Chemical Analysis Report

SO-DIST-2023-01-12-01

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

Event Description: **2023 SMP : Myakka Cricks**
Request ID: **RQ-2023-01-09-41**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 314
Fort Myers, FL 33901-3381
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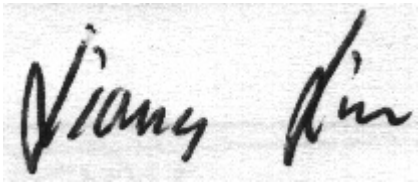
Date Certified: 07-FEB-2023 11:21



Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Metals and Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Little Alligator Creek @ Midway Blvd. **Collection Date/Time: 01/11/2023 08:45**

Field ID: G3SD0071 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2380481	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P424500	
	SM 2320 B-2011	Total Alkalinity	143		mg CaCO3/L	P424907	
	SM 2540 D-2015	TSS	6	I	mg/L	P424829	
	SM 4500-F- C-2011	Fluoride	0.84	J	mg F/L	P425320	LCS
2380483	EPA 350.1 Rev. 2.0	Ammonia-N	0.040		mg N/L	P425100	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56		mg N/L	P424549	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.019		mg N/L	P424900	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P424648	
	SM 5310 B-2011	Organic Carbon	8.1		mg C/L	P424636	
2380494	EPA 200.7 Rev. 4.4	Calcium	248		mg/L	P424584	
		Iron	100	I	ug/L	P424584	
		Magnesium	614		mg/L	P424584	
		Strontium	5.07E+03		ug/L	P424584	
		Tin	60	U	ug/L	P424584	
		Titanium	2.2	U	ug/L	P424584	
		Vanadium	6.0	U	ug/L	P424584	
		Zinc	15	U	ug/L	P424584	
	EPA 200.8 Rev. 5.4	Aluminum	73	I	ug/L	P424584	
		Antimony	0.26	I	ug/L	P424584	
		Arsenic	2.21		ug/L	P424584	
		Beryllium	0.040	U	ug/L	P424584	
		Cadmium	0.080	U	ug/L	P424584	
		Chromium	1.6	U	ug/L	P424584	
		Cobalt	0.39	I	ug/L	P424584	
		Copper	1.6	U	ug/L	P424584	
		Lead	2.0	U	ug/L	P424584	
		Manganese	10.5		ug/L	P424584	
		Molybdenum	7.3		ug/L	P424584	
		Nickel	2.0	U	ug/L	P424584	
		Selenium	0.80	U	ug/L	P424584	
		Silver	0.040	U	ug/L	P424584	
		Thallium	0.40	U	ug/L	P424584	

Ref. Method and Comment:
SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 4500-F- C-2011: Refer to the Lab Analysis Report for an explanation of QC Codes.
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. Precision data and spike recoveries for tin are unavailable because sample matrix interference necessitated a high dilution.

Sample Location: Rock Creek @ Eisenhower Dr. **Collection Date/Time: 01/11/2023 09:30**

Field ID: G3SD0070 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2380482	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P424500	
	SM 2320 B-2011	Total Alkalinity	105		mg CaCO3/L	P424907	
	SM 2540 D-2015	TSS	6	I	mg/L	P424828	
	SM 4500-F- C-2011	Fluoride	0.50	J	mg F/L	P425320	LCS
2380484	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P425100	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P424549	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.014		mg N/L	P424900	
	EPA 365.1 Rev. 2.0	Total-P	0.19		mg P/L	P424648	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P424635	
2380495	EPA 200.7 Rev. 4.4	Calcium	145		mg/L	P424584	
		Iron	210	I	ug/L	P424584	
		Magnesium	294		mg/L	P424584	
		Strontium	3.72E+03		ug/L	P424584	
		Tin	9.0	U	ug/L	P424584	
		Titanium	2.2	U	ug/L	P424584	
		Vanadium	6.0	U	ug/L	P424584	
		Zinc	15	U	ug/L	P424584	
	EPA 200.8 Rev. 5.4	Aluminum	145		ug/L	P424584	
		Antimony	0.20	U	ug/L	P424584	
		Arsenic	1.88		ug/L	P424584	
		Beryllium	0.040	U	ug/L	P424584	
		Cadmium	0.080	U	ug/L	P424584	
		Chromium	1.6	U	ug/L	P424584	
		Cobalt	0.20	U	ug/L	P424584	
		Copper	1.6	U	ug/L	P424584	
		Lead	0.80	U	ug/L	P424584	
		Manganese	10.1		ug/L	P424584	
		Molybdenum	3.6		ug/L	P424584	
		Nickel	2.0	U	ug/L	P424584	
		Selenium	0.80	U	ug/L	P424584	
		Silver	0.040	U	ug/L	P424584	
		Thallium	0.40	U	ug/L	P424584	

