

Chemical Analysis Report

NE-DIST-2023-07-20-01

Florida DEP Laboratory
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DOH Accreditation E31780

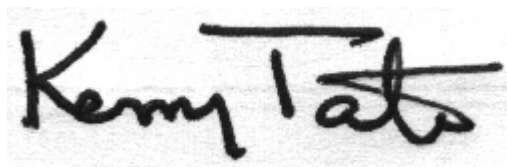
Event Description: **Nassau North 2 Boat**
Request ID: **RQ-2023-07-10-20**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 07-AUG-2023 10:24

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.

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: EGAN CREEK AT ATLANTIC

Collection Date/Time: 07/19/2023 10:35

Field ID: G4NE0285

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2425660	DEP SOP: NU-094-1	Color (true)	31		PCU	P432790	
	EPA 180.1 Rev. 2.0	Turbidity	7.8		NTU	P432798	
	EPA 300.0 Rev. 2.1	Chloride	1.6E+04		mg Cl/L	P433121	
		Sulfate	2.4E+03		mg SO4/L	P433124	
	SM 2320 B-2011	Total Alkalinity	130		mg CaCO3/L	P433013	
	SM 2540 C-2015	TDS	2.74E+04		mg/L	P433338	
	SM 2540 D-2015	TSS	16		mg/L	P433191	
2425661	SM 4500-F- C-2011	Fluoride	1.1		mg F/L	P433014	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P433103	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.87		mg N/L	P433107	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P432947	
	EPA 365.1 Rev. 2.0	Total-P	0.20		mg P/L	P433146	
	SM 5310 B-2011	Organic Carbon	9.3		mg C/L	P432911	

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: ST MARYS R AT GA LINE US 17

Collection Date/Time: 07/19/2023 12:00

Field ID: 19010001

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2425662	DEP SOP: NU-094-1	Color (true)	420		PCU	P432790	
	EPA 180.1 Rev. 2.0	Turbidity	9.0		NTU	P432798	
	EPA 300.0 Rev. 2.1	Chloride	45		mg Cl/L	P433121	
		Sulfate	5.5		mg SO4/L	P433124	
	SM 2320 B-2011	Total Alkalinity	7.9		mg CaCO3/L	P432942	
	SM 2540 C-2015	TDS	168		mg/L	P433337	
	SM 2540 D-2015	TSS	25		mg/L	P433187	
2425663	SM 4500-F- C-2011	Fluoride	0.054	I	mg F/L	P432944	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P432999	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P433029	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.087		mg N/L	P432951	
	EPA 365.1 Rev. 2.0	Total-P	0.072		mg P/L	P432889	
2425670	SM 5310 B-2011	Organic Carbon	38		mg C/L	P432967	
	EPA 200.7 Rev. 4.4	Calcium	6.02		mg/L	P432849	
		Iron	1.39E+03		ug/L	P432849	
		Magnesium	4.50		mg/L	P432849	
		Potassium	1.5		mg/L	P432849	
		Sodium	27.6		mg/L	P432849	
		Strontium	43.9		ug/L	P432849	
		Tin	3.0	U	ug/L	P432849	
		Titanium	5.4		ug/L	P432849	
		Vanadium	2.0	U	ug/L	P432849	
		Zinc	5.0	U	ug/L	P432849	
	EPA 200.8 Rev. 5.4	Aluminum	757		ug/L	P432849	
		Antimony	0.050	I	ug/L	P432849	
		Arsenic	0.71		ug/L	P432849	
		Barium	15.9		ug/L	P432849	
		Beryllium	0.056		ug/L	P432849	
		Boron	31.0		ug/L	P432849	
		Cadmium	0.020	U	ug/L	P432849	
		Chromium	0.95	I	ug/L	P432849	
		Cobalt	0.268		ug/L	P432849	
		Copper	0.56	I	ug/L	P432849	
		Lead	0.97		ug/L	P432849	
		Manganese	19.4		ug/L	P432849	
		Molybdenum	0.23	I	ug/L	P432849	
		Nickel	0.71	I	ug/L	P432849	
		Selenium	0.20	U	ug/L	P432849	
		Silver	0.010	U	ug/L	P432849	
		Thallium	0.10	U	ug/L	P432849	
	SM 2340 B-2011	Hardness	33.6		mg/L	P432849	

Ref. Method and Comment:

SM 2540 D-2015: 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 07/25/2023.

