

Chemical Analysis Report

TLH-ROC-2022-09-01-01

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

Event Description: **Run 9**
Request ID: **RQ-2022-07-11-61**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Michael Eckles

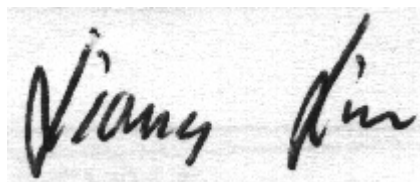
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This Report replaces the previous Report Serial Number: 0140655

Report Comment: Correction for a location was made.

Revision certified by: Liang Lin, Environmental Administrator

Date Certified: 23-SEP-2022 11:39

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

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: East Bay ENCOC FCOLI

Collection Date/Time: 09/01/2022 11:35

Field ID: G2TLHR0051

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2353859	EPA 180.1 Rev. 2.0	Turbidity	5.1	A	NTU	P419081	
	SM 2320 B-2011	Total Alkalinity	75		mg CaCO3/L	P419276	
	SM 2540 D-2011	TSS	5	I	mg/L	P419316	
	SM 4500-F- C-2011	Fluoride	0.52		mg F/L	P419280	
2353861	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P419206	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P419099	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P419328	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P419247	
	SM 5310 B-2011	Organic Carbon	5.0		mg C/L	P419189	
2353875	EPA 200.7 Rev. 4.4	Calcium	178		mg/L	P419339	
		Iron	170	I	ug/L	P419339	
		Magnesium	577		mg/L	P419339	
		Strontium	3.11E+03		ug/L	P419339	
		Tin	9.0	U	ug/L	P419339	
		Titanium	3.4	I	ug/L	P419339	
		Vanadium	6.0	U	ug/L	P419339	
		Zinc	15	U	ug/L	P419339	
	EPA 200.8 Rev. 5.4	Aluminum	138		ug/L	P419339	
		Antimony	0.20	U	ug/L	P419339	
		Arsenic	1.30		ug/L	P419339	
		Beryllium	0.040	U	ug/L	P419339	
		Cadmium	0.080	U	ug/L	P419339	
		Chromium	1.6	U	ug/L	P419339	
		Cobalt	0.18	I	ug/L	P419339	
		Copper	1.6	U	ug/L	P419339	
		Lead	0.80	U	ug/L	P419339	
		Manganese	108		ug/L	P419339	
		Molybdenum	4.9		ug/L	P419339	
		Nickel	2.0	U	ug/L	P419339	
		Selenium	0.80	U	ug/L	P419339	
		Silver	0.040	U	ug/L	P419339	
		Thallium	0.40	U	ug/L	P419339	

Ref. Method and Comment:

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

EPA 200.7 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: East bay (Apalachicola)

Collection Date/Time: 09/01/2022 11:40

Field ID: G2TLHR0027

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2353860	EPA 180.1 Rev. 2.0	Turbidity	4.5		NTU	P419081	
	SM 2320 B-2011	Total Alkalinity	66		mg CaCO3/L	P419276	
	SM 2540 D-2011	TSS	4	IA	mg/L	P419316	
	SM 4500-F- C-2011	Fluoride	0.40		mg F/L	P419280	
2353862	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P419206	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P419099	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P419328	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P419247	
	SM 5310 B-2011	Organic Carbon	6.5		mg C/L	P419189	
2353876	EPA 200.7 Rev. 4.4	Calcium	144		mg/L	P419339	
		Iron	190	I	ug/L	P419339	
		Magnesium	467		mg/L	P419339	
		Strontium	2.46E+03		ug/L	P419339	
		Tin	9.0	U	ug/L	P419339	
		Titanium	2.5	I	ug/L	P419339	
		Vanadium	6.0	U	ug/L	P419339	
	EPA 200.8 Rev. 5.4	Zinc	15	U	ug/L	P419339	
		Aluminum	105		ug/L	P419339	
		Antimony	0.20	U	ug/L	P419339	
		Arsenic	1.07		ug/L	P419339	
		Beryllium	0.040	U	ug/L	P419339	
		Cadmium	0.080	U	ug/L	P419339	
		Chromium	1.6	U	ug/L	P419339	
		Cobalt	0.17	I	ug/L	P419339	
		Copper	1.6	U	ug/L	P419339	
		Lead	0.80	U	ug/L	P419339	
		Manganese	95.2		ug/L	P419339	
		Molybdenum	3.9		ug/L	P419339	
		Nickel	2.0	U	ug/L	P419339	
		Selenium	0.80	U	ug/L	P419339	
		Silver	0.040	U	ug/L	P419339	
		Thallium	0.40	U	ug/L	P419339	

