

Chemical Analysis Report

NE-DIST-2022-10-13-02

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

Event Description: **Nassau North**
Request ID: **RQ-2022-10-10-10**
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.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 02-NOV-2022 11:20

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line extending from the end of the name.

NON-CONFORMANCE REPORT INCLUDED

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: LITTLE ST. MARYS @ CR 121A

Collection Date/Time: 10/12/2022 11:00

Field ID: 19010046

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2362337	DEP SOP: NU-094-1	Color (true)	270		PCU	P420899	
	EPA 180.1 Rev. 2.0	Turbidity	4.9		NTU	P420896	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P421514	
		Sulfate	5.2		mg SO4/L	P421519	
	SM 2320 B-2011	Total Alkalinity	27		mg CaCO3/L	P421003	
	SM 2540 C-2015	TDS	137		mg/L	P421409	
	SM 2540 D-2015	TSS	3	I	mg/L	P421413	
2362338	SM 4500-F- C-2011	Fluoride	0.061	I	mg F/L	P421005	MS
	EPA 350.1 Rev. 2.0	Ammonia-N	0.19		mg N/L	P421251	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P421225	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.030		mg N/L	P420968	
	EPA 365.1 Rev. 2.0	Total-P	0.062		mg P/L	P421050	
2362349	SM 5310 B-2011	Organic Carbon	29		mg C/L	P420996	
	EPA 200.7 Rev. 4.4	Calcium	12.5		mg/L	P420914	
		Iron	1.84E+03		ug/L	P420914	
		Magnesium	3.80		mg/L	P420914	
		Potassium	1.7		mg/L	P420914	
		Sodium	11.6		mg/L	P420914	
		Strontium	54.0		ug/L	P420914	
		Tin	3.0	U	ug/L	P420914	
		Titanium	0.98	I	ug/L	P420914	
		Vanadium	2.0	U	ug/L	P420914	
		Zinc	5.0	U	ug/L	P420914	
	EPA 200.8 Rev. 5.4	Aluminum	248		ug/L	P420914	
		Antimony	0.050	U	ug/L	P420914	
		Arsenic	0.90		ug/L	P420914	
		Barium	33.5		ug/L	P420914	
		Beryllium	0.036	I	ug/L	P420914	
		Boron	27.6		ug/L	P420914	
		Cadmium	0.020	U	ug/L	P420914	
		Chromium	0.64	I	ug/L	P420914	
		Cobalt	1.13		ug/L	P420914	
		Copper	0.40	U	ug/L	P420914	
		Lead	0.96		ug/L	P420914	
		Manganese	406		ug/L	P420914	
		Molybdenum	0.15	U	ug/L	P420914	
		Nickel	0.56	I	ug/L	P420914	
		Selenium	0.20	U	ug/L	P420914	
		Silver	0.010	U	ug/L	P420914	
		Thallium	0.10	U	ug/L	P420914	
	SM 2340 B-2011	Hardness	46.8		mg/L	P420914	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Little St. Marys River at White Oak Rd.

Collection Date/Time: 10/12/2022 11:45

Field ID: G4NE0289

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2362350	EPA 200.7 Rev. 4.4	Calcium	8.36		mg/L	P420914	
		Iron	1.64E+03		ug/L	P420914	
		Magnesium	12.4		mg/L	P420914	
		Potassium	3.9		mg/L	P420914	
		Sodium	93.5		mg/L	P420914	
		Strontium	84.9		ug/L	P420914	
		Tin	3.0	U	ug/L	P420914	
		Titanium	2.7	I	ug/L	P420914	
		Vanadium	2.0	U	ug/L	P420914	
		Zinc	5.0	U	ug/L	P420914	
	EPA 200.8 Rev. 5.4	Aluminum	696		ug/L	P420914	
		Antimony	0.050	U	ug/L	P420914	
		Arsenic	0.72		ug/L	P420914	
		Barium	19.1		ug/L	P420914	
		Beryllium	0.056		ug/L	P420914	
		Boron	55.2		ug/L	P420914	
		Cadmium	0.020	U	ug/L	P420914	
		Chromium	0.97	I	ug/L	P420914	
		Cobalt	0.392		ug/L	P420914	
		Copper	0.40	U	ug/L	P420914	
		Lead	0.84		ug/L	P420914	
		Manganese	30.9		ug/L	P420914	
		Molybdenum	0.20	I	ug/L	P420914	
		Nickel	0.88	I	ug/L	P420914	
		Selenium	0.20	U	ug/L	P420914	
		Silver	0.010	U	ug/L	P420914	
		Thallium	0.10	U	ug/L	P420914	
	SM 2340 B-2011	Hardness	71.8		mg/L	P420914	

Sample Location: Escambia Slough at Escambia st.