Ref. Method and Comment:
SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 4500-F- C-2011: Refer to the Lab Analysis Report for an explanation of QC Codes.
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. Precision data and spike recoveries for tin are unavailable because sample matrix interference necessitated a high dilution.

Sample Location: Myakka River (Tidal) @ US 41 **Collection Date/Time: 01/11/2023 10:00**

Field ID: G3SD0068 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2380485	EPA 180.1 Rev. 2.0	Turbidity	3.1		NTU	P424500	
	SM 2320 B-2011	Total Alkalinity	68		mg CaCO3/L	P424907	
	SM 2540 D-2015	TSS	5	I	mg/L	P424828	
	SM 4500-F- C-2011	Fluoride	0.24		mg F/L	P425318	
2380486	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P425102	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.94		mg N/L	P424681	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P424839	
	EPA 365.1 Rev. 2.0	Total-P	0.22		mg P/L	P424649	
	SM 5310 B-2011	Organic Carbon	19		mg C/L	P424635	

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: Big Slough Canal **Collection Date/Time: 01/11/2023 10:25**

Field ID: G3SD0161 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2380496	EPA 200.7 Rev. 4.4	Calcium	104		mg/L	P424544	
		Cobalt	1.0	U	ug/L	P424544	
		Iron	740		ug/L	P424544	
		Magnesium	17.9		mg/L	P424544	
		Manganese	11.9		ug/L	P424544	
		Strontium	2.25E+03		ug/L	P424544	
		Tin	3.0	U	ug/L	P424544	
		Titanium	1.1	I	ug/L	P424544	
		Vanadium	2.0	U	ug/L	P424544	
		Zinc	5.0	U	ug/L	P424544	
	EPA 200.8 Rev. 5.4	Aluminum	93		ug/L	P424544	
		Antimony	0.15	I	ug/L	P424544	
		Arsenic	1.41		ug/L	P424544	
		Beryllium	0.013	I	ug/L	P424544	
		Cadmium	0.020	U	ug/L	P424544	
		Chromium	0.68	I	ug/L	P424544	
		Copper	0.63	I	ug/L	P424544	
		Lead	0.20	U	ug/L	P424544	
		Molybdenum	2.84		ug/L	P424544	
		Nickel	1.0	I	ug/L	P424544	
		Selenium	0.36	I	ug/L	P424544	
		Silver	0.010	U	ug/L	P424544	
		Thallium	0.10	U	ug/L	P424544	

Sample Location: Big Slough @ Butler Park **Collection Date/Time: 01/11/2023 10:50**

Field ID: G3SD0168 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2380497	EPA 200.7 Rev. 4.4	Calcium	80.2		mg/L	P424544	
		Cobalt	1.0	U	ug/L	P424544	
		Iron	790		ug/L	P424544	
		Magnesium	18.3		mg/L	P424544	
		Manganese	16.8		ug/L	P424544	
		Potassium	5.1		mg/L	P424544	
		Sodium	34.9		mg/L	P424544	
		Strontium	1.18E+03		ug/L	P424544	
		Tin	3.0	U	ug/L	P424544	
		Titanium	0.87	I	ug/L	P424544	
		Vanadium	2.0	U	ug/L	P424544	
		Zinc	5.0	U	ug/L	P424544	
	EPA 200.8 Rev. 5.4	Aluminum	47		ug/L	P424544	
		Antimony	0.070	I	ug/L	P424544	
		Arsenic	1.32		ug/L	P424544	
		Barium	14.9		ug/L	P424544	
		Beryllium	0.013	I	ug/L	P424544	
		Boron	41.9		ug/L	P424544	
		Cadmium	0.020	U	ug/L	P424544	
		Chromium	0.62	I	ug/L	P424544	
		Copper	0.45	I	ug/L	P424544	
		Lead	0.20	U	ug/L	P424544	
		Molybdenum	1.25		ug/L	P424544	
		Nickel	0.89	I	ug/L	P424544	
		Selenium	0.20	U	ug/L	P424544	
		Silver	0.010	U	ug/L	P424544	
		Thallium	0.10	U	ug/L	P424544	
	SM 2340 B-2011	Hardness	275		mg/L	P424544	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P424500