Sample Location: FB

Collection Date/Time: 07/19/2023 12:10

Field ID: FB_07192023

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2425664	DEP SOP: NU-094-1	Color (true)	2.5	U	PCU	P432790	
	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P432798	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P433121	
		Sulfate	0.20	U	mg SO4/L	P433124	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P432942	
	SM 2540 C-2015	TDS	15	U	mg/L	P433337	
	SM 2540 D-2015	TSS	2	U	mg/L	P433187	
2425665	SM 4500-F- C-2011	Fluoride	0.025	U	mg F/L	P432944	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P432999	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P433029	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P432951	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P432889	
2425671	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P432967	
	EPA 200.7 Rev. 4.4	Calcium	0.075	U	mg/L	P432849	
		Iron	30	U	ug/L	P432849	
		Magnesium	0.040	U	mg/L	P432849	
		Potassium	0.30	U	mg/L	P432849	
		Sodium	0.50	U	mg/L	P432849	
		Strontium	2.0	U	ug/L	P432849	
		Tin	3.0	U	ug/L	P432849	
		Titanium	0.75	U	ug/L	P432849	
		Vanadium	2.0	U	ug/L	P432849	
		Zinc	5.0	U	ug/L	P432849	
		Aluminum	5.0	U	ug/L	P432849	
		Antimony	0.050	U	ug/L	P432849	
		Arsenic	0.050	U	ug/L	P432849	
		Barium	0.20	U	ug/L	P432849	
		Beryllium	0.010	U	ug/L	P432849	
		Boron	2.0	U	ug/L	P432849	
	EPA 200.8 Rev. 5.4	Cadmium	0.020	U	ug/L	P432849	
		Chromium	0.40	U	ug/L	P432849	
		Cobalt	0.020	U	ug/L	P432849	
		Copper	0.40	U	ug/L	P432849	
		Lead	0.20	U	ug/L	P432849	
		Manganese	0.10	U	ug/L	P432849	
		Molybdenum	0.15	U	ug/L	P432849	
		Nickel	0.50	U	ug/L	P432849	
		Selenium	0.20	U	ug/L	P432849	
		Silver	0.010	U	ug/L	P432849	
		Thallium	0.10	U	ug/L	P432849	
	SM 2340 B-2011	Hardness	0.35	U	mg/L	P432849	

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: NASSAU RIV US 17

Collection Date/Time: 07/19/2023 13:00

Field ID: 19020002

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2425676	EPA 200.7 Rev. 4.4	Calcium	143		mg/L	P432913	
		Iron	520		ug/L	P432913	
		Magnesium	415		mg/L	P432913	
		Potassium	124		mg/L	P432913	
	EPA 200.8 Rev. 5.4	Sodium	3.41E+03		mg/L	P432913	
		Strontium	2.29E+03		ug/L	P432913	
		Tin	9.0	U	ug/L	P432913	
		Titanium	7.7	I	ug/L	P432913	
		Vanadium	6.0	U	ug/L	P432913	
		Zinc	15	U	ug/L	P432913	
		Aluminum	665		ug/L	P432913	
		Antimony	0.20	U	ug/L	P432913	
		Arsenic	1.77		ug/L	P432913	
		Barium	36.0		ug/L	P432913	
		Beryllium	0.065	I	ug/L	P432913	
		Boron	1.41E+03		ug/L	P432913	
		Cadmium	0.080	U	ug/L	P432913	
		Chromium	1.6	U	ug/L	P432913	
		Cobalt	0.18	I	ug/L	P432913	
		Copper	1.6	U	ug/L	P432913	
		Lead	0.80	U	ug/L	P432913	
		Manganese	38.9		ug/L	P432913	
		Molybdenum	3.3		ug/L	P432913	
	SM 2340 B-2011	Nickel	2.0	U	ug/L	P432913	
		Selenium	0.80	U	ug/L	P432913	
		Silver	0.040	U	ug/L	P432913	
		Thallium	0.40	U	ug/L	P432913	
		Hardness	2.07E+03		mg/L	P432913	

Ref. Method and Comment:

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

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P432790

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P432798

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P432849

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: P432913

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: P432849

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P432849

Component	Result	Code	Units
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: P432913

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: P433121

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P433124

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P432999

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433103

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433103

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433029

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433107

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P432947

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P432951

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P432889

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P433146

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

Reference Method: SM 2320 B-2011
Batch ID: P432942

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

Reference Method: SM 2320 B-2011
Batch ID: P433013

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2015
Batch ID: P433337

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2015
Batch ID: P433338

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P433187

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P433191

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P432944

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 4500-F- C-2011
Batch ID: P433014

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P432911

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

Reference Method: SM 5310 B-2011
Batch ID: P432967

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: P432790

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.8		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P432798

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P432849

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	109		P	85 - 115
Iron	107		P	85 - 115
Magnesium	107		P	85 - 115
Potassium	105		P	85 - 115
Sodium	106		P	85 - 115
Strontium	103		P	85 - 115
Tin	106		P	85 - 115
Titanium	103		P	85 - 115
Vanadium	103		P	85 - 115
Zinc	105		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P432913