Ref. Method and Comment:

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

EPA 200.7 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: Inter-Coastal 450m d-stream Pine Log Boat Ramp

Collection Date/Time: 09/01/2022 12:20

Field ID: G2TLHR0034

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2353863	DEP SOP: NU-094-1	Color (true)	37	A	PCU	P419198	
	EPA 180.1 Rev. 2.0	Turbidity	7.1		NTU	P419081	
	EPA 300.0 Rev. 2.1	Chloride	5.3		mg Cl/L	P419739	
		Sulfate	6.9		mg SO4/L	P419742	
	SM 2320 B-2011	Total Alkalinity	44		mg CaCO3/L	P419411	
	SM 2540 C-2011	TDS	73		mg/L	P419415	
	SM 2540 D-2011	TSS	7	I	mg/L	P419314	
2353864	SM 4500-F- C-2011	Fluoride	0.067	I	mg F/L	P419390	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P419145	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.34		mg N/L	P419238	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.27		mg N/L	P419296	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P419249	
2353877	SM 5310 B-2011	Organic Carbon	4.4		mg C/L	P419352	
	EPA 200.7 Rev. 4.4	Calcium	13.9		mg/L	P419177	
		Iron	560		ug/L	P419177	
		Magnesium	2.06		mg/L	P419177	
		Potassium	1.8		mg/L	P419177	
		Sodium	7.0		mg/L	P419177	
		Strontium	34.9		ug/L	P419177	
		Tin	3.0	U	ug/L	P419177	
		Titanium	4.0		ug/L	P419177	
		Vanadium	2.0	U	ug/L	P419177	
		Zinc	5.0	U	ug/L	P419177	
		Aluminum	152		ug/L	P419177	
		Antimony	0.071	I	ug/L	P419177	
		Arsenic	0.49		ug/L	P419177	
		Barium	19.6		ug/L	P419177	
		Beryllium	0.026	I	ug/L	P419177	
		Boron	17.4		ug/L	P419177	
		Cadmium	0.020	U	ug/L	P419177	
		Chromium	0.40	U	ug/L	P419177	
		Cobalt	0.158		ug/L	P419177	
		Copper	0.62	I	ug/L	P419177	
		Lead	0.20	U	ug/L	P419177	
		Manganese	63.9		ug/L	P419177	
		Molybdenum	0.36	I	ug/L	P419177	
		Nickel	0.50	U	ug/L	P419177	
		Selenium	0.20	U	ug/L	P419177	
		Silver	0.010	U	ug/L	P419177	
		Thallium	0.10	U	ug/L	P419177	
	SM 2340 B-2011	Hardness	43.1		mg/L	P419177	

Ref. Method and Comment:

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

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P419198

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P419081

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P419177

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: P419339

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/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 200.8 Rev. 5.4
Batch ID: P419177

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P419177

Component	Result	Code	Units
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: P419339

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	0.10	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: P419739