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P424544

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Cobalt	1.0	U	ug/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/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: P424584

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: P424544

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
Copper	0.40	U	ug/L
Lead	0.20	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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P424584

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 350.1 Rev. 2.0
Batch ID: P425100

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425102

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424549

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424681

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424839

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424900

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424648

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424649

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

Reference Method: SM 2320 B-2011
Batch ID: P424907

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

Reference Method: SM 2540 D-2015
Batch ID: P424828

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P424829

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P425318

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 4500-F- C-2011
Batch ID: P425320

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P424635

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

Reference Method: SM 5310 B-2011
Batch ID: P424636

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P424500

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P424544

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Cobalt	105		P	85 - 115
Iron	101		P	85 - 115
Magnesium	101		P	85 - 115
Manganese	105		P	85 - 115
Potassium	104		P	85 - 115
Sodium	109		P	85 - 115
Strontium	103		P	85 - 115
Tin	103		P	85 - 115
Titanium	103		P	85 - 115
Vanadium	102		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P424584

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	102		P	85 - 115
Iron	102		P	85 - 115
Magnesium	100		P	85 - 115
Strontium	103		P	85 - 115
Tin	104		P	85 - 115
Titanium	103		P	85 - 115
Vanadium	103		P	85 - 115
Zinc	107		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P424544

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	96.4		P	85 - 115
Antimony	103		P	85 - 115
Arsenic	100		P	85 - 115
Barium	102		P	85 - 115
Beryllium	92.7		P	85 - 115
Boron	103		P	85 - 115
Cadmium	104		P	85 - 115
Chromium	95.4		P	85 - 115
Copper	95.8		P	85 - 115
Lead	93.5		P	85 - 115
Molybdenum	99.1		P	85 - 115
Nickel	97.3		P	85 - 115
Selenium	99.9		P	85 - 115
Silver	101		P	85 - 115
Thallium	103		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P424584

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	98.9		P	85 - 115
Antimony	96.9		P	85 - 115
Arsenic	97.9		P	85 - 115
Beryllium	88.8		P	85 - 115
Cadmium	98.9		P	85 - 115
Chromium	94.0		P	85 - 115
Cobalt	97.4		P	85 - 115
Copper	97.4		P	85 - 115
Lead	91.4		P	85 - 115
Manganese	95.3		P	85 - 115
Molybdenum	96.1		P	85 - 115
Nickel	99.4		P	85 - 115
Selenium	97.6		P	85 - 115
Silver	96.5		P	85 - 115
Thallium	97.8		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425100

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425102

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: P424549

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424681

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424839

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424900

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424648

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424649

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

Reference Method: SM 2320 B-2011
Batch ID: P424907

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	94.8		P	94 - 106

Reference Method: SM 2540 D-2015
Batch ID: P424828

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	94.8		P	85 - 106

Reference Method: SM 2540 D-2015
Batch ID: P424829

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	96.0		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P425318

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.6		P	96 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P425320

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.8		F	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P424635

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.1		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P424636

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.6		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P424544