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	106		P	85 - 115
Magnesium	103		P	85 - 115
Potassium	100		P	85 - 115
Sodium	100		P	85 - 115
Strontium	95.7		P	85 - 115
Tin	98.7		P	85 - 115
Titanium	97.3		P	85 - 115
Vanadium	97.9		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P432849

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.1		P	80 - 120
Antimony	98.2		P	80 - 120
Arsenic	96.6		P	80 - 120
Barium	101		P	80 - 120
Beryllium	92.4		P	80 - 120
Boron	94.9		P	80 - 120
Cadmium	97.8		P	80 - 120
Chromium	92.4		P	80 - 120
Cobalt	95.7		P	80 - 120
Copper	96.6		P	80 - 120

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P432849

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Lead	91.6		P	80 - 120
Manganese	93.3		P	80 - 120
Molybdenum	96.3		P	80 - 120
Nickel	94.1		P	80 - 120
Selenium	98.5		P	80 - 120
Silver	114		P	80 - 120
Thallium	93.4		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P432913

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	98.5		P	85 - 115
Antimony	102		P	85 - 115
Arsenic	100		P	85 - 115
Barium	104		P	85 - 115
Beryllium	94.2		P	85 - 115
Boron	98.9		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	96.8		P	85 - 115
Cobalt	97.9		P	85 - 115
Copper	96.6		P	85 - 115
Lead	95.3		P	85 - 115
Manganese	97.0		P	85 - 115
Molybdenum	97.6		P	85 - 115
Nickel	96.4		P	85 - 115
Selenium	101		P	85 - 115
Silver	103		P	85 - 115
Thallium	97.6		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P433121

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

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P433124

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P432999

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P433103

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

Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433103

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433029

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433107

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P432947

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P432951

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: P432889

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P433146

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

Reference Method: SM 2320 B-2011
Batch ID: P432942

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	95.7		P	92 - 105

Reference Method: SM 2320 B-2011
Batch ID: P433013

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	93.8		P	92 - 105

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2540 C-2015
Batch ID: P433337

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

Reference Method: SM 2540 C-2015
Batch ID: P433338

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

Reference Method: SM 2540 D-2015
Batch ID: P433187

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	94.1		P	85 - 106

Reference Method: SM 2540 D-2015
Batch ID: P433191

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	95.8		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P432944

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.0		P	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P433014

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.2		P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P432911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.8		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P432967

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P432849

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425656	Calcium	108	106	P/P	80 - 120
2425656	Iron	107	107	P/P	80 - 120
2425656	Magnesium	107	107	P/P	80 - 120
2425656	Potassium	107	105	P/P	80 - 120
2425656	Sodium	105	105	P/P	80 - 120
2425656	Strontium	103	105	P/P	80 - 120
2425656	Tin	107	103	P/P	80 - 120
2425656	Titanium	102	102	P/P	80 - 120
2425656	Vanadium	102	102	P/P	80 - 120
2425656	Zinc	104	103	P/P	80 - 120
2425747	Calcium	101		P	80 - 120
2425747	Iron	105		P	80 - 120
2425747	Magnesium	102		P	80 - 120
2425747	Potassium	107		P	80 - 120
2425747	Sodium	105		P	80 - 120
2425747	Strontium	102		P	80 - 120
2425747	Tin	102		P	80 - 120
2425747	Titanium	103		P	80 - 120
2425747	Vanadium	104		P	80 - 120
2425747	Zinc	101		P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P432913

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425676	Iron	95.6	101	P/P	80 - 120
2425676	Tin	87.3	86.8	P/P	80 - 120
2425676	Titanium	88.6	94.5	P/P	80 - 120
2425676	Vanadium	95.9	99.7	P/P	80 - 120
2425676	Zinc	92.2	94.8	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P432849

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425656	Aluminum	99.0	97.9	P/P	80 - 120
2425656	Antimony	100	99.6	P/P	80 - 120
2425656	Arsenic	96.9	96.0	P/P	80 - 120
2425656	Barium	102	101	P/P	80 - 120
2425656	Beryllium	92.9	93.0	P/P	80 - 120
2425656	Boron	99.3	98.7	P/P	80 - 120
2425656	Cadmium	99.3	99.0	P/P	80 - 120
2425656	Chromium	94.4	94.5	P/P	80 - 120
2425656	Cobalt	95.8	94.9	P/P	80 - 120
2425656	Copper	97.6	96.0	P/P	80 - 120
2425656	Lead	93.6	93.1	P/P	80 - 120
2425656	Manganese	94.1	94.1	P/P	80 - 120
2425656	Molybdenum	96.6	95.6	P/P	80 - 120
2425656	Nickel	94.6	93.0	P/P	80 - 120
2425656	Selenium	98.0	96.7	P/P	80 - 120
2425656	Silver	113	113	P/P	80 - 120
2425656	Thallium	96.4	96.0	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P432849