Collection Date/Time: 10/12/2022 13:35

Field ID: G4NE0287

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2362331	EPA 180.1 Rev. 2.0	Turbidity	5.6		NTU	P420896	
	SM 2320 B-2011	Total Alkalinity	116		mg CaCO3/L	P421170	RPD
	SM 2540 D-2015	TSS	10	IA	mg/L	P421415	
	SM 4500-F- C-2011	Fluoride	1.3		mg F/L	P421173	MS
2362332	EPA 350.1 Rev. 2.0	Ammonia-N	0.021	Y	mg N/L	P421227	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P420960	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P420922	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P420863	
	SM 5310 B-2011	Organic Carbon	3.6	IY	mg C/L	P421114	
2362348	EPA 200.7 Rev. 4.4	Calcium	408		mg/L	P421128	
		Iron	290	I	ug/L	P421663	
		Magnesium	1.39E+03		mg/L	P421128	
		Strontium	7.27E+03		ug/L	P421128	
	EPA 200.8 Rev. 5.4	Tin	30	U	ug/L	P421128	
		Titanium	10	I	ug/L	P421128	
		Vanadium	20	U	ug/L	P421128	
		Zinc	50	U	ug/L	P421128	
		Aluminum	500		ug/L	P421128	
		Antimony	0.22	I	ug/L	P421128	
		Arsenic	2.36		ug/L	P421128	
		Beryllium	0.040	U	ug/L	P421128	
		Cadmium	0.080	U	ug/L	P421128	
		Chromium	1.6	U	ug/L	P421128	
		Cobalt	0.28	I	ug/L	P421128	
		Copper	3.5		ug/L	P421128	
		Lead	2.0	U	ug/L	P421128	
		Manganese	9.7		ug/L	P421128	
		Molybdenum	12.8		ug/L	P421128	
		Nickel	2.0	U	ug/L	P421128	
		Selenium	0.80	U	ug/L	P421128	
		Silver	0.040	U	ug/L	P421128	
		Thallium	1.0	U	ug/L	P421128	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Sample stored outside of the acceptable temperature range. Please see NCR.

SM 5310 B-2011: Sample stored outside of the acceptable temperature range. Please see NCR.

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, magnesium and strontium are unavailable because of high analyte concentration in the QC sample.

Sample Location: Egan Creek at Atlantic

Collection Date/Time: 10/12/2022 13:50

Field ID: G4NE0285

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2362333	EPA 180.1 Rev. 2.0	Turbidity	5.0		NTU	P420896	
	SM 2320 B-2011	Total Alkalinity	127		mg CaCO3/L	P421170	RPD
	SM 2540 D-2015	TSS	8	I	mg/L	P421415	
	SM 4500-F- C-2011	Fluoride	1.2		mg F/L	P421173	MS
2362335	EPA 350.1 Rev. 2.0	Ammonia-N	0.010	Y	mg N/L	P421227	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.50		mg N/L	P420960	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P420922	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P420863	
	SM 5310 B-2011	Organic Carbon	7.4	Y	mg C/L	P421114	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Sample stored outside of the acceptable temperature range. Please see NCR.

SM 5310 B-2011: Sample stored outside of the acceptable temperature range. Please see NCR.

Sample Location: Egans Creek at Jasmine St.

Collection Date/Time: 10/12/2022 14:05

Field ID: G4NE0305

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2362334	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P420896	
	SM 2320 B-2011	Total Alkalinity	151		mg CaCO3/L	P421170	RPD
	SM 2540 D-2015	TSS	7	I	mg/L	P421415	
	SM 4500-F- C-2011	Fluoride	0.64		mg F/L	P421173	MS
2362336	EPA 350.1 Rev. 2.0	Ammonia-N	0.23		mg N/L	P420983	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P420960	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P420922	
	EPA 365.1 Rev. 2.0	Total-P	0.87		mg P/L	P420863	
	SM 5310 B-2011	Organic Carbon	17	Y	mg C/L	P421114	

Ref. Method and Comment:

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

SM 5310 B-2011: Sample stored outside of the acceptable temperature range. Please see NCR.

Non-Conformance Report

NCR ID: 9589

<u>Event(s)</u>	<u>Job(s)</u>	<u>Sample(s)</u>	<u>Test(s)</u>
NE-DIST-2022-10-13-02	TLH-2022-10-13-62	2362332	
NE-DIST-2022-10-13-02	TLH-2022-10-13-62	2362335	
NE-DIST-2022-10-13-02	TLH-2022-10-13-62	2362336	

NCR Type: CUSTODY

NCR Category: General

Observation: Samples stored at room temperature overnight on 10/17/2022.