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380343	Calcium	100	103	P/P	80 - 120
2380343	Cobalt	106	105	P/P	80 - 120
2380343	Iron	99.0	103	P/P	80 - 120
2380343	Magnesium	100	103	P/P	80 - 120
2380343	Manganese	106	105	P/P	80 - 120
2380343	Potassium	100	104	P/P	80 - 120
2380343	Sodium	101	103	P/P	80 - 120
2380343	Strontium	104	105	P/P	80 - 120
2380343	Tin	105	102	P/P	80 - 120
2380343	Titanium	103	102	P/P	80 - 120
2380343	Vanadium	103	102	P/P	80 - 120
2380343	Zinc	105	105	P/P	80 - 120
2380347	Calcium	102		P	80 - 120
2380347	Cobalt	105		P	80 - 120
2380347	Iron	101		P	80 - 120
2380347	Magnesium	100		P	80 - 120
2380347	Manganese	104		P	80 - 120
2380347	Potassium	103		P	80 - 120
2380347	Sodium	103		P	80 - 120
2380347	Strontium	103		P	80 - 120
2380347	Tin	103		P	80 - 120
2380347	Titanium	102		P	80 - 120
2380347	Vanadium	102		P	80 - 120
2380347	Zinc	104		P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P424584

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2379389	Iron	104	101	P/P	80 - 120
2379389	Titanium	109	108	P/P	80 - 120
2379389	Vanadium	106	104	P/P	80 - 120
2379389	Zinc	108	105	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P424544

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380343	Aluminum	98.0	97.1	P/P	80 - 120
2380343	Antimony	101	102	P/P	80 - 120
2380343	Arsenic	102	102	P/P	80 - 120
2380343	Barium	102	102	P/P	80 - 120
2380343	Beryllium	93.2	93.3	P/P	80 - 120
2380343	Boron	103	103	P/P	80 - 120
2380343	Cadmium	106	104	P/P	80 - 120
2380343	Chromium	95.6	97.0	P/P	80 - 120
2380343	Copper	100	100	P/P	80 - 120
2380343	Lead	95.1	95.8	P/P	80 - 120
2380343	Molybdenum	99.6	101	P/P	80 - 120
2380343	Nickel	100	103	P/P	80 - 120
2380343	Selenium	102	104	P/P	80 - 120
2380343	Silver	100	100	P/P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P424544

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380343	Thallium	103	105	P/P	80 - 120
2380347	Aluminum	93.8		P	80 - 120
2380347	Antimony	102		P	80 - 120
2380347	Arsenic	101		P	80 - 120
2380347	Barium	103		P	80 - 120
2380347	Beryllium	91.8		P	80 - 120
2380347	Boron	107		P	80 - 120
2380347	Cadmium	105		P	80 - 120
2380347	Chromium	96.1		P	80 - 120
2380347	Copper	99.9		P	80 - 120
2380347	Lead	95.4		P	80 - 120
2380347	Molybdenum	102		P	80 - 120
2380347	Nickel	96.9		P	80 - 120
2380347	Selenium	102		P	80 - 120
2380347	Silver	102		P	80 - 120
2380347	Thallium	104		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P424584

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2379389	Aluminum	97.6	99.3	P/P	70 - 130
2379389	Antimony	98.6	102	P/P	70 - 130
2379389	Arsenic	102	111	P/P	70 - 130
2379389	Beryllium	99.1	99.1	P/P	70 - 130
2379389	Cadmium	98.8	101	P/P	70 - 130
2379389	Chromium	90.2	91.7	P/P	70 - 130
2379389	Cobalt	99.7	102	P/P	70 - 130
2379389	Copper	104	108	P/P	70 - 130
2379389	Lead	98.9	100	P/P	70 - 130
2379389	Manganese	80.3	93.0	P/P	70 - 130
2379389	Molybdenum	101	107	P/P	70 - 130
2379389	Nickel	89.7	111	P/P	70 - 130
2379389	Selenium	102	106	P/P	70 - 130
2379389	Silver	89.5	92.0	P/P	70 - 130
2379389	Thallium	100	104	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425100

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380314	Ammonia-N	105	108	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425102

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2379640	Ammonia-N	98.0	98.2	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424549

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380136	Kjeldahl Nitrogen	98.6	98.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424681

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380857	Kjeldahl Nitrogen	97.3	93.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424839

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380470	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424900

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380483	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424648

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380483	Total-P	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424649

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380408	Total-P	106	105	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P425318

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2381058	Fluoride	98.5	99.3	P/P	94 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P425320

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380071	Fluoride	100	100	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P424635

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380760	Organic Carbon	94.2	96.8	P/P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P424636

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380818	Organic Carbon	97.3	95.4	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P424500

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380467	Turbidity	3.43	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P424544