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P419742

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P419145

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P419206

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P419099

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P419238

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P419296

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P419328

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P419247

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P419249

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

Reference Method: SM 2320 B-2011
Batch ID: P419276

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

Reference Method: SM 2320 B-2011
Batch ID: P419411

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

Reference Method: SM 2540 C-2011
Batch ID: P419415

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P419314

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P419316

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P419280

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500-F- C-2011
Batch ID: P419390

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P419189

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

Reference Method: SM 5310 B-2011
Batch ID: P419352

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: P419198

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

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P419081

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P419177

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	111		P	85 - 115
Magnesium	105		P	85 - 115
Potassium	108		P	85 - 115
Sodium	107		P	85 - 115
Strontium	110		P	85 - 115
Tin	111		P	85 - 115
Titanium	108		P	85 - 115
Vanadium	107		P	85 - 115
Zinc	110		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P419339

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	107		P	85 - 115
Iron	112		P	85 - 115
Magnesium	107		P	85 - 115
Strontium	108		P	85 - 115
Tin	108		P	85 - 115
Titanium	106		P	85 - 115
Vanadium	105		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P419177

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	103		P	85 - 115
Arsenic	104		P	85 - 115
Barium	107		P	85 - 115
Beryllium	98.1		P	85 - 115
Boron	105		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	101		P	85 - 115
Cobalt	101		P	85 - 115
Copper	102		P	85 - 115
Lead	96.6		P	85 - 115
Manganese	102		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P419177

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Molybdenum	101		P	85 - 115
Nickel	103		P	85 - 115
Selenium	102		P	85 - 115
Silver	89.3		P	85 - 115
Thallium	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P419339

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.8		P	85 - 115
Antimony	103		P	85 - 115
Arsenic	102		P	85 - 115
Beryllium	91.9		P	85 - 115
Cadmium	99.8		P	85 - 115
Chromium	100		P	85 - 115
Cobalt	97.1		P	85 - 115
Copper	97.3		P	85 - 115
Lead	93.6		P	85 - 115
Manganese	98.6		P	85 - 115
Molybdenum	99.1		P	85 - 115
Nickel	98.3		P	85 - 115
Selenium	101		P	85 - 115
Silver	85.3		P	85 - 115
Thallium	99.4		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P419739

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P419742

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P419145

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P419206

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.0		P	90 - 110

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P419099

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: P419238

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P419296

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: P419328

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P419247

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	109		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P419249

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

Reference Method: SM 2320 B-2011
Batch ID: P419276

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P419411

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.4		P	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P419280

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	94 - 104

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P419390

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

Reference Method: SM 5310 B-2011
Batch ID: P419189

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.6		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P419352

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P419177

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2353696	Calcium	106		P	80 - 120
2353696	Iron	107	109	P/P	80 - 120
2353696	Magnesium	104		P	80 - 120
2353696	Potassium	105		P	80 - 120
2353696	Sodium	105		P	80 - 120
2353696	Strontium	105	107	P/P	80 - 120
2353696	Tin	106	108	P/P	80 - 120
2353696	Titanium	103	106	P/P	80 - 120
2353696	Vanadium	102	105	P/P	80 - 120
2353696	Zinc	104	106	P/P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P419339

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2353876	Iron	106	108	P/P	70 - 130
2353876	Tin	99.5	91.1	P/P	70 - 130
2353876	Titanium	106	104	P/P	70 - 130
2353876	Vanadium	104	102	P/P	70 - 130
2353876	Zinc	97.5	97.4	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P419177

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2353696	Aluminum	102	99.2	P/P	80 - 120
2353696	Antimony	104	103	P/P	80 - 120
2353696	Arsenic	105	103	P/P	80 - 120
2353696	Barium	106	103	P/P	80 - 120
2353696	Beryllium	101	99.0	P/P	80 - 120
2353696	Boron	106	99.4	P/P	80 - 120
2353696	Cadmium	100	98.2	P/P	80 - 120
2353696	Chromium	105	101	P/P	80 - 120
2353696	Cobalt	102	98.9	P/P	80 - 120
2353696	Copper	101	97.6	P/P	80 - 120
2353696	Lead	97.7	95.3	P/P	80 - 120
2353696	Manganese	104	101	P/P	80 - 120
2353696	Molybdenum	103	101	P/P	80 - 120
2353696	Nickel	103	100	P/P	80 - 120
2353696	Selenium	101	100	P/P	80 - 120
2353696	Silver	88.8	87.5	P/P	80 - 120
2353696	Thallium	105	102	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P419339