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425747	Aluminum	96.0		P	80 - 120
2425747	Antimony	99.9		P	80 - 120
2425747	Arsenic	95.2		P	80 - 120
2425747	Barium	101		P	80 - 120
2425747	Beryllium	88.4		P	80 - 120
2425747	Boron	98.0		P	80 - 120
2425747	Cadmium	100		P	80 - 120
2425747	Chromium	92.5		P	80 - 120
2425747	Cobalt	90.6		P	80 - 120
2425747	Copper	92.6		P	80 - 120
2425747	Lead	91.9		P	80 - 120
2425747	Manganese	92.0		P	80 - 120
2425747	Molybdenum	98.7		P	80 - 120
2425747	Nickel	88.0		P	80 - 120
2425747	Selenium	96.6		P	80 - 120
2425747	Silver	112		P	80 - 120
2425747	Thallium	95.7		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P432913

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425676	Aluminum	101	118	P/P	70 - 130
2425676	Antimony	97.3	99.1	P/P	70 - 130
2425676	Arsenic	108	107	P/P	70 - 130
2425676	Barium	101	102	P/P	70 - 130
2425676	Beryllium	89.3	90.3	P/P	70 - 130
2425676	Boron	103	95.8	P/P	70 - 130
2425676	Cadmium	91.6	93.6	P/P	70 - 130
2425676	Chromium	96.3	97.0	P/P	70 - 130
2425676	Cobalt	96.2	95.5	P/P	70 - 130
2425676	Copper	104	104	P/P	70 - 130
2425676	Lead	101	101	P/P	70 - 130
2425676	Manganese	94.0	95.4	P/P	70 - 130
2425676	Molybdenum	109	111	P/P	70 - 130
2425676	Nickel	94.0	94.5	P/P	70 - 130
2425676	Selenium	102	101	P/P	70 - 130
2425676	Silver	91.7	92.9	P/P	70 - 130
2425676	Thallium	103	104	P/P	70 - 130

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P433121

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425462	Chloride	97.3		P	90 - 110
2425629	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P433124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425462	Sulfate	97.1		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P433124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425629	Sulfate	99.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P432999

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425630	Ammonia-N	94.8	96.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433103

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425590	Ammonia-N	98.4	97.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433029

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425465	Kjeldahl Nitrogen	92.9	93.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433107

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2426903	Kjeldahl Nitrogen	103	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P432947

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425661	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P432951

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425510	NO2NO3-N	97.5	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P432889

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425735	Total-P	105	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P433146

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2426249	Total-P	102	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P432944

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2426008	Fluoride	96.4	97.2	P/P	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P433014

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2424792	Fluoride	98.4	99.1	P/P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P432911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425432	Organic Carbon	94.6	94.5	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P432967

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2425464	Organic Carbon	94.4	95.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P432790

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425629	Color (true)	1.11	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P432798

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425505	Turbidity	8.07	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P432849

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425656	Calcium	1.14	Spike	P	0 - 20
2425656	Iron	0.337	Spike	P	0 - 20
2425656	Magnesium	0.368	Spike	P	0 - 20
2425656	Potassium	1.04	Spike	P	0 - 20
2425656	Sodium	0.449	Spike	P	0 - 20
2425656	Strontium	1.52	Spike	P	0 - 20
2425656	Tin	3.06	Spike	P	0 - 20
2425656	Titanium	0.189	Spike	P	0 - 20
2425656	Vanadium	0.101	Spike	P	0 - 20
2425656	Zinc	0.194	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P432913

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425676	Calcium	4.06	Spike	P	0 - 20
2425676	Iron	4.61	Spike	P	0 - 20
2425676	Magnesium	5.47	Spike	P	0 - 20
2425676	Potassium	5.52	Spike	P	0 - 20
2425676	Sodium	3.62	Spike	P	0 - 20
2425676	Strontium	4.00	Spike	P	0 - 20
2425676	Tin	0.636	Spike	P	0 - 20
2425676	Titanium	5.29	Spike	P	0 - 20
2425676	Vanadium	3.85	Spike	P	0 - 20
2425676	Zinc	2.77	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P432849

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425656	Aluminum	1.10	Spike	P	0 - 20
2425656	Antimony	0.915	Spike	P	0 - 20
2425656	Arsenic	0.969	Spike	P	0 - 20
2425656	Barium	0.511	Spike	P	0 - 20
2425656	Beryllium	0.114	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P432849