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380343	Calcium	2.64	Spike	P	0 - 20
2380343	Cobalt	0.806	Spike	P	0 - 20
2380343	Iron	3.32	Spike	P	0 - 20
2380343	Magnesium	2.05	Spike	P	0 - 20
2380343	Manganese	0.535	Spike	P	0 - 20
2380343	Potassium	2.86	Spike	P	0 - 20
2380343	Sodium	1.25	Spike	P	0 - 20
2380343	Strontium	1.15	Spike	P	0 - 20
2380343	Tin	2.54	Spike	P	0 - 20
2380343	Titanium	0.631	Spike	P	0 - 20
2380343	Vanadium	0.362	Spike	P	0 - 20
2380343	Zinc	0.383	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P424584

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2379389	Calcium	1.69	Spike	P	0 - 20
2379389	Iron	1.57	Spike	P	0 - 20
2379389	Magnesium	0.578	Spike	P	0 - 20
2379389	Strontium	2.99	Spike	P	0 - 20
2379389	Titanium	1.48	Spike	P	0 - 20
2379389	Vanadium	1.64	Spike	P	0 - 20
2379389	Zinc	2.21	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P424544

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380343	Aluminum	0.806	Spike	P	0 - 20
2380343	Antimony	1.10	Spike	P	0 - 20
2380343	Arsenic	0.128	Spike	P	0 - 20
2380343	Barium	0.0815	Spike	P	0 - 20
2380343	Beryllium	0.115	Spike	P	0 - 20
2380343	Boron	0.135	Spike	P	0 - 20
2380343	Cadmium	2.17	Spike	P	0 - 20
2380343	Chromium	1.37	Spike	P	0 - 20
2380343	Copper	0.0869	Spike	P	0 - 20
2380343	Lead	0.768	Spike	P	0 - 20
2380343	Molybdenum	1.36	Spike	P	0 - 20
2380343	Nickel	2.32	Spike	P	0 - 20
2380343	Selenium	1.85	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P424544

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380343	Silver	0.0548	Spike	P	0 - 20
2380343	Thallium	1.32	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P424584

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2379389	Aluminum	1.46	Spike	P	0 - 20
2379389	Antimony	3.22	Spike	P	0 - 20
2379389	Arsenic	4.21	Spike	P	0 - 20
2379389	Beryllium	0.0258	Spike	P	0 - 20
2379389	Cadmium	1.78	Spike	P	0 - 20
2379389	Chromium	1.52	Spike	P	0 - 20
2379389	Cobalt	1.13	Spike	P	0 - 20
2379389	Copper	3.93	Spike	P	0 - 20
2379389	Lead	1.31	Spike	P	0 - 20
2379389	Manganese	3.61	Spike	P	0 - 20
2379389	Molybdenum	4.52	Spike	P	0 - 20
2379389	Nickel	4.14	Spike	P	0 - 20
2379389	Selenium	3.48	Spike	P	0 - 20
2379389	Silver	2.72	Spike	P	0 - 20
2379389	Thallium	4.17	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425100

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380314	Ammonia-N	1.53	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425102

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2379640	Ammonia-N	0.173	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424549

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380136	Kjeldahl Nitrogen	0.135	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424681

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380857	Kjeldahl Nitrogen	2.39	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424839

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380470	NO2NO3-N	1.39	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P424900

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380483	NO2NO3-N	0.904	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424648

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380483	Total-P	0.436	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424649

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380408	Total-P	1.11	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P424907

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380737	Total Alkalinity	2.19	Sample	P	0 - 3.8

Reference Method: SM 4500-F- C-2011
Batch ID: P425318

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2381058	Fluoride	0.483	Spike	P	0 - 1.6

Reference Method: SM 4500-F- C-2011
Batch ID: P425320

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380071	Fluoride	0.0	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P424635

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380760	Organic Carbon	2.20	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 5310 B-2011
Batch ID: P424636

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380818	Organic Carbon	1.42	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: A116882
Included Lab Sample IDs: 2380481, 2380482, 2380485

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

Reference Method: SM 5310 B-2011
Run ID: A116931
Included Lab Sample IDs: 2380483, 2380484, 2380486