Resolution: Samples placed in refrigerator on 10/18/2022 at 9:20 AM. Data generated after this time will be qualified where appropriate.

Authorized by/Date: Patrick M. Roche 10/27/2022

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P420899

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P420896

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P420914

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 200.7 Rev. 4.4
Batch ID: P421128

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Magnesium	0.040	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 200.7 Rev. 4.4
Batch ID: P421663

Component	Result	Code	Units
Iron	30	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P420914

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P420914

Component	Result	Code	Units
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 200.8 Rev. 5.4
Batch ID: P421128

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Beryllium	0.010	U	ug/L
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	0.19	I	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: P421514

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421519

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420983

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421227

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421251

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420960

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421225

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420922

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420968

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420863

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421050

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

Reference Method: SM 2320 B-2011
Batch ID: P421003

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P421170

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

Reference Method: SM 2540 C-2015
Batch ID: P421409

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P421413

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P421415

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P421005

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500-F- C-2011
Batch ID: P421173

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P420996

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

Reference Method: SM 5310 B-2011
Batch ID: P421114

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: P420899

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	94.6		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P420896

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P420914

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	100		P	85 - 115
Iron	106		P	85 - 115
Magnesium	107		P	85 - 115
Potassium	104		P	85 - 115
Sodium	100		P	85 - 115
Strontium	105		P	85 - 115
Tin	104		P	85 - 115
Titanium	103		P	85 - 115
Vanadium	103		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P421128

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	112		P	85 - 115
Magnesium	108		P	85 - 115
Strontium	109		P	85 - 115
Tin	110		P	85 - 115
Titanium	106		P	85 - 115
Vanadium	106		P	85 - 115
Zinc	108		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P421663

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	105		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P420914

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.5		P	85 - 115
Antimony	104		P	85 - 115
Arsenic	100		P	85 - 115
Barium	104		P	85 - 115
Beryllium	94.2		P	85 - 115
Boron	105		P	85 - 115
Cadmium	98.7		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P420914

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chromium	101		P	85 - 115
Cobalt	96.9		P	85 - 115
Copper	98.0		P	85 - 115
Lead	94.8		P	85 - 115
Manganese	101		P	85 - 115
Molybdenum	97.0		P	85 - 115
Nickel	97.8		P	85 - 115
Selenium	97.6		P	85 - 115
Silver	101		P	85 - 115
Thallium	90.3		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P421128

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	92.8		P	85 - 115
Antimony	100		P	85 - 115
Arsenic	98.2		P	85 - 115
Beryllium	86.6		P	85 - 115
Cadmium	99.3		P	85 - 115
Chromium	95.1		P	85 - 115
Cobalt	95.3		P	85 - 115
Copper	95.9		P	85 - 115
Lead	94.9		P	85 - 115
Manganese	95.9		P	85 - 115
Molybdenum	98.1		P	85 - 115
Nickel	95.7		P	85 - 115
Selenium	91.8		P	85 - 115
Silver	104		P	85 - 115
Thallium	96.7		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P421514

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

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P421519

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P420983

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.2		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421227

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	93.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421251

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	93.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420960

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421225

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420922

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420968

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420863

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421050

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

Reference Method: SM 2320 B-2011
Batch ID: P421003

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.2		P	94 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-2011
Batch ID: P421170

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.6		P	94 - 106

Reference Method: SM 2540 C-2015
Batch ID: P421409

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	98.0		P	90 - 110

Reference Method: SM 2540 D-2015
Batch ID: P421413

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	101		P	85 - 106

Reference Method: SM 2540 D-2015
Batch ID: P421415

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	94.0		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P421005

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	96 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P421173

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.1		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P420996

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.8		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P421114

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P420914

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362199	Calcium	100		P	80 - 120
2362199	Iron	105	112	P/P	80 - 120
2362199	Magnesium	103	114	P/P	80 - 120
2362199	Potassium	104	109	P/P	80 - 120
2362199	Sodium	102		P	80 - 120
2362199	Strontium	105	108	P/P	80 - 120
2362199	Tin	104	103	P/P	80 - 120
2362199	Titanium	105	106	P/P	80 - 120
2362199	Vanadium	104	105	P/P	80 - 120
2362199	Zinc	102	104	P/P	80 - 120
2362445	Calcium	100		P	80 - 120
2362445	Iron	102		P	80 - 120
2362445	Magnesium	97.4		P	80 - 120
2362445	Potassium	102		P	80 - 120
2362445	Sodium	102		P	80 - 120
2362445	Strontium	99.6		P	80 - 120
2362445	Tin	101		P	80 - 120
2362445	Titanium	105		P	80 - 120
2362445	Vanadium	106		P	80 - 120
2362445	Zinc	101		P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P421128