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425656	Boron	0.554	Spike	P	0 - 20
2425656	Cadmium	0.272	Spike	P	0 - 20
2425656	Chromium	0.174	Spike	P	0 - 20
2425656	Cobalt	0.923	Spike	P	0 - 20
2425656	Copper	1.71	Spike	P	0 - 20
2425656	Lead	0.541	Spike	P	0 - 20
2425656	Manganese	0.00874	Spike	P	0 - 20
2425656	Molybdenum	0.967	Spike	P	0 - 20
2425656	Nickel	1.68	Spike	P	0 - 20
2425656	Selenium	1.42	Spike	P	0 - 20
2425656	Silver	0.0993	Spike	P	0 - 20
2425656	Thallium	0.512	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P432913

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425676	Aluminum	11.2	Spike	P	0 - 20
2425676	Antimony	1.77	Spike	P	0 - 20
2425676	Arsenic	0.335	Spike	P	0 - 20
2425676	Barium	0.587	Spike	P	0 - 20
2425676	Beryllium	1.05	Spike	P	0 - 20
2425676	Boron	0.929	Spike	P	0 - 20
2425676	Cadmium	2.18	Spike	P	0 - 20
2425676	Chromium	0.754	Spike	P	0 - 20
2425676	Cobalt	0.713	Spike	P	0 - 20
2425676	Copper	0.530	Spike	P	0 - 20
2425676	Lead	0.533	Spike	P	0 - 20
2425676	Manganese	1.03	Spike	P	0 - 20
2425676	Molybdenum	1.96	Spike	P	0 - 20
2425676	Nickel	0.554	Spike	P	0 - 20
2425676	Selenium	0.680	Spike	P	0 - 20
2425676	Silver	1.24	Spike	P	0 - 20
2425676	Thallium	0.933	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P433121

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425462	Chloride	0.127	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P433124

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425462	Sulfate	0.0	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P432999

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425630	Ammonia-N	1.77	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433103

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425590	Ammonia-N	0.892	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433029

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425465	Kjeldahl Nitrogen	0.290	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433107

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2426903	Kjeldahl Nitrogen	1.40	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P432947

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425661	NO2NO3-N	0.482	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P432951

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425510	NO2NO3-N	0.514	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P432889

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425735	Total-P	0.0212	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P433146

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2426249	Total-P	0.331	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P432942

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2426008	Total Alkalinity	0.850	Sample	P	0 - 3.9

Reference Method: SM 2320 B-2011
Batch ID: P433013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2424792	Total Alkalinity	0.0499	Sample	P	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P433337

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425293	TDS	5.13	Sample	P	0 - 10

Reference Method: SM 2540 C-2015
Batch ID: P433338

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425813	TDS	8.45	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P432944

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2426008	Fluoride	0.524	Spike	P	0 - 1.9

Reference Method: SM 4500-F- C-2011
Batch ID: P433014

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2424792	Fluoride	0.477	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2011
Batch ID: P432911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425432	Organic Carbon	0.0834	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P432967

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2425464	Organic Carbon	0.425	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: DEP SOP: NU-094-1

Run ID: A120528

Included Lab Sample IDs: 2425660, 2425662, 2425664

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	99.5	P/P	90 - 110
Color (true)	99.3	101	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A120531

Included Lab Sample IDs: 2425660, 2425662, 2425664

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	100	P/P	95 - 105

Reference Method: SM 5310 B-2011

Run ID: A120583

Included Lab Sample IDs: 2425661

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.3	95.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A120590

Included Lab Sample IDs: 2425663

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A120592

Included Lab Sample IDs: 2425665

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	99.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A120600

Included Lab Sample IDs: 2425670, 2425671

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	95.2	98.3	P/P	90 - 110
Aluminum	97.7	98.3	P/P	90 - 110
Antimony	96.5	97.7	P/P	90 - 110
Antimony	98.2	97.2	P/P	90 - 110
Arsenic	94.1	94.4	P/P	90 - 110
Arsenic	98.4	95.3	P/P	90 - 110
Barium	96.8	98.6	P/P	90 - 110
Barium	98.8	98.0	P/P	90 - 110
Beryllium	91.8	92.4	P/P	90 - 110
Beryllium	95.7	93.7	P/P	90 - 110
Boron	91.2	96.2	P/P	90 - 110
Boron	94.7	95.6	P/P	90 - 110
Cadmium	96.5	97.2	P/P	90 - 110
Cadmium	97.8	97.0	P/P	90 - 110
Chromium	93.9	94.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A120600