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.4	98.6	P/P	90 - 110
Organic Carbon	98.2	91.4	P/P	90 - 110
Organic Carbon	98.6	93.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A116970
Included Lab Sample IDs: 2380483, 2380484, 2380486

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	100	P/P	90 - 110
Total-P	101	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A116980
Included Lab Sample IDs: 2380486

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A117001
Included Lab Sample IDs: 2380483, 2380484

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.3	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A117017
Included Lab Sample IDs: 2380486

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	104	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A117025
Included Lab Sample IDs: 2380494, 2380495

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	96.2	98.0	P/P	90 - 110
Arsenic	99.1	101	P/P	90 - 110
Cadmium	97.0	97.8	P/P	90 - 110
Chromium	92.6	94.7	P/P	90 - 110
Cobalt	96.9	96.7	P/P	90 - 110
Copper	98.7	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A117025
Included Lab Sample IDs: 2380494, 2380495

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Manganese	95.4	96.9	P/P	90 - 110
Molybdenum	95.6	96.3	P/P	90 - 110
Nickel	99.8	103	P/P	90 - 110
Selenium	98.8	100	P/P	90 - 110
Silver	96.9	98.4	P/P	90 - 110
Thallium	96.7	97.0	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A117048
Included Lab Sample IDs: 2380494, 2380495, 2380496, 2380497

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	101	P/P	90 - 110
Calcium	101	102	P/P	90 - 110
Cobalt	106	104	P/P	90 - 110
Iron	101	100	P/P	90 - 110
Iron	101	99.4	P/P	90 - 110
Magnesium	100	98.9	P/P	90 - 110
Magnesium	99.7	99.4	P/P	90 - 110
Manganese	104	104	P/P	90 - 110
Potassium	105	104	P/P	90 - 110
Sodium	104	104	P/P	90 - 110
Strontium	101	101	P/P	90 - 110
Strontium	102	102	P/P	90 - 110
Tin	101	102	P/P	90 - 110
Tin	105	102	P/P	90 - 110
Titanium	102	101	P/P	90 - 110
Titanium	99.1	101	P/P	90 - 110
Vanadium	101	100	P/P	90 - 110
Vanadium	98.6	100	P/P	90 - 110
Zinc	103	104	P/P	90 - 110
Zinc	108	105	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A117052
Included Lab Sample IDs: 2380494, 2380495

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	102	P/P	90 - 110
Beryllium	96.6	97.7	P/P	90 - 110
Lead	93.3	93.3	P/P	90 - 110
Lead	93.9	93.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A117060
Included Lab Sample IDs: 2380483, 2380484

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-2011
Run ID: A117062
Included Lab Sample IDs: 2380481, 2380482, 2380485

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	94.5	95.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A117087
Included Lab Sample IDs: 2380496, 2380497

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	101	101	P/P	90 - 110
Arsenic	98.9	98.4	P/P	90 - 110
Barium	99.1	100	P/P	90 - 110
Beryllium	93.7	95.0	P/P	90 - 110
Boron	100	103	P/P	90 - 110
Cadmium	103	102	P/P	90 - 110
Chromium	93.4	94.8	P/P	90 - 110
Copper	95.4	95.3	P/P	90 - 110
Lead	92.4	92.4	P/P	90 - 110
Molybdenum	98.6	99.4	P/P	90 - 110
Nickel	95.1	95.1	P/P	90 - 110
Selenium	101	102	P/P	90 - 110
Silver	102	101	P/P	90 - 110
Thallium	101	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A117140
Included Lab Sample IDs: 2380483, 2380484, 2380486

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.7	98.2	P/P	90 - 110
Ammonia-N	99.6	97.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A117152
Included Lab Sample IDs: 2380496, 2380497

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	93.0	93.6	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A117235
Included Lab Sample IDs: 2380481, 2380482, 2380485

