

Chemical Analysis Report

SO-DIST-2023-03-16-01

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

Event Description: **2023 SMP: Continuous Pickup**
Request ID: **RQ-2023-03-06-33**
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
Attn: William Mullen

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

Certified by: Colin Wright, Program Administrator

Date Certified: 04-APR-2023 09:27

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light-colored rectangular 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: CLEVELAND CEMETARY DITCH @ RIVERSIDE RD **Collection Date/Time: 03/15/2023 10:40**

Field ID: G3SD0076

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2394311	EPA 180.1 Rev. 2.0	Turbidity	37		NTU	P427257	
	SM 2320 B-2011	Total Alkalinity	267	A	mg CaCO3/L	P427604	
	SM 2540 D-2015	TSS	28		mg/L	P427594	RPD
	SM 4500-F- C-2011	Fluoride	0.18		mg F/L	P427950	
2394312	EPA 350.1 Rev. 2.0	Ammonia-N	0.64		mg N/L	P427493	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.1		mg N/L	P427790	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.81		mg N/L	P427816	
	EPA 365.1 Rev. 2.0	Total-P	0.31		mg P/L	P427301	
	SM 5310 B-2011	Organic Carbon	22		mg C/L	P427626	
2394317	EPA 200.7 Rev. 4.4	Calcium	152		mg/L	P427303	
		Iron	1.93E+03		ug/L	P427303	
		Magnesium	76.3		mg/L	P427303	
		Strontium	1.19E+03		ug/L	P427303	
	EPA 200.8 Rev. 5.4	Tin	9.0	U	ug/L	P427303	
		Titanium	5.7	I	ug/L	P427303	
		Vanadium	12	I	ug/L	P427303	
		Zinc	15	U	ug/L	P427303	
		Aluminum	2.26E+03		ug/L	P427303	
		Antimony	0.84	I	ug/L	P427303	
		Arsenic	18.4		ug/L	P427303	
		Beryllium	0.10	I	ug/L	P427303	
		Cadmium	0.26	I	ug/L	P427303	
		Chromium	6.6		ug/L	P427303	
		Cobalt	0.36		ug/L	P427303	
		Copper	2.0	I	ug/L	P427303	
		Lead	1.7		ug/L	P427303	
		Manganese	53.4		ug/L	P427303	
		Molybdenum	7.9		ug/L	P427303	
		Nickel	2.0	U	ug/L	P427303	
		Selenium	1.1	I	ug/L	P427303	
		Silver	0.040	U	ug/L	P427303	
		Thallium	0.40	U	ug/L	P427303	

Ref. Method and Comment:

SM 2320 B-2011: The laboratory conductivity was 4220 µmhos/cm.

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.

EPA 200.8 Rev. 5.4: The aluminum result was confirmed in the undigested sample on 03/21/2023.

Sample Location: YuccaFlatswoods Mid

Collection Date/Time: 03/15/2023 11:45

Field ID: G2SD0052

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2394309	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P427257	
	SM 2320 B-2011	Total Alkalinity	147		mg CaCO3/L	P427604	
	SM 2540 D-2015	TSS	3	U	mg/L	P427594	RPD
	SM 4500-F- C-2011	Fluoride	1.2		mg F/L	P427954	
2394310	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P427493	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.69		mg N/L	P427790	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P427699	
	EPA 365.1 Rev. 2.0	Total-P	0.18		mg P/L	P427301	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P427626	

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P427257

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P427303

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: P427303

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: P427493

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P427790

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P427699

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P427816

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P427301

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

Reference Method: SM 2320 B-2011
Batch ID: P427604

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

Reference Method: SM 2540 D-2015
Batch ID: P427594

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P427950

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 4500-F- C-2011
Batch ID: P427954

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P427626

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: P427257

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P427303

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P427303

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	103		P	85 - 115
Antimony	108		P	85 - 115
Arsenic	103		P	85 - 115
Beryllium	93.3		P	85 - 115
Cadmium	105		P	85 - 115
Chromium	103		P	85 - 115
Cobalt	104		P	85 - 115
Copper	101		P	85 - 115
Lead	100		P	85 - 115
Manganese	102		P	85 - 115
Molybdenum	103		P	85 - 115
Nickel	103		P	85 - 115
Selenium	102		P	85 - 115
Silver	105		P	85 - 115
Thallium	105		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P427493

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.4		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P427699

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: P427816

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P427301

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

Reference Method: SM 2320 B-2011
Batch ID: P427604

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.5		P	94 - 106

Reference Method: SM 2540 D-2015
Batch ID: P427594

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	95.3		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P427950

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

Reference Method: SM 4500-F- C-2011
Batch ID: P427954

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

Reference Method: SM 5310 B-2011
Batch ID: P427626

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P427303

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2394376	Iron	107	104	P/P	70 - 130
2394376	Tin	88.9	92.9	P/P	70 - 130
2394376	Titanium	106	106	P/P	70 - 130
2394376	Vanadium	105	104	P/P	70 - 130
2394376	Zinc	99.8	99.6	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P427303