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362348	Tin	97.6	112	P/P	70 - 130
2362348	Titanium	102	102	P/P	70 - 130
2362348	Vanadium	111	113	P/P	70 - 130
2362348	Zinc	101	102	P/P	70 - 130

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P421663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2364573	Iron	101	99.8	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P420914

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362199	Aluminum	97.3	101	P/P	80 - 120
2362199	Antimony	103	104	P/P	80 - 120
2362199	Arsenic	100	102	P/P	80 - 120
2362199	Barium	103	105	P/P	80 - 120
2362199	Beryllium	93.1	95.9	P/P	80 - 120
2362199	Boron	101	103	P/P	80 - 120
2362199	Cadmium	98.9	98.7	P/P	80 - 120
2362199	Chromium	100	103	P/P	80 - 120
2362199	Cobalt	96.2	98.0	P/P	80 - 120
2362199	Copper	98.2	99.9	P/P	80 - 120
2362199	Lead	94.1	96.2	P/P	80 - 120
2362199	Manganese	99.1	101	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P420914

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362199	Molybdenum	96.8	98.5	P/P	80 - 120
2362199	Nickel	98.2	99.5	P/P	80 - 120
2362199	Selenium	97.5	98.5	P/P	80 - 120
2362199	Silver	99.2	101	P/P	80 - 120
2362199	Thallium	92.5	96.7	P/P	80 - 120
2362445	Aluminum	98.2		P	80 - 120
2362445	Antimony	107		P	80 - 120
2362445	Arsenic	103		P	80 - 120
2362445	Barium	106		P	80 - 120
2362445	Beryllium	93.1		P	80 - 120
2362445	Boron	101		P	80 - 120
2362445	Cadmium	101		P	80 - 120
2362445	Chromium	102		P	80 - 120
2362445	Cobalt	97.9		P	80 - 120
2362445	Copper	97.2		P	80 - 120
2362445	Lead	95.0		P	80 - 120
2362445	Manganese	102		P	80 - 120
2362445	Molybdenum	99.8		P	80 - 120
2362445	Nickel	98.5		P	80 - 120
2362445	Selenium	101		P	80 - 120
2362445	Silver	101		P	80 - 120
2362445	Thallium	93.3		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P421128

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362348	Aluminum	117	116	P/P	70 - 130
2362348	Antimony	93.7	94.6	P/P	70 - 130
2362348	Arsenic	108	108	P/P	70 - 130
2362348	Beryllium	102	98.3	P/P	70 - 130
2362348	Cadmium	87.7	87.3	P/P	70 - 130
2362348	Chromium	96.6	95.2	P/P	70 - 130
2362348	Cobalt	117	118	P/P	70 - 130
2362348	Copper	102	104	P/P	70 - 130
2362348	Lead	103	102	P/P	70 - 130
2362348	Manganese	93.8	92.5	P/P	70 - 130
2362348	Molybdenum	115	114	P/P	70 - 130
2362348	Nickel	122	122	P/P	70 - 130
2362348	Selenium	88.1	88.0	P/P	70 - 130
2362348	Silver	88.4	88.7	P/P	70 - 130
2362348	Thallium	104	105	P/P	70 - 130

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P421514

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362241	Chloride	91.1		P	90 - 110
2362258	Chloride	103		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421519

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362241	Sulfate	95.3		P	90 - 110
2362258	Sulfate	104		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420983

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2360451	Ammonia-N	105	106	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421227

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362332	Ammonia-N	105	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421251

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362261	Ammonia-N	101	94.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420960

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362228	Kjeldahl Nitrogen	98.9	94.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421225

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362483	Kjeldahl Nitrogen	105	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420922

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362227	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420968

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362369	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420863

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361513	Total-P	101	101	P/P	90 - 110

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P421005

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362193	Fluoride	107	108	F/F	94 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P421173

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362534	Fluoride	94.6	93.3	P/F	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P420996

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362180	Organic Carbon	98.8	99.8	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P421114

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2361518	Organic Carbon	91.0	93.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P420899

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362241	Color (true)	6.98	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P420896

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362233	Turbidity	2.11	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P420914