Included Lab Sample IDs: 2425670, 2425671

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	95.8	96.0	P/P	90 - 110
Cobalt	92.9	93.5	P/P	90 - 110
Cobalt	97.2	94.7	P/P	90 - 110
Copper	92.1	93.6	P/P	90 - 110
Copper	96.8	94.4	P/P	90 - 110
Lead	90.2	90.9	P/P	90 - 110
Lead	92.3	91.4	P/P	90 - 110
Manganese	95.0	95.6	P/P	90 - 110
Manganese	95.4	95.5	P/P	90 - 110
Molybdenum	94.4	94.7	P/P	90 - 110
Molybdenum	97.5	95.1	P/P	90 - 110
Nickel	90.9	91.5	P/P	90 - 110
Nickel	96.1	93.3	P/P	90 - 110
Selenium	96.3	97.2	P/P	90 - 110
Selenium	97.7	95.3	P/P	90 - 110
Silver	98.1	98.9	P/P	90 - 110
Silver	99.8	98.3	P/P	90 - 110
Thallium	92.7	93.2	P/P	90 - 110
Thallium	94.1	93.7	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A120602

Included Lab Sample IDs: 2425662, 2425664

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.0	92.9	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A120602

Included Lab Sample IDs: 2425662, 2425664

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A120605

Included Lab Sample IDs: 2425670, 2425671

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	100	P/P	95 - 105
Calcium	97.7	100	P/P	90 - 110
Iron	103	98.8	P/P	95 - 105
Iron	98.0	99.3	P/P	90 - 110
Magnesium	103	98.7	P/P	95 - 105
Magnesium	97.6	99.0	P/P	90 - 110
Potassium	101	96.3	P/P	95 - 105
Potassium	95.9	97.5	P/P	90 - 110
Sodium	100	95.9	P/P	95 - 105
Sodium	95.3	97.6	P/P	90 - 110
Strontium	101	105	P/P	90 - 110
Strontium	102	102	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A120605

Included Lab Sample IDs: 2425670, 2425671

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Tin	101	103	P/P	95 - 105
Tin	101	102	P/P	90 - 110
Titanium	99.6	101	P/P	95 - 105
Titanium	99.7	101	P/P	90 - 110
Vanadium	100	101	P/P	95 - 105
Vanadium	99.3	100	P/P	90 - 110
Zinc	102	104	P/P	95 - 105
Zinc	102	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A120607

Included Lab Sample IDs: 2425661

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A120608

Included Lab Sample IDs: 2425663, 2425665

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A120614

Included Lab Sample IDs: 2425663, 2425665

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.0	97.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A120627

Included Lab Sample IDs: 2425663, 2425665

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	94.3	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A120636

Included Lab Sample IDs: 2425676

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.4	99.1	P/P	90 - 110
Antimony	97.4	97.7	P/P	90 - 110
Arsenic	98.9	97.8	P/P	90 - 110
Barium	99.7	98.9	P/P	90 - 110
Beryllium	98.6	97.4	P/P	90 - 110
Boron	93.4	97.4	P/P	90 - 110
Cadmium	98.3	97.2	P/P	90 - 110
Chromium	96.2	96.2	P/P	90 - 110
Cobalt	98.2	95.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A120636

Included Lab Sample IDs: 2425676

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	96.7	96.3	P/P	90 - 110
Lead	92.9	91.5	P/P	90 - 110
Manganese	97.2	95.9	P/P	90 - 110
Molybdenum	97.3	95.6	P/P	90 - 110
Nickel	97.3	94.9	P/P	90 - 110
Selenium	99.9	97.6	P/P	90 - 110
Silver	101	100	P/P	90 - 110
Thallium	95.8	93.9	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A120639

Included Lab Sample IDs: 2425660

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.6	92.7	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A120639

Included Lab Sample IDs: 2425660

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A120677

Included Lab Sample IDs: 2425663, 2425665

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.3	94.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A120681

Included Lab Sample IDs: 2425661

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.7	98.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A120686

Included Lab Sample IDs: 2425660, 2425662, 2425664

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A120732

Included Lab Sample IDs: 2425661

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A120759

Included Lab Sample IDs: 2425661

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	98.7	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A120773

