	---------	------------	----------------

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A117914

Included Lab Sample IDs: 2389658, 2389660

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.6	95.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A117936

Included Lab Sample IDs: 2389660

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A117939

Included Lab Sample IDs: 2389656

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.9	98.0	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				
DEP SOP: NU-094-1	Color (true)	101				1.97	
EPA 180.1 Rev. 2.0	Turbidity	99.8				11.0	
EPA 200.7 Rev. 4.4	Calcium	103	101	102			1.86
	Iron	107	104	103	107		0.698
	Magnesium	109	106	104	99.8		1.38
	Potassium	101	98.0	96.9	100		1.02
	Sodium	101	99.1	95.7	98.3		1.83
	Strontium	102	99.5	98.0	103		1.50
	Tin	99.5	99.0	97.7	103		1.35
	Titanium	103	105	104	107		1.02
	Vanadium	101	105	104	105		1.17
	Zinc	103	102	99.9	107		1.66
EPA 200.8 Rev. 5.4	Aluminum	97.5	92.8	95.4	97.9		2.76
	Antimony	96.8	96.9	99.3	99.9		2.48
	Arsenic	96.3	95.5	96.4	97.1		0.946
	Barium	98.8	97.7	99.0	99.3		1.32
	Beryllium	95.7	93.9	93.4	94.4		0.528
	Boron	100	96.3	99.7	103		3.02
	Cadmium	98.0	97.5	99.4	99.8		1.90
	Chromium	97.2	99.4	100	98.2		0.781
	Cobalt	97.1	94.0	95.1	95.1		1.16
	Copper	94.5	94.4	94.8	94.4		0.442
	Lead	91.9	90.3	92.0	92.7		1.92
	Manganese	95.6	98.4	94.4	97.2		2.25
	Molybdenum	96.4	97.8	101	99.0		2.87
	Nickel	97.6	96.0	97.7	96.0		1.70
	Selenium	96.0	93.8	96.2	94.8		2.44
	Silver	97.8	96.3	98.1	100		1.91
	Thallium	96.3	96.3	99.0	97.8		2.69
EPA 300.0 Rev. 2.1	Chloride	94.5	94.4	93.8		0.153	
	Sulfate	97.5	98.7	96.0		0.831	
EPA 350.1 Rev. 2.0	Ammonia-N	102	101	101			0.0
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	104	111			4.71
	Kjeldahl Nitrogen	96.1	100	103			2.37
EPA 353.2 Rev. 2.0	NO2NO3-N	104	101	100			0.496
EPA 365.1 Rev. 2.0	Total-P	102	102	100			1.87
	Total-P	98.9	100	99.4			0.776
SM 2320 B-2011	Total Alkalinity	97.8				0.146	
SM 2540 C-2015	TDS	94.2				4.49	
SM 2540 D-2015	TSS	93.3					
	TSS	96.9					
SM 4500-F- C-2011	Fluoride	100	99.9	99.3			0.482
SM 5310 B-2011	Organic Carbon	94.1	94.5	95.9			0.996

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2389655, 2389657
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2389655, 2389657, 2389659
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2389668, 2389669
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2389668, 2389669

Reference Method Descriptions

Method	Description	Associated Samples
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2389655, 2389657
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2389655, 2389657
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2389656, 2389658, 2389660
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2389656, 2389658, 2389660
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2389656, 2389658, 2389660
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2389656, 2389658, 2389660
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2389655, 2389657, 2389659
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2389668, 2389669
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2389655, 2389657
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2389655, 2389657, 2389659
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2389655, 2389657, 2389659
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2389656, 2389658, 2389660

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	02/23/2023			02/23/2023 14:30	Alexis Price	2389655, 2389657
EPA 180.1 Rev. 2.0	02/23/2023			02/23/2023 14:43	Khloe J Berg	2389655
	02/23/2023			02/23/2023 14:44	Khloe J Berg	2389657
	02/23/2023			02/23/2023 14:45	Khloe J Berg	2389659
EPA 200.7 Rev. 4.4	02/23/2023	02/27/2023 10:40	Vijayalakshmi Reddy	03/01/2023 15:41	McKinley C Carter	2389668
	02/23/2023	02/27/2023 10:40	Vijayalakshmi Reddy	03/01/2023 15:48	McKinley C Carter	2389669
EPA 200.8 Rev. 5.4	02/23/2023	02/27/2023 10:40	Vijayalakshmi Reddy	03/01/2023 16:17	Conrad Hartmann	2389668
	02/23/2023	02/27/2023 10:40	Vijayalakshmi Reddy	03/01/2023 16:26	Conrad Hartmann	2389669
EPA 300.0 Rev. 2.1	02/23/2023			03/04/2023 05:24	Judith K. Clark	2389655
	02/23/2023			03/04/2023 05:39	Judith K. Clark	2389657
EPA 350.1 Rev. 2.0	02/23/2023			03/01/2023 11:36	Khloe J Berg	2389656
	02/23/2023			03/01/2023 11:40	Khloe J Berg	2389658
	02/23/2023			03/01/2023 11:41	Khloe J Berg	2389660
EPA 351.2 Rev. 2.0	02/23/2023	03/07/2023 09:18	Simonne.V. Calhoun	03/09/2023 17:58	Judith K. Clark	2389658
	02/23/2023	03/07/2023 09:18	Simonne.V. Calhoun	03/09/2023 18:00	Judith K. Clark	2389660
	02/23/2023	03/08/2023 14:00	Simonne.V. Calhoun	03/10/2023 16:54	Samantha L Bates	2389656
EPA 353.2 Rev. 2.0	02/23/2023			03/01/2023 09:39	Beverly Y. Sanders	2389656
	02/23/2023			03/01/2023 09:45	Beverly Y. Sanders	2389658
	02/23/2023			03/01/2023 09:46	Beverly Y. Sanders	2389660
EPA 365.1 Rev. 2.0	02/23/2023	02/28/2023 17:21	Adam P Silver	03/04/2023 09:34	James L Waggeberby	2389656
	02/23/2023	02/28/2023 17:21	Adam P Silver	03/04/2023 09:35	James L Waggeberby	2389658
	02/23/2023	03/08/2023 02:00	Alexis Price	03/10/2023 12:21	James L Waggeberby	2389660
SM 2320 B-2011	02/23/2023			03/02/2023 00:22	Dale L. Simmons	2389655
	02/23/2023			03/02/2023 00:36	Dale L. Simmons	2389657
	02/23/2023			03/02/2023 00:47	Dale L. Simmons	2389659
SM 2340 B-2011	02/23/2023			03/01/2023 15:41	McKinley C Carter	2389668
	02/23/2023			03/01/2023 15:48	McKinley C Carter	2389669
SM 2540 C-2015	02/23/2023			02/27/2023 16:17	Yijie Li	2389655, 2389657
SM 2540 D-2015	02/23/2023			02/27/2023 16:17	Yijie Li	2389655, 2389657, 2389659
SM 4500-F- C-2011	02/23/2023			03/02/2023 00:22	Dale L. Simmons	2389655
	02/23/2023			03/02/2023 00:36	Dale L. Simmons	2389657
	02/23/2023			03/02/2023 00:47	Dale L. Simmons	2389659
SM 5310 B-2011	02/23/2023			03/06/2023 18:23	Elise M. Gillis	2389656
	02/23/2023			03/06/2023 18:37	Elise M. Gillis	2389658
	02/23/2023			03/06/2023 18:51	Elise M. Gillis	2389660