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2353076	Aluminum	104	106	P/P	80 - 120
2353076	Antimony	100	99.4	P/P	80 - 120
2353076	Arsenic	113	112	P/P	80 - 120
2353076	Beryllium	98.4	98.0	P/P	80 - 120
2353076	Cadmium	95.1	93.5	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P419339

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2353076	Chromium	97.2	95.9	P/P	80 - 120
2353076	Cobalt	105	106	P/P	80 - 120
2353076	Copper	105	102	P/P	80 - 120
2353076	Lead	98.1	97.3	P/P	80 - 120
2353076	Manganese	93.6	93.9	P/P	80 - 120
2353076	Molybdenum	110	110	P/P	80 - 120
2353076	Nickel	107	109	P/P	80 - 120
2353076	Selenium	99.0	101	P/P	80 - 120
2353076	Thallium	105	105	P/P	80 - 120
2353876	Silver	75.3	76.9	P/P	70 - 130

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P419739

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2353690	Chloride	98.2		P	90 - 110
2354011	Chloride	98.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P419742

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2353690	Sulfate	95.1		P	90 - 110
2354011	Sulfate	97.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P419145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2353889	Ammonia-N	97.0	97.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P419206

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2351678	Ammonia-N	98.2	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P419099

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2353861	Kjeldahl Nitrogen	104	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P419238

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2354140	Kjeldahl Nitrogen	102	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P419296

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2353677	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P419328

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2353610	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P419247

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2352653	Total-P	100	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P419249

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2353855	Total-P	109	107	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P419280

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2353473	Fluoride	97.8	98.5	P/P	94 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P419390

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2353959	Fluoride	98.5	98.5	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P419189

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2353610	Organic Carbon	91.2	89.3	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P419352

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2354070	Organic Carbon	97.1	98.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P419198

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353863	Color (true)	0.336	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P419081

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353859	Turbidity	2.73	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P419177

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353696	Calcium	1.77	Spike	P	0 - 20
2353696	Iron	1.92	Spike	P	0 - 20
2353696	Magnesium	2.60	Spike	P	0 - 20
2353696	Potassium	2.18	Spike	P	0 - 20
2353696	Sodium	2.27	Spike	P	0 - 20
2353696	Strontium	1.71	Spike	P	0 - 20
2353696	Tin	2.46	Spike	P	0 - 20
2353696	Titanium	2.87	Spike	P	0 - 20
2353696	Vanadium	2.91	Spike	P	0 - 20
2353696	Zinc	2.67	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P419339

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353876	Calcium	0.260	Spike	P	0 - 20
2353876	Iron	1.13	Spike	P	0 - 20
2353876	Magnesium	4.40	Spike	P	0 - 20
2353876	Strontium	1.51	Spike	P	0 - 20
2353876	Tin	8.87	Spike	P	0 - 20
2353876	Titanium	1.80	Spike	P	0 - 20
2353876	Vanadium	2.02	Spike	P	0 - 20
2353876	Zinc	0.107	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P419177

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353696	Aluminum	2.97	Spike	P	0 - 20
2353696	Antimony	1.25	Spike	P	0 - 20
2353696	Arsenic	2.11	Spike	P	0 - 20
2353696	Barium	1.83	Spike	P	0 - 20
2353696	Beryllium	1.49	Spike	P	0 - 20
2353696	Boron	5.27	Spike	P	0 - 20
2353696	Cadmium	2.29	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P419177