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2394376	Aluminum	108	108	P/P	70 - 130
2394376	Antimony	103	102	P/P	70 - 130
2394376	Arsenic	118	120	P/P	70 - 130
2394376	Beryllium	103	101	P/P	70 - 130
2394376	Cadmium	99.8	103	P/P	70 - 130
2394376	Chromium	102	103	P/P	70 - 130
2394376	Cobalt	119	119	P/P	70 - 130
2394376	Copper	108	108	P/P	70 - 130
2394376	Lead	111	112	P/P	70 - 130
2394376	Manganese	98.5	97.3	P/P	70 - 130
2394376	Molybdenum	121	123	P/P	70 - 130
2394376	Nickel	115	116	P/P	70 - 130
2394376	Selenium	105	106	P/P	70 - 130
2394376	Silver	96.9	98.1	P/P	70 - 130
2394376	Thallium	118	118	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P427493

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2393951	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P427790

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2394310	Kjeldahl Nitrogen	97.2	99.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P427699

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2393782	NO2NO3-N	99.6	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P427816

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2395587	NO2NO3-N	105	104	P/P	90 - 110

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P427301

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2393952	Total-P	97.1	96.8	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P427950

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2396626	Fluoride	102	101	P/P	94 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P427954

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2396528	Fluoride	102	102	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P427626

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2393602	Organic Carbon	89.1	91.5	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P427257

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2394243	Turbidity	3.53	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P427303

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2394376	Calcium	1.64	Spike	P	0 - 20
2394376	Iron	3.08	Spike	P	0 - 20
2394376	Magnesium	1.69	Spike	P	0 - 20
2394376	Strontium	2.86	Spike	P	0 - 20
2394376	Tin	4.36	Spike	P	0 - 20
2394376	Titanium	0.0511	Spike	P	0 - 20
2394376	Vanadium	1.37	Spike	P	0 - 20
2394376	Zinc	0.239	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P427303

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2394376	Aluminum	0.314	Spike	P	0 - 20
2394376	Antimony	0.400	Spike	P	0 - 20
2394376	Arsenic	1.37	Spike	P	0 - 20
2394376	Beryllium	2.59	Spike	P	0 - 20
2394376	Cadmium	2.80	Spike	P	0 - 20
2394376	Chromium	0.993	Spike	P	0 - 20
2394376	Cobalt	0.0631	Spike	P	0 - 20
2394376	Copper	0.404	Spike	P	0 - 20
2394376	Lead	0.715	Spike	P	0 - 20
2394376	Manganese	0.829	Spike	P	0 - 20
2394376	Molybdenum	1.48	Spike	P	0 - 20
2394376	Nickel	1.09	Spike	P	0 - 20
2394376	Selenium	0.971	Spike	P	0 - 20
2394376	Silver	1.22	Spike	P	0 - 20
2394376	Thallium	0.186	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P427493

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2393951	Ammonia-N	0.696	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P427790

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2394310	Kjeldahl Nitrogen	1.96	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P427699

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2393782	NO2NO3-N	0.482	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P427816

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2395587	NO2NO3-N	0.957	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P427301

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2393952	Total-P	0.313	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P427604

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2394311	Total Alkalinity	1.11	Sample	P	0 - 3.8

Reference Method: SM 2540 D-2015
Batch ID: P427594

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2394699	TSS	10.2	Sample	F	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P427950

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2396626	Fluoride	0.476	Spike	P	0 - 1.6

Reference Method: SM 4500-F- C-2011
Batch ID: P427954

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2396528	Fluoride	0.0	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P427626

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2393602	Organic Carbon	2.08	Spike	P	0 - 20

Quality Assurance Report Precision

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A118040

Included Lab Sample IDs: 2394309, 2394311

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A118068

Included Lab Sample IDs: 2394310, 2394312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	102	P/P	90 - 110
Total-P	102	107	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A118086

Included Lab Sample IDs: 2394317

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	105	P/P	90 - 110
Arsenic	105	106	P/P	90 - 110
Beryllium	101	102	P/P	90 - 110
Cadmium	102	102	P/P	90 - 110
Chromium	101	103	P/P	90 - 110
Cobalt	104	105	P/P	90 - 110
Copper	103	104	P/P	90 - 110
Lead	98.8	99.9	P/P	90 - 110
Manganese	100	102	P/P	90 - 110
Molybdenum	102	103	P/P	90 - 110
Nickel	104	105	P/P	90 - 110
Selenium	103	105	P/P	90 - 110
Silver	104	104	P/P	90 - 110
Thallium	103	104	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A118132

Included Lab Sample IDs: 2394317

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	98.8	97.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A118136

Included Lab Sample IDs: 2394310, 2394312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.4	98.8	P/P	90 - 110
Ammonia-N	98.6	98.8	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A118170

Included Lab Sample IDs: 2394309, 2394311

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	94.4	97.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-2011

Run ID: A118179

Included Lab Sample IDs: 2394310, 2394312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.0	95.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A118209

Included Lab Sample IDs: 2394310

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	103	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A118244