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362199	Calcium	3.30	Spike	P	0 - 20
2362199	Iron	6.04	Spike	P	0 - 20
2362199	Magnesium	6.13	Spike	P	0 - 20
2362199	Potassium	3.12	Spike	P	0 - 20
2362199	Sodium	4.14	Spike	P	0 - 20
2362199	Strontium	3.24	Spike	P	0 - 20
2362199	Tin	0.217	Spike	P	0 - 20
2362199	Titanium	1.24	Spike	P	0 - 20
2362199	Vanadium	1.19	Spike	P	0 - 20
2362199	Zinc	1.61	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P421128

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362348	Calcium	19.8	Spike	P	0 - 20
2362348	Magnesium	1.73	Spike	P	0 - 20
2362348	Strontium	5.40	Spike	P	0 - 20
2362348	Tin	13.5	Spike	P	0 - 20
2362348	Titanium	0.0804	Spike	P	0 - 20
2362348	Vanadium	1.44	Spike	P	0 - 20
2362348	Zinc	1.25	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P421663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2364573	Iron	0.816	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P420914

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362199	Aluminum	3.29	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P420914

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362199	Antimony	0.836	Spike	P	0 - 20
2362199	Arsenic	1.89	Spike	P	0 - 20
2362199	Barium	1.16	Spike	P	0 - 20
2362199	Beryllium	2.99	Spike	P	0 - 20
2362199	Boron	1.87	Spike	P	0 - 20
2362199	Cadmium	0.212	Spike	P	0 - 20
2362199	Chromium	2.07	Spike	P	0 - 20
2362199	Cobalt	1.88	Spike	P	0 - 20
2362199	Copper	1.70	Spike	P	0 - 20
2362199	Lead	2.19	Spike	P	0 - 20
2362199	Manganese	1.58	Spike	P	0 - 20
2362199	Molybdenum	1.69	Spike	P	0 - 20
2362199	Nickel	1.29	Spike	P	0 - 20
2362199	Selenium	1.05	Spike	P	0 - 20
2362199	Silver	1.53	Spike	P	0 - 20
2362199	Thallium	4.42	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P421128

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362348	Aluminum	1.09	Spike	P	0 - 20
2362348	Antimony	0.880	Spike	P	0 - 20
2362348	Arsenic	0.417	Spike	P	0 - 20
2362348	Beryllium	3.91	Spike	P	0 - 20
2362348	Cadmium	0.387	Spike	P	0 - 20
2362348	Chromium	1.47	Spike	P	0 - 20
2362348	Cobalt	1.02	Spike	P	0 - 20
2362348	Copper	1.88	Spike	P	0 - 20
2362348	Lead	1.17	Spike	P	0 - 20
2362348	Manganese	1.23	Spike	P	0 - 20
2362348	Molybdenum	0.993	Spike	P	0 - 20
2362348	Nickel	0.540	Spike	P	0 - 20
2362348	Selenium	0.119	Spike	P	0 - 20
2362348	Silver	0.357	Spike	P	0 - 20
2362348	Thallium	1.28	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P421514

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362241	Chloride	1.34	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P421519

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362241	Sulfate	1.78	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P420983

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2360451	Ammonia-N	1.17	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421227

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362332	Ammonia-N	0.545	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421251

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362261	Ammonia-N	5.50	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P420960

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362228	Kjeldahl Nitrogen	3.49	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421225

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362483	Kjeldahl Nitrogen	1.56	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420922

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362227	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420968

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362369	NO2NO3-N	0.489	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P420863

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361513	Total-P	0.223	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421050

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362407	Total-P	2.15	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P421003

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362193	Total Alkalinity	0.902	Sample	P	0 - 3.8

Reference Method: SM 2320 B-2011
Batch ID: P421170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362534	Total Alkalinity	4.38	Sample	F	0 - 3.8

Reference Method: SM 2540 C-2015
Batch ID: P421409

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362320	TDS	4.99	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P421005

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362193	Fluoride	0.474	Spike	P	0 - 1.6

Reference Method: SM 4500-F- C-2011
Batch ID: P421173

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362534	Fluoride	1.00	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P420996

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362180	Organic Carbon	0.536	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P421114

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2361518	Organic Carbon	1.59	Spike	P	0 - 20

Quality Assurance Report Precision

* 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: A115295

Included Lab Sample IDs: 2362331, 2362333, 2362334, 2362337

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105

Reference Method: DEP SOP: NU-094-1

Run ID: A115297

Included Lab Sample IDs: 2362337

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.6	97.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A115310

Included Lab Sample IDs: 2362332, 2362335, 2362336

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A115338

Included Lab Sample IDs: 2362338

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A115344

Included Lab Sample IDs: 2362336

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.6	96.9	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A115346