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353696	Chromium	3.43	Spike	P	0 - 20
2353696	Cobalt	2.88	Spike	P	0 - 20
2353696	Copper	3.13	Spike	P	0 - 20
2353696	Lead	2.51	Spike	P	0 - 20
2353696	Manganese	2.20	Spike	P	0 - 20
2353696	Molybdenum	2.21	Spike	P	0 - 20
2353696	Nickel	2.94	Spike	P	0 - 20
2353696	Selenium	0.947	Spike	P	0 - 20
2353696	Silver	1.47	Spike	P	0 - 20
2353696	Thallium	2.23	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P419339

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353076	Aluminum	1.96	Spike	P	0 - 20
2353076	Antimony	1.06	Spike	P	0 - 20
2353076	Arsenic	0.551	Spike	P	0 - 20
2353076	Beryllium	0.448	Spike	P	0 - 20
2353076	Cadmium	1.64	Spike	P	0 - 20
2353076	Chromium	1.40	Spike	P	0 - 20
2353076	Cobalt	0.295	Spike	P	0 - 20
2353076	Copper	2.87	Spike	P	0 - 20
2353076	Lead	0.774	Spike	P	0 - 20
2353076	Manganese	0.132	Spike	P	0 - 20
2353076	Molybdenum	0.102	Spike	P	0 - 20
2353076	Nickel	1.33	Spike	P	0 - 20
2353076	Selenium	2.35	Spike	P	0 - 20
2353076	Thallium	0.0587	Spike	P	0 - 20
2353876	Silver	2.02	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P419739

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353690	Chloride	0.00596	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P419742

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353690	Sulfate	0.105	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P419145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P419145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353889	Ammonia-N	0.372	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P419206

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2351678	Ammonia-N	0.344	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P419099

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353861	Kjeldahl Nitrogen	0.00665	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P419238

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2354140	Kjeldahl Nitrogen	0.904	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P419296

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353677	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P419328

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353610	NO2NO3-N	1.31	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P419247

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352653	Total-P	2.51	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P419249

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353855	Total-P	1.37	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P419276

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2352587	Total Alkalinity	0.722	Sample	P	0 - 3.8

Reference Method: SM 2320 B-2011
Batch ID: P419411

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353959	Total Alkalinity	0.145	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2011
Batch ID: P419415

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353828	TDS	7.89	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P419280

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353473	Fluoride	0.470	Spike	P	0 - 1.6

Reference Method: SM 4500-F- C-2011
Batch ID: P419390

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353959	Fluoride	0.0	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P419189

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2353610	Organic Carbon	1.65	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P419352

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2354070	Organic Carbon	1.21	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A114527

Included Lab Sample IDs: 2353859, 2353860, 2353863

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A114549

Included Lab Sample IDs: 2353864

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.0	98.1	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A114572

Included Lab Sample IDs: 2353861, 2353862

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	90.2	95.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A114576

Included Lab Sample IDs: 2353861, 2353862

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

Reference Method: DEP SOP: NU-094-1

Run ID: A114577

Included Lab Sample IDs: 2353863

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A114579

Included Lab Sample IDs: 2353861, 2353862

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.4	99.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A114588

Included Lab Sample IDs: 2353877

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	103	P/P	90 - 110
Iron	106	105	P/P	90 - 110
Magnesium	105	105	P/P	90 - 110
Potassium	106	104	P/P	90 - 110
Sodium	105	103	P/P	90 - 110
Strontium	103	102	P/P	90 - 110
Tin	105	102	P/P	90 - 110
Titanium	102	99.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A114588

Included Lab Sample IDs: 2353877

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Vanadium	101	98.5	P/P	90 - 110
Zinc	105	102	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A114593