Included Lab Sample IDs: 2425676

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	101	P/P	90 - 110
Iron	101	99.0	P/P	90 - 110
Magnesium	100	98.4	P/P	90 - 110
Potassium	97.6	95.6	P/P	90 - 110
Sodium	98.0	97.3	P/P	90 - 110
Strontium	93.3	93.3	P/P	90 - 110
Tin	96.1	96.9	P/P	90 - 110
Titanium	95.6	95.8	P/P	90 - 110
Vanadium	96.0	96.3	P/P	90 - 110
Zinc	98.2	98.6	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)	97.8					1.11	
EPA 180.1 Rev. 2.0	Turbidity	99.2					8.07	
EPA 200.7 Rev. 4.4	Calcium	109	108	106	101			1.14
	Calcium	103						4.06
	Iron	107	107	107	105			0.337
	Iron	106	95.6	101				4.61
	Magnesium	107	107	107	102			0.368
	Magnesium	103						5.47
	Potassium	105	107	105	107			1.04
	Potassium	100						5.52
	Sodium	106	105	105	105			0.449
	Sodium	100						3.62
	Strontium	103	103	105	102			1.52
	Strontium	95.7						4.00
	Tin	106	107	103	102			3.06
	Tin	98.7	87.3	86.8				0.636
	Titanium	103	102	102	103			0.189
	Titanium	97.3	88.6	94.5				5.29
	Vanadium	103	102	102	104			0.101
	Vanadium	97.9	95.9	99.7				3.85
	Zinc	105	104	103	101			0.194
	Zinc	101	92.2	94.8				2.77
EPA 200.8 Rev. 5.4	Aluminum	97.1	99.0	97.9	96.0			1.10
	Aluminum	98.5	101	118				11.2
	Antimony	98.2	100	99.6	99.9			0.915
	Antimony	102	97.3	99.1				1.77
	Arsenic	96.6	96.9	96.0	95.2			0.969
	Arsenic	100	108	107				0.335
	Barium	101	102	101	101			0.511
	Barium	104	101	102				0.587
	Beryllium	92.4	92.9	93.0	88.4			0.114
	Beryllium	94.2	89.3	90.3				1.05
	Boron	94.9	99.3	98.7	98.0			0.554
	Boron	98.9	103	95.8				0.929
	Cadmium	97.8	99.3	99.0	100			0.272
	Cadmium	100	91.6	93.6				2.18
	Chromium	92.4	94.4	94.5	92.5			0.174
	Chromium	96.8	96.3	97.0				0.754
	Cobalt	95.7	95.8	94.9	90.6			0.923
	Cobalt	97.9	96.2	95.5				0.713
	Copper	96.6	97.6	96.0	92.6			1.71
	Copper	96.6	104	104				0.530
	Lead	91.6	93.6	93.1	91.9			0.541
	Lead	95.3	101	101				0.533
	Manganese	93.3	94.1	94.1	92.0			0.0087
	Manganese	97.0	94.0	95.4				1.03
	Molybdenum	96.3	96.6	95.6	98.7			0.967
	Molybdenum	97.6	109	111				1.96
	Nickel	94.1	94.6	93.0	88.0			1.68
	Nickel	96.4	94.0	94.5				0.554
	Selenium	98.5	98.0	96.7	96.6			1.42
	Selenium	101	102	101				0.680
	Silver	114	113	113	112			0.0993
	Silver	103	91.7	92.9				1.24

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision	MS
			LCS	SMP	MS		
EPA 200.8 Rev. 5.4	Thallium	93.4	96.4	96.0	95.7		0.512
	Thallium	97.6	103	104			0.933
EPA 300.0 Rev. 2.1	Chloride	101	97.3	103		0.127	
	Sulfate	99.8	97.1	99.9		0.0	
EPA 350.1 Rev. 2.0	Ammonia-N	97.4	94.8	96.6			1.77
	Ammonia-N	98.2	98.4	97.4			0.892
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	92.9	93.3			0.290
	Kjeldahl Nitrogen	105	103	101			1.40
EPA 353.2 Rev. 2.0	NO2NO3-N	102	104	104			0.482
	NO2NO3-N	102	97.5	97.0			0.514
EPA 365.1 Rev. 2.0	Total-P	101	105	105			0.0212
	Total-P	107	102	102			0.331
SM 2320 B-2011	Total Alkalinity	95.7				0.850	
	Total Alkalinity	93.8				0.0499	
SM 2540 C-2015	TDS	104				5.13	
	TDS	98.8				8.45	
SM 2540 D-2015	TSS	94.1					
	TSS	95.8					
SM 4500-F- C-2011	Fluoride	98.0	96.4	97.2			0.524
	Fluoride	97.2	98.4	99.1			0.477
SM 5310 B-2011	Organic Carbon	95.8	94.6	94.5			0.0834
	Organic Carbon	95.0	94.4	95.1			0.425

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2425660, 2425662, 2425664
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2425660, 2425662, 2425664
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2425670, 2425671, 2425676
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2425670, 2425671, 2425676
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2425660, 2425662, 2425664
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2425660, 2425662, 2425664
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2425661, 2425663, 2425665
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2425661, 2425663, 2425665
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2425661, 2425663, 2425665
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2425661, 2425663, 2425665
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2425660, 2425662, 2425664
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2425670, 2425671, 2425676
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2425660, 2425662, 2425664
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2425660, 2425662, 2425664
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2425660, 2425662, 2425664
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2425661, 2425663, 2425665