Included Lab Sample IDs: 2362349, 2362350

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	96.6	97.1	P/P	90 - 110
Iron	98.5	98.5	P/P	90 - 110
Magnesium	97.2	97.6	P/P	90 - 110
Potassium	98.1	97.9	P/P	90 - 110
Sodium	99.7	99.6	P/P	90 - 110
Strontium	102	104	P/P	90 - 110
Tin	102	101	P/P	90 - 110
Titanium	103	102	P/P	90 - 110
Vanadium	103	102	P/P	90 - 110
Zinc	101	101	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A115351

Included Lab Sample IDs: 2362338

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

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-2011

Run ID: A115351

Included Lab Sample IDs: 2362338

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.8	99.7	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A115356

Included Lab Sample IDs: 2362337

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	96.2	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A115356

Included Lab Sample IDs: 2362337

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A115368

Included Lab Sample IDs: 2362332, 2362335, 2362336

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A115378

Included Lab Sample IDs: 2362349, 2362350

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	102	P/P	90 - 110
Antimony	103	103	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Barium	101	102	P/P	90 - 110
Beryllium	99.4	99.4	P/P	90 - 110
Boron	99.4	101	P/P	90 - 110
Cadmium	102	101	P/P	90 - 110
Chromium	99.4	100	P/P	90 - 110
Cobalt	96.3	96.6	P/P	90 - 110
Copper	98.1	97.9	P/P	90 - 110
Lead	93.3	93.4	P/P	90 - 110
Manganese	99.1	100	P/P	90 - 110
Molybdenum	99.0	99.4	P/P	90 - 110
Nickel	98.3	98.4	P/P	90 - 110
Selenium	101	103	P/P	90 - 110
Silver	98.7	99.4	P/P	90 - 110
Thallium	96.3	96.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A115389

Included Lab Sample IDs: 2362335, 2362336

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A115389

Included Lab Sample IDs: 2362335, 2362336

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

Reference Method: SM 5310 B-2011

Run ID: A115398

Included Lab Sample IDs: 2362332, 2362335, 2362336

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.7	99.0	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A115421

Included Lab Sample IDs: 2362331, 2362333, 2362334

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	94.8	104	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A115421

Included Lab Sample IDs: 2362331, 2362333, 2362334

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A115427

Included Lab Sample IDs: 2362332

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A115428

Included Lab Sample IDs: 2362338

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A115448

Included Lab Sample IDs: 2362332, 2362335

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.2	98.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A115454

Included Lab Sample IDs: 2362338

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.1	97.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A115473

Included Lab Sample IDs: 2362348

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.6	98.4	P/P	90 - 110
Antimony	98.3	102	P/P	90 - 110
Arsenic	99.8	102	P/P	90 - 110
Cadmium	100	103	P/P	90 - 110
Chromium	95.9	96.2	P/P	90 - 110
Cobalt	97.9	97.2	P/P	90 - 110
Copper	99.6	99.2	P/P	90 - 110
Lead	97.9	98.4	P/P	90 - 110
Manganese	96.6	96.6	P/P	90 - 110
Molybdenum	101	103	P/P	90 - 110
Nickel	99.5	98.5	P/P	90 - 110
Selenium	97.6	102	P/P	90 - 110
Silver	103	104	P/P	90 - 110
Thallium	98.0	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A115481

Included Lab Sample IDs: 2362338

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A115524

Included Lab Sample IDs: 2362348

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	97.5	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A115558

Included Lab Sample IDs: 2362337

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	100	P/P	90 - 110
Sulfate	102	101	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A115583

Included Lab Sample IDs: 2362348

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	101	P/P	90 - 110
Magnesium	99.6	98.1	P/P	90 - 110
Strontium	98.1	100	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A115613

Included Lab Sample IDs: 2362348

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A115613

Included Lab Sample IDs: 2362348

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Tin	105	105	P/P	90 - 110
Titanium	102	101	P/P	90 - 110
Vanadium	101	101	P/P	90 - 110
Zinc	104	103	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A115641