Included Lab Sample IDs: 2353877

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	100	101	P/P	90 - 110
Antimony	99.8	101	P/P	90 - 110
Arsenic	104	106	P/P	90 - 110
Barium	102	102	P/P	90 - 110
Beryllium	99.3	97.1	P/P	90 - 110
Boron	101	101	P/P	90 - 110
Cadmium	103	103	P/P	90 - 110
Chromium	103	105	P/P	90 - 110
Cobalt	101	102	P/P	90 - 110
Copper	103	104	P/P	90 - 110
Lead	94.7	94.3	P/P	90 - 110
Manganese	104	104	P/P	90 - 110
Nickel	103	103	P/P	90 - 110
Selenium	103	105	P/P	90 - 110
Silver	99.0	99.8	P/P	90 - 110
Thallium	105	104	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A114599

Included Lab Sample IDs: 2353859, 2353860

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	95.6	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A114599

Included Lab Sample IDs: 2353859, 2353860

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A114607

Included Lab Sample IDs: 2353864

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A114620

Included Lab Sample IDs: 2353861, 2353862

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A114620

Included Lab Sample IDs: 2353861, 2353862

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

Reference Method: SM 5310 B-2011

Run ID: A114631

Included Lab Sample IDs: 2353864

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.5	96.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A114645

Included Lab Sample IDs: 2353864

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.9	98.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A114650

Included Lab Sample IDs: 2353861, 2353862, 2353864

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	99.5	P/P	90 - 110
Total-P	99.5	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A114659

Included Lab Sample IDs: 2353877

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Molybdenum	96.4	96.9	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A114660

Included Lab Sample IDs: 2353863

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A114665

Included Lab Sample IDs: 2353875, 2353876

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.7	100	P/P	90 - 110
Antimony	98.9	97.9	P/P	90 - 110
Arsenic	105	104	P/P	90 - 110
Beryllium	99.6	99.7	P/P	90 - 110
Cadmium	101	102	P/P	90 - 110
Chromium	104	104	P/P	90 - 110
Cobalt	100	101	P/P	90 - 110
Copper	104	105	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A114665

Included Lab Sample IDs: 2353875, 2353876

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	90.9	91.6	P/P	90 - 110
Manganese	100	99.8	P/P	90 - 110
Molybdenum	99.6	99.2	P/P	90 - 110
Nickel	103	104	P/P	90 - 110
Selenium	104	98.9	P/P	90 - 110
Thallium	101	103	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A114670

Included Lab Sample IDs: 2353863

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.8	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A114684

Included Lab Sample IDs: 2353875, 2353876

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	97.3	98.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A114789

Included Lab Sample IDs: 2353863

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A114866

Included Lab Sample IDs: 2353875, 2353876

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	103	P/P	95 - 105
Iron	102	100	P/P	95 - 105
Magnesium	100	99.2	P/P	95 - 105
Magnesium	99.2	98.7	P/P	90 - 110
Strontium	100	102	P/P	95 - 105
Tin	102	99.7	P/P	95 - 105
Titanium	99.3	97.9	P/P	95 - 105
Vanadium	98.3	99.2	P/P	95 - 105
Zinc	100	97.0	P/P	95 - 105