Included Lab Sample IDs: 2394317

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	106	105	P/P	90 - 110
Iron	106	106	P/P	90 - 110
Magnesium	105	106	P/P	90 - 110
Strontium	99.1	101	P/P	90 - 110
Tin	103	102	P/P	90 - 110
Titanium	102	103	P/P	90 - 110
Vanadium	103	103	P/P	90 - 110
Zinc	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A118262

Included Lab Sample IDs: 2394312

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A118319

Included Lab Sample IDs: 2394310, 2394312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	91.4	92.3	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A118331

Included Lab Sample IDs: 2394309, 2394311

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	104	104	P/P	90 - 110
Fluoride	104	104	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
EPA 180.1 Rev. 2.0	Turbidity	100				3.53
EPA 200.7 Rev. 4.4	Calcium	106				1.64
	Iron	107	107	104		3.08
	Magnesium	104				1.69
	Strontium	100				2.86
	Tin	106	88.9	92.9		4.36
	Titanium	104	106	106		0.0511
	Vanadium	103	105	104		1.37
	Zinc	104	99.8	99.6		0.239
EPA 200.8 Rev. 5.4	Aluminum	103	108	108		0.314
	Antimony	108	103	102		0.400
	Arsenic	103	118	120		1.37
	Beryllium	93.3	103	101		2.59
	Cadmium	105	99.8	103		2.80
	Chromium	103	102	103		0.993
	Cobalt	104	119	119		0.0631
	Copper	101	108	108		0.404
	Lead	100	111	112		0.715
	Manganese	102	98.5	97.3		0.829
	Molybdenum	103	121	123		1.48
	Nickel	103	115	116		1.09
	Selenium	102	105	106		0.971
	Silver	105	96.9	98.1		1.22
	Thallium	105	118	118		0.186
EPA 350.1 Rev. 2.0	Ammonia-N	95.4	102	103		0.696
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen		97.2	99.5		1.96
EPA 353.2 Rev. 2.0	NO2NO3-N	103	99.6	99.2		0.482
	NO2NO3-N	103	105	104		0.957
EPA 365.1 Rev. 2.0	Total-P	101	97.1	96.8		0.313
SM 2320 B-2011	Total Alkalinity	98.5				1.11
SM 2540 D-2015	TSS	95.3				10.2
SM 4500-F- C-2011	Fluoride	101	102	101		0.476
	Fluoride	101	102	102		0.0
SM 5310 B-2011	Organic Carbon	97.4	89.1	91.5		2.08

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2394309, 2394311
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2394317
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2394317
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2394310, 2394312
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2394310, 2394312
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2394310, 2394312
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2394310, 2394312
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2394309, 2394311
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2394309, 2394311
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2394309, 2394311
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2394310, 2394312

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	03/16/2023			03/16/2023 13:24	Chandler E Cox	2394309
	03/16/2023			03/16/2023 13:25	Chandler E Cox	2394311
EPA 200.7 Rev. 4.4	03/16/2023	03/17/2023 12:20	George D Taylor	03/28/2023 22:26	McKinley C Carter	2394317
EPA 200.8 Rev. 5.4	03/16/2023	03/17/2023 12:20	George D Taylor	03/20/2023 18:03	Emily M Philpot	2394317
	03/16/2023	03/17/2023 12:20	George D Taylor	03/21/2023 19:40	Emily M Philpot	2394317
EPA 350.1 Rev. 2.0	03/16/2023			03/22/2023 12:01	Khloe J Berg	2394310
	03/16/2023			03/22/2023 14:31	Khloe J Berg	2394312
EPA 351.2 Rev. 2.0	03/16/2023	03/29/2023 15:39	Simonne.V. Calhoun	03/31/2023 11:22	Judith K. Clark	2394310
	03/16/2023	03/29/2023 15:39	Simonne.V. Calhoun	03/31/2023 11:27	Judith K. Clark	2394312
EPA 353.2 Rev. 2.0	03/16/2023			03/27/2023 11:44	Beverly Y. Sanders	2394310
	03/16/2023			03/29/2023 10:35	Beverly Y. Sanders	2394312
EPA 365.1 Rev. 2.0	03/16/2023	03/17/2023 15:18	Adam P Silver	03/17/2023 18:27	James L Waggeberby	2394310
	03/16/2023	03/17/2023 15:18	Adam P Silver	03/17/2023 18:30	James L Waggeberby	2394312
SM 2320 B-2011	03/16/2023			03/24/2023 05:41	Chandler E Cox	2394311
	03/16/2023			03/24/2023 06:50	Chandler E Cox	2394309
SM 2540 D-2015	03/16/2023			03/21/2023 16:04	Yijie Li	2394309, 2394311
SM 4500-F- C-2011	03/16/2023			03/31/2023 22:02	Dale L. Simmons	2394311
	03/16/2023			04/01/2023 00:22	Dale L. Simmons	2394309
SM 5310 B-2011	03/16/2023			03/24/2023 01:02	Elise M. Gillis	2394310
	03/16/2023			03/24/2023 01:22	Elise M. Gillis	2394312