Included Lab Sample IDs: 2362348

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	101	102	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
DEP SOP: NU-094-1	Color (true)	94.6					6.98	
EPA 180.1 Rev. 2.0	Turbidity	100					2.11	
EPA 200.7 Rev. 4.4	Calcium	100	100	100				3.30
	Calcium	112						19.8
	Iron	106	105	112	102			6.04
	Iron	105	101	99.8				0.816
	Magnesium	107	103	114	97.4			6.13
	Magnesium	108						1.73
	Potassium	104	104	109	102			3.12
	Sodium	100	102	102				4.14
	Strontium	105	105	108	99.6			3.24
	Strontium	109						5.40
	Tin	104	104	103	101			0.217
	Tin	110	97.6	112				13.5
	Titanium	103	105	106	105			1.24
	Titanium	106	102	102				0.0804
	Vanadium	103	104	105	106			1.19
	Vanadium	106	111	113				1.44
	Zinc	103	102	104	101			1.61
	Zinc	108	101	102				1.25
EPA 200.8 Rev. 5.4	Aluminum	99.5	97.3	101	98.2			3.29
	Aluminum	92.8	117	116				1.09
	Antimony	104	103	104	107			0.836
	Antimony	100	93.7	94.6				0.880
	Arsenic	100	100	102	103			1.89
	Arsenic	98.2	108	108				0.417
	Barium	104	103	105	106			1.16
	Beryllium	94.2	93.1	95.9	93.1			2.99
	Beryllium	86.6	102	98.3				3.91
	Boron	105	101	103	101			1.87
	Cadmium	98.7	98.9	98.7	101			0.212
	Cadmium	99.3	87.7	87.3				0.387
	Chromium	101	100	103	102			2.07
	Chromium	95.1	96.6	95.2				1.47
	Cobalt	96.9	96.2	98.0	97.9			1.88
	Cobalt	95.3	117	118				1.02
	Copper	98.0	98.2	99.9	97.2			1.70
	Copper	95.9	102	104				1.88
	Lead	94.8	94.1	96.2	95.0			2.19
	Lead	94.9	103	102				1.17
	Manganese	101	99.1	101	102			1.58
	Manganese	95.9	93.8	92.5				1.23
	Molybdenum	97.0	96.8	98.5	99.8			1.69
	Molybdenum	98.1	115	114				0.993
	Nickel	97.8	98.2	99.5	98.5			1.29
	Nickel	95.7	122	122				0.540
	Selenium	97.6	97.5	98.5	101			1.05
	Selenium	91.8	88.1	88.0				0.119
	Silver	101	99.2	101	101			1.53
	Silver	104	88.4	88.7				0.357
	Thallium	90.3	92.5	96.7	93.3			4.42
	Thallium	96.7	104	105				1.28
EPA 300.0 Rev. 2.1	Chloride	98.3	91.1	103			1.34	
	Sulfate	98.5	95.3	104			1.78	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 350.1 Rev. 2.0	Ammonia-N	97.2	105	106		1.17
	Ammonia-N	93.4	105	104		0.545
	Ammonia-N	93.0	101	94.0		5.50
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108	98.9	94.1		3.49
	Kjeldahl Nitrogen	107	105	108		1.56
EPA 353.2 Rev. 2.0	NO2NO3-N	100	102	102		0.0
	NO2NO3-N	102	102	102		0.489
EPA 365.1 Rev. 2.0	Total-P	106	101	101		0.223
	Total-P	103				2.15
SM 2320 B-2011	Total Alkalinity	98.2			0.902	
	Total Alkalinity	99.6			4.38	
SM 2540 C-2015	TDS	98.0			4.99	
SM 2540 D-2015	TSS	101				
	TSS	94.0				
SM 4500-F- C-2011	Fluoride	101	107	108		0.474
	Fluoride	98.1	94.6	93.3		1.00
SM 5310 B-2011	Organic Carbon	97.8	98.8	99.8		0.536
	Organic Carbon	97.4	91.0	93.4		1.59

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2362337
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2362331, 2362333, 2362334, 2362337
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2362348, 2362349, 2362350
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2362348, 2362349, 2362350
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2362337
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2362337
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2362332, 2362335, 2362336, 2362338
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2362332, 2362335, 2362336, 2362338
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2362332, 2362335, 2362336, 2362338
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2362332, 2362335, 2362336, 2362338
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2362331, 2362333, 2362334, 2362337
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2362349, 2362350
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2362337
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2362331, 2362333, 2362334, 2362337
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2362331, 2362333, 2362334, 2362337
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2362332, 2362335, 2362336, 2362338