* 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)	101				0.336	
EPA 180.1 Rev. 2.0	Turbidity	97.5				2.73	
EPA 200.7 Rev. 4.4	Calcium	106	106				1.77
	Calcium	107					0.260
	Iron	111	107	109			1.92
	Iron	112	106	108			1.13
	Magnesium	105	104				2.60
	Magnesium	107					4.40
	Potassium	108	105				2.18
	Sodium	107	105				2.27
	Strontium	110	105	107			1.71
	Strontium	108					1.51
	Tin	111	106	108			2.46
	Tin	108	99.5	91.1			8.87
	Titanium	108	103	106			2.87
	Titanium	106	106	104			1.80
	Vanadium	107	102	105			2.91
	Vanadium	105	104	102			2.02
	Zinc	110	104	106			2.67
	Zinc	104	97.5	97.4			0.107
EPA 200.8 Rev. 5.4	Aluminum	102	102	99.2			2.97
	Aluminum	99.8	104	106			1.96
	Antimony	103	104	103			1.25
	Antimony	103	100	99.4			1.06
	Arsenic	104	105	103			2.11
	Arsenic	102	113	112			0.551
	Barium	107	106	103			1.83
	Beryllium	98.1	101	99.0			1.49
	Beryllium	91.9	98.4	98.0			0.448
	Boron	105	106	99.4			5.27
	Cadmium	101	100	98.2			2.29
	Cadmium	99.8	95.1	93.5			1.64
	Chromium	101	105	101			3.43
	Chromium	100	97.2	95.9			1.40
	Cobalt	101	102	98.9			2.88
	Cobalt	97.1	105	106			0.295
	Copper	102	101	97.6			3.13
	Copper	97.3	105	102			2.87
	Lead	96.6	97.7	95.3			2.51
	Lead	93.6	98.1	97.3			0.774
	Manganese	102	104	101			2.20
	Manganese	98.6	93.6	93.9			0.132
	Molybdenum	101	103	101			2.21
	Molybdenum	99.1	110	110			0.102
	Nickel	103	103	100			2.94
	Nickel	98.3	107	109			1.33
	Selenium	102	101	100			0.947
	Selenium	101	99.0	101			2.35
	Silver	89.3	88.8	87.5			1.47
	Silver	85.3	75.3	76.9			2.02
	Thallium	102	105	102			2.23
	Thallium	99.4	105	105			0.0587
EPA 300.0 Rev. 2.1	Chloride	98.8	98.2	98.4		0.0059	
	Sulfate	98.2	95.1	97.6		0.105	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 350.1 Rev. 2.0	Ammonia-N	94.2	97.0	97.4		0.372
	Ammonia-N	97.0	98.2	97.8		0.344
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	104	104		0.0066
	Kjeldahl Nitrogen	102	102	103		0.904
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	102	102		0.0
	NO ₂ NO ₃ -N	101	100	102		1.31
EPA 365.1 Rev. 2.0	Total-P	109	100	103		2.51
	Total-P	106	109	107		1.37
SM 2320 B-2011	Total Alkalinity	100			0.722	
	Total Alkalinity	98.4			0.145	
SM 2540 C-2011	TDS				7.89	
SM 4500-F- C-2011	Fluoride	102	97.8	98.5		0.470
	Fluoride	101	98.5	98.5		0.0
SM 5310 B-2011	Organic Carbon	96.6	91.2	89.3		1.65
	Organic Carbon	96.0	97.1	98.7		1.21

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2353863
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2353859, 2353860, 2353863
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2353875, 2353876, 2353877
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2353875, 2353876, 2353877
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2353863
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2353863
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2353861, 2353862, 2353864
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2353861, 2353862, 2353864
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2353861, 2353862, 2353864
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2353861, 2353862, 2353864
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2353859, 2353860, 2353863
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2353877
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2353863
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2353859, 2353860, 2353863
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2353859, 2353860, 2353863
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2353861, 2353862, 2353864