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

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity	100					3.43	
EPA 200.7 Rev. 4.4	Calcium	103	100	103	102			2.64
	Calcium	102						1.69
	Cobalt	105	106	105	105			0.806
	Iron	101	99.0	103	101			3.32
	Iron	102	104	101				1.57
	Magnesium	101	100	103	100			2.05
	Magnesium	100						0.578
	Manganese	105	106	105	104			0.535
	Potassium	104	100	104	103			2.86
	Sodium	109	101	103	103			1.25
	Strontium	103	104	105	103			1.15
	Strontium	103						2.99
	Tin	103	105	102	103			2.54
	Tin	104						
	Titanium	103	103	102	102			0.631
	Titanium	103	109	108				1.48
	Vanadium	102	103	102	102			0.362
	Vanadium	103	106	104				1.64
	Zinc	104	105	105	104			0.383
	Zinc	107	108	105				2.21
EPA 200.8 Rev. 5.4	Aluminum	96.4	98.0	97.1	93.8			0.806
	Aluminum	98.9	97.6	99.3				1.46
	Antimony	103	101	102	102			1.10
	Antimony	96.9	98.6	102				3.22
	Arsenic	100	102	102	101			0.128
	Arsenic	97.9	102	111				4.21
	Barium	102	102	102	103			0.0815
	Beryllium	92.7	93.2	93.3	91.8			0.115
	Beryllium	88.8	99.1	99.1				0.0258
	Boron	103	103	103	107			0.135
	Cadmium	104	106	104	105			2.17
	Cadmium	98.9	98.8	101				1.78
	Chromium	95.4	95.6	97.0	96.1			1.37
	Chromium	94.0	90.2	91.7				1.52
	Cobalt	97.4	99.7	102				1.13
	Copper	95.8	100	100	99.9			0.0869
	Copper	97.4	104	108				3.93
	Lead	93.5	95.1	95.8	95.4			0.768
	Lead	91.4	98.9	100				1.31
	Manganese	95.3	80.3	93.0				3.61
	Molybdenum	99.1	99.6	101	102			1.36
	Molybdenum	96.1	101	107				4.52
	Nickel	97.3	100	103	96.9			2.32
	Nickel	99.4	89.7	111				4.14
	Selenium	99.9	102	104	102			1.85
	Selenium	97.6	102	106				3.48
	Silver	101	100	100	102			0.0548
	Silver	96.5	89.5	92.0				2.72
	Thallium	103	103	105	104			1.32
	Thallium	97.8	100	104				4.17
EPA 350.1 Rev. 2.0	Ammonia-N	99.6	105	108				1.53
	Ammonia-N	98.2	98.0	98.2				0.173
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	98.6	98.4				0.135

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	97.3	93.5			2.39
EPA 353.2 Rev. 2.0	NO2NO3-N	103	103	102			1.39
	NO2NO3-N	100	101	102			0.904
EPA 365.1 Rev. 2.0	Total-P	104	101	101			0.436
	Total-P	105	106	105			1.11
SM 2320 B-2011	Total Alkalinity	94.8				2.19	
SM 2540 D-2015	TSS	94.8					
	TSS	96.0					
SM 4500-F- C-2011	Fluoride	98.6	98.5	99.3			0.483
	Fluoride	94.8	100	100			0.0
SM 5310 B-2011	Organic Carbon	96.1	94.2	96.8			2.20
	Organic Carbon	98.6	97.3	95.4			1.42

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2380481, 2380482, 2380485
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2380494, 2380495, 2380496, 2380497
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2380494, 2380495, 2380496, 2380497
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2380483, 2380484, 2380486
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2380483, 2380484, 2380486
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2380483, 2380484, 2380486
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2380483, 2380484, 2380486
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2380481, 2380482, 2380485
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2380497
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2380481, 2380482, 2380485
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2380481, 2380482, 2380485
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2380483, 2380484, 2380486