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	10/13/2022			10/13/2022 16:06	Anna M. Plaviak	2362337
EPA 180.1 Rev. 2.0	10/13/2022			10/13/2022 15:04	Khloe J Berg	2362331
	10/13/2022			10/13/2022 15:05	Khloe J Berg	2362333
	10/13/2022			10/13/2022 15:06	Khloe J Berg	2362334
	10/13/2022			10/13/2022 15:07	Khloe J Berg	2362337
EPA 200.7 Rev. 4.4	10/13/2022	10/14/2022 11:20	George D Taylor	10/17/2022 19:11	McKinley C Carter	2362349
	10/13/2022	10/14/2022 11:20	George D Taylor	10/17/2022 19:18	McKinley C Carter	2362350
	10/13/2022	10/20/2022 10:29	George D Taylor	10/27/2022 23:49	McKinley C Carter	2362348
	10/13/2022	10/20/2022 10:29	George D Taylor	10/28/2022 00:21	McKinley C Carter	2362348
	10/13/2022	10/20/2022 10:29	George D Taylor	10/28/2022 20:39	McKinley C Carter	2362348
	10/13/2022	10/31/2022 11:10	George D Taylor	10/31/2022 17:08	Betina Topolski	2362348
EPA 200.8 Rev. 5.4	10/13/2022	10/14/2022 11:20	George D Taylor	10/18/2022 19:56	Emily M Philpot	2362349
	10/13/2022	10/14/2022 11:20	George D Taylor	10/18/2022 20:05	Emily M Philpot	2362350
	10/13/2022	10/20/2022 10:29	George D Taylor	10/21/2022 22:35	Emily M Philpot	2362348
	10/13/2022	10/20/2022 10:29	George D Taylor	10/21/2022 23:52	Emily M Philpot	2362348
	10/13/2022	10/20/2022 10:29	George D Taylor	10/26/2022 02:41	Emily M Philpot	2362348
EPA 300.0 Rev. 2.1	10/13/2022			10/25/2022 20:49	Anna M. Plaviak	2362337
EPA 350.1 Rev. 2.0	10/13/2022			10/17/2022 13:31	Judith K. Clark	2362336
	10/13/2022			10/21/2022 08:31	Judith K. Clark	2362332
	10/13/2022			10/21/2022 08:37	Judith K. Clark	2362335
	10/13/2022			10/21/2022 10:37	Judith K. Clark	2362338
EPA 351.2 Rev. 2.0	10/13/2022	10/17/2022 12:50	Simonne.V. Calhoun	10/18/2022 13:41	Samantha L Bates	2362332
	10/13/2022	10/17/2022 12:50	Simonne.V. Calhoun	10/18/2022 13:43	Samantha L Bates	2362335
	10/13/2022	10/17/2022 12:50	Simonne.V. Calhoun	10/18/2022 13:44	Samantha L Bates	2362336
	10/13/2022	10/21/2022 11:19	Simonne.V. Calhoun	10/24/2022 12:28	Alexandra J Mattheus	2362338
EPA 353.2 Rev. 2.0	10/13/2022			10/14/2022 10:04	Beverly Y. Sanders	2362332
	10/13/2022			10/14/2022 10:05	Beverly Y. Sanders	2362335
	10/13/2022			10/14/2022 10:06	Beverly Y. Sanders	2362336
	10/13/2022			10/17/2022 09:09	Beverly Y. Sanders	2362338
EPA 365.1 Rev. 2.0	10/13/2022	10/14/2022 14:05	Adam P Silver	10/19/2022 11:46	Simonne.V. Calhoun	2362335
	10/13/2022	10/14/2022 14:05	Adam P Silver	10/19/2022 11:47	Simonne.V. Calhoun	2362336
	10/13/2022	10/14/2022 14:05	Adam P Silver	10/20/2022 11:52	Simonne.V. Calhoun	2362332
	10/13/2022	10/19/2022 14:47	Adam P Silver	10/20/2022 11:40	Simonne.V. Calhoun	2362338
SM 2320 B-2011	10/13/2022			10/15/2022 02:34	Dale L. Simmons	2362337
	10/13/2022			10/20/2022 07:15	Dale L. Simmons	2362334
	10/13/2022			10/20/2022 07:50	Dale L. Simmons	2362331
	10/13/2022			10/20/2022 08:03	Dale L. Simmons	2362333
SM 2340 B-2011	10/13/2022			10/17/2022 19:11	McKinley C Carter	2362349
	10/13/2022			10/17/2022 19:18	McKinley C Carter	2362350
SM 2540 C-2015	10/13/2022			10/18/2022 15:43	Yijie Li	2362337

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 D-2015	10/13/2022			10/18/2022 15:43	Yijie Li	2362331, 2362333, 2362334, 2362337
SM 4500-F- C-2011	10/13/2022			10/15/2022 02:34	Dale L. Simmons	2362337
	10/13/2022			10/20/2022 06:20	Dale L. Simmons	2362334
	10/13/2022			10/20/2022 06:36	Dale L. Simmons	2362331
	10/13/2022			10/20/2022 06:41	Dale L. Simmons	2362333
	10/13/2022			10/18/2022 02:52	Khloe J Berg	2362338
SM 5310 B-2011	10/13/2022			10/19/2022 02:46	Khloe J Berg	2362332
	10/13/2022			10/19/2022 03:18	Khloe J Berg	2362335
	10/13/2022			10/19/2022 03:33	Khloe J Berg	2362336