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	07/20/2023			07/20/2023 14:48	Alexis Price	2425660
	07/20/2023			07/20/2023 14:49	Alexis Price	2425664
	07/20/2023			07/20/2023 15:10	Alexis Price	2425662
EPA 180.1 Rev. 2.0	07/20/2023			07/20/2023 14:55	Khloe J Berg	2425660
	07/20/2023			07/20/2023 14:58	Khloe J Berg	2425662
	07/20/2023			07/20/2023 14:59	Khloe J Berg	2425664
EPA 200.7 Rev. 4.4	07/20/2023	07/21/2023 12:10	George D Taylor	07/24/2023 17:46	McKinley C Carter	2425671
	07/20/2023	07/21/2023 12:10	George D Taylor	07/24/2023 21:24	McKinley C Carter	2425670
	07/20/2023	07/24/2023 12:50	George D Taylor	08/01/2023 23:53	Chase Roberts	2425676
EPA 200.8 Rev. 5.4	07/20/2023	07/24/2023 12:50	George D Taylor	08/02/2023 00:40	Chase Roberts	2425676
	07/20/2023	07/21/2023 12:10	George D Taylor	07/24/2023 13:52	Emily M Philpot	2425671
	07/20/2023	07/21/2023 12:10	George D Taylor	07/24/2023 17:52	Emily M Philpot	2425670
EPA 300.0 Rev. 2.1	07/20/2023	07/24/2023 12:50	George D Taylor	07/25/2023 16:46	Emily M Philpot	2425676
	07/20/2023	07/24/2023 12:50	George D Taylor	07/25/2023 18:13	Emily M Philpot	2425676
	07/20/2023			07/26/2023 04:02	James L Waggeberby	2425660
EPA 350.1 Rev. 2.0	07/20/2023			07/26/2023 04:17	James L Waggeberby	2425662
	07/20/2023			07/26/2023 04:32	James L Waggeberby	2425664
	07/20/2023			07/25/2023 15:20	Ping Hua	2425663
EPA 351.2 Rev. 2.0	07/20/2023			07/25/2023 15:21	Ping Hua	2425665
	07/20/2023			07/27/2023 10:38	Ping Hua	2425661
	07/20/2023	07/25/2023 15:32	Dana G. Hughes	07/27/2023 10:45	Samantha L Bates	2425663
EPA 353.2 Rev. 2.0	07/20/2023	07/25/2023 15:32	Dana G. Hughes	07/27/2023 10:46	Samantha L Bates	2425665
	07/20/2023	07/27/2023 12:49	Dana G. Hughes	08/01/2023 10:10	Samantha L Bates	2425661
	07/20/2023			07/24/2023 13:40	Judith K. Clark	2425663
EPA 365.1 Rev. 2.0	07/20/2023			07/24/2023 13:41	Judith K. Clark	2425665
	07/20/2023			07/25/2023 09:14	Beverly Y. Sanders	2425661
	07/20/2023	07/24/2023 11:56	Alexis Price	07/24/2023 15:25	Simonne.V. Calhoun	2425663
SM 2320 B-2011	07/20/2023	07/24/2023 11:56	Alexis Price	07/24/2023 16:31	Simonne.V. Calhoun	2425665
	07/20/2023	07/28/2023 14:20	Simonne.V. Calhoun	07/31/2023 10:53	Chandler E Cox	2425661
	07/20/2023			07/24/2023 22:35	Dale L. Simmons	2425662
SM 2340 B-2011	07/20/2023			07/24/2023 22:44	Dale L. Simmons	2425664
	07/20/2023			07/25/2023 21:51	Dale L. Simmons	2425660
	07/20/2023			07/24/2023 17:46	McKinley C Carter	2425671
SM 2540 C-2015	07/20/2023			07/24/2023 21:24	McKinley C Carter	2425670
	07/20/2023			08/02/2023 00:40	Chase Roberts	2425676
	07/20/2023			07/25/2023 15:46	Yijie Li	2425660, 2425662, 2425664
SM 2540 D-2015	07/20/2023			07/25/2023 15:46	Yijie Li	2425660, 2425662, 2425664
SM 4500-F- C-2011	07/20/2023			07/24/2023 22:35	Dale L. Simmons	2425662
	07/20/2023			07/24/2023 22:44	Dale L. Simmons	2425664
	07/20/2023			07/25/2023 19:27	Dale L. Simmons	2425660

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-2011	07/20/2023			07/22/2023 03:18	Elise M. Gillis	2425661
	07/20/2023			07/24/2023 21:46	Khloe J Berg	2425663
	07/20/2023			07/24/2023 22:01	Khloe J Berg	2425665