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	01/12/2023			01/12/2023 14:09	Anna M. Plaviak	2380481
	01/12/2023			01/12/2023 14:10	Anna M. Plaviak	2380482
	01/12/2023			01/12/2023 14:13	Anna M. Plaviak	2380485
EPA 200.7 Rev. 4.4	01/12/2023	01/13/2023 11:20	George D Taylor	01/24/2023 00:45	McKinley C Carter	2380496
	01/12/2023	01/13/2023 11:20	George D Taylor	01/24/2023 00:52	McKinley C Carter	2380497
	01/12/2023	01/17/2023 10:50	George D Taylor	01/23/2023 18:46	McKinley C Carter	2380494
	01/12/2023	01/17/2023 10:50	George D Taylor	01/23/2023 18:54	McKinley C Carter	2380494
	01/12/2023	01/17/2023 10:50	George D Taylor	01/23/2023 19:01	McKinley C Carter	2380495
EPA 200.8 Rev. 5.4	01/12/2023	01/13/2023 11:20	George D Taylor	01/25/2023 03:48	Emily M Philpot	2380496
	01/12/2023	01/13/2023 11:20	George D Taylor	01/25/2023 03:57	Emily M Philpot	2380497
	01/12/2023	01/13/2023 11:20	George D Taylor	01/27/2023 19:59	Megan Whitefoot	2380496
	01/12/2023	01/13/2023 11:20	George D Taylor	01/27/2023 20:06	Megan Whitefoot	2380497
	01/12/2023	01/17/2023 10:50	George D Taylor	01/20/2023 23:24	Emily M Philpot	2380494
	01/12/2023	01/17/2023 10:50	George D Taylor	01/20/2023 23:33	Emily M Philpot	2380495
	01/12/2023	01/17/2023 10:50	George D Taylor	01/21/2023 01:19	Emily M Philpot	2380494
	01/12/2023	01/17/2023 10:50	George D Taylor	01/21/2023 01:29	Emily M Philpot	2380495
	01/12/2023	01/17/2023 10:50	George D Taylor	01/23/2023 15:49	Emily M Philpot	2380494
	01/12/2023	01/17/2023 10:50	George D Taylor	01/23/2023 17:08	Emily M Philpot	2380494
	01/12/2023	01/17/2023 10:50	George D Taylor	01/23/2023 17:14	Emily M Philpot	2380495
EPA 350.1 Rev. 2.0	01/12/2023			01/27/2023 13:30	Ping Hua	2380483
	01/12/2023			01/27/2023 13:31	Ping Hua	2380484
	01/12/2023			01/27/2023 14:28	Ping Hua	2380486
EPA 351.2 Rev. 2.0	01/12/2023	01/17/2023 13:45	Judith K. Clark	01/20/2023 10:25	Judith K. Clark	2380483
	01/12/2023	01/17/2023 13:45	Judith K. Clark	01/20/2023 10:26	Judith K. Clark	2380484
	01/12/2023	01/19/2023 14:22	Judith K. Clark	01/20/2023 13:47	Judith K. Clark	2380486
EPA 353.2 Rev. 2.0	01/12/2023			01/19/2023 10:16	Beverly Y. Sanders	2380486
	01/12/2023			01/24/2023 10:24	Beverly Y. Sanders	2380483
	01/12/2023			01/24/2023 10:31	Beverly Y. Sanders	2380484
EPA 365.1 Rev. 2.0	01/12/2023	01/18/2023 15:47	Adam P Silver	01/19/2023 09:32	James L Waggerby	2380483
	01/12/2023	01/18/2023 15:47	Adam P Silver	01/19/2023 09:37	James L Waggerby	2380484
	01/12/2023	01/18/2023 15:47	Adam P Silver	01/19/2023 09:59	James L Waggerby	2380486
SM 2320 B-2011	01/12/2023			01/24/2023 07:50	Dale L. Simmons	2380481
	01/12/2023			01/24/2023 08:02	Dale L. Simmons	2380482
	01/12/2023			01/24/2023 08:14	Dale L. Simmons	2380485
SM 2340 B-2011	01/12/2023			01/24/2023 00:52	McKinley C Carter	2380497
SM 2540 D-2015	01/12/2023			01/17/2023 15:22	Yijie Li	2380481, 2380482, 2380485
SM 4500-F- C-2011	01/12/2023			02/02/2023 01:02	Dale L. Simmons	2380485
	01/12/2023			02/02/2023 03:47	Dale L. Simmons	2380482
	01/12/2023			02/02/2023 04:40	Dale L. Simmons	2380481
SM 5310 B-2011	01/12/2023			01/17/2023 16:53	Elise M. Gillis	2380484

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-2011	01/12/2023			01/17/2023 17:50	Elise M. Gillis	2380486
	01/12/2023			01/18/2023 01:34	Elise M. Gillis	2380483