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	09/01/2022			09/02/2022 14:45	Blanca Fach	2353863
EPA 180.1 Rev. 2.0	09/01/2022			09/02/2022 11:23	Chandler E Cox	2353859
	09/01/2022			09/02/2022 11:25	Chandler E Cox	2353860
	09/01/2022			09/02/2022 11:26	Chandler E Cox	2353863
EPA 200.7 Rev. 4.4	09/01/2022	09/07/2022 09:55	Megan Whitefoot	09/07/2022 19:19	McKinley C Carter	2353877
	09/01/2022	09/09/2022 10:00	Megan Whitefoot	09/21/2022 15:24	McKinley C Carter	2353875
	09/01/2022	09/09/2022 10:00	Megan Whitefoot	09/21/2022 15:32	McKinley C Carter	2353875
	09/01/2022	09/09/2022 10:00	Megan Whitefoot	09/21/2022 15:40	McKinley C Carter	2353876
	09/01/2022	09/09/2022 10:00	Megan Whitefoot	09/21/2022 16:40	McKinley C Carter	2353876
EPA 200.8 Rev. 5.4	09/01/2022	09/07/2022 09:55	Megan Whitefoot	09/07/2022 18:29	Megan Whitefoot	2353877
	09/01/2022	09/07/2022 09:55	Megan Whitefoot	09/09/2022 19:28	Emily M Philpot	2353877
	09/01/2022	09/09/2022 10:00	Megan Whitefoot	09/12/2022 00:51	Emily M Philpot	2353875
	09/01/2022	09/09/2022 10:00	Megan Whitefoot	09/12/2022 01:30	Emily M Philpot	2353876
	09/01/2022	09/09/2022 10:00	Megan Whitefoot	09/12/2022 17:49	Emily M Philpot	2353875
	09/01/2022	09/09/2022 10:00	Megan Whitefoot	09/12/2022 18:02	Emily M Philpot	2353876
EPA 300.0 Rev. 2.1	09/01/2022			09/14/2022 21:23	Anna M. Plaviak	2353863
EPA 350.1 Rev. 2.0	09/01/2022			09/06/2022 13:08	Ping Hua	2353864
	09/01/2022			09/07/2022 12:08	Ping Hua	2353861
	09/01/2022			09/07/2022 12:09	Ping Hua	2353862
EPA 351.2 Rev. 2.0	09/01/2022	09/06/2022 14:30	Alexandra J Mattheus	09/07/2022 12:29	Alexandra J Mattheus	2353861
	09/01/2022	09/06/2022 14:30	Alexandra J Mattheus	09/07/2022 12:38	Alexandra J Mattheus	2353862
	09/01/2022	09/08/2022 10:30	Alexandra J Mattheus	09/09/2022 09:51	Alexandra J Mattheus	2353864
EPA 353.2 Rev. 2.0	09/01/2022			09/08/2022 11:09	Beverly Y. Sanders	2353864
	09/01/2022			09/08/2022 15:34	Touraj Touran	2353861
	09/01/2022			09/08/2022 15:35	Touraj Touran	2353862
EPA 365.1 Rev. 2.0	09/01/2022	09/08/2022 16:33	Adam P Silver	09/09/2022 14:03	James L Waggeberby	2353861
	09/01/2022	09/08/2022 16:33	Adam P Silver	09/09/2022 14:04	James L Waggeberby	2353862
	09/01/2022	09/08/2022 16:33	Adam P Silver	09/09/2022 14:23	James L Waggeberby	2353864
SM 2320 B-2011	09/01/2022			09/08/2022 02:47	Adam P Silver	2353859
	09/01/2022			09/08/2022 02:58	Adam P Silver	2353860
	09/01/2022			09/12/2022 01:04	Dale L. Simmons	2353863
SM 2340 B-2011	09/01/2022			09/07/2022 19:19	McKinley C Carter	2353877
SM 2540 C-2011	09/01/2022			09/07/2022 13:56	Yijie Li	2353863
SM 2540 D-2011	09/01/2022			09/07/2022 13:56	Yijie Li	2353859, 2353860, 2353863
SM 4500-F- C-2011	09/01/2022			09/08/2022 00:15	Adam P Silver	2353860
	09/01/2022			09/08/2022 00:25	Adam P Silver	2353859
	09/01/2022			09/09/2022 16:26	Dale L. Simmons	2353863
SM 5310 B-2011	09/01/2022			09/07/2022 05:00	Khloe J Berg	2353861
	09/01/2022			09/07/2022 05:15	Khloe J Berg	2353862
	09/01/2022			09/08/2022 17:03	Khloe J Berg	2353864