

Chemical Analysis Report

SO-DIST-2023-05-18-02

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

Event Description: **2023 SMP: Continuous Pickup**
Request ID: **RQ-2023-05-08-45**
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

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

Date Certified: 09-JUN-2023 13:16

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

Case Narrative

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

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

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

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

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

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

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

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

Precision is reported as relative percent difference unless otherwise noted.

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

QC Codes used in this report may include:

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

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

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

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

Sample Location: CLEVELAND CEMETARY DITCH AT RIVERSIDE RD **Collection Date/Time: 05/17/2023 09:10**

Field ID: G3SD0076

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2411100	EPA 180.1 Rev. 2.0	Turbidity	5.5		NTU	P430080	
	SM 2320 B-2011	Total Alkalinity	228		mg CaCO3/L	P430440	
	SM 2540 D-2015	TSS	4	I	mg/L	P430687	
	SM 4500-F- C-2011	Fluoride	0.32		mg F/L	P430531	
2411101	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P430412	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P430235	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P430947	
	EPA 365.1 Rev. 2.0	Total-P	0.31		mg P/L	P430216	
	SM 5310 B-2011	Organic Carbon	22		mg C/L	P430727	
2411120	EPA 200.7 Rev. 4.4	Calcium	156		mg/L	P430250	
		Iron	300	I	ug/L	P430250	
		Magnesium	174		mg/L	P430250	
		Strontium	1.98E+03		ug/L	P430250	
		Tin	9.0	U	ug/L	P430250	
		Titanium	4.4	I	ug/L	P430250	
		Vanadium	6.0	U	ug/L	P430250	
		Zinc	15	U	ug/L	P430250	
		Aluminum	78	I	ug/L	P430250	
		Antimony	0.39	I	ug/L	P430250	
		Arsenic	12.7		ug/L	P430250	
		Beryllium	0.10	U	ug/L	P430250	
	EPA 200.8 Rev. 5.4	Cadmium	0.080	U	ug/L	P430250	
		Chromium	4.0	U	ug/L	P430250	
		Cobalt	0.17	I	ug/L	P430250	
		Copper	1.6	U	ug/L	P430250	
		Lead	0.80	U	ug/L	P430250	
		Manganese	52.0		ug/L	P430250	
		Molybdenum	7.7		ug/L	P430250	
		Nickel	2.0	U	ug/L	P430250	
		Selenium	0.90	I	ug/L	P430250	
		Silver	0.040	U	ug/L	P430250	
		Thallium	0.40	U	ug/L	P430250	

Ref. Method and Comment:

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

EPA 200.7 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: YUCCAFLATWOODS MID

Collection Date/Time: 05/17/2023 10:05

Field ID: G2SD0052

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2411098	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P430080	
	SM 2320 B-2011	Total Alkalinity	162		mg CaCO3/L	P430440	
	SM 2540 D-2015	TSS	6	I	mg/L	P430687	
	SM 4500-F- C-2011	Fluoride	1.3		mg F/L	P430444	MS
2411099	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P430412	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P430235	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P430947	
	EPA 365.1 Rev. 2.0	Total-P	0.20		mg P/L	P430216	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P430727	

Ref. Method and Comment:

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P430080

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P430250

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: P430250

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: P430412

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430235

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430947

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: P430216

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

Reference Method: SM 2320 B-2011
Batch ID: P430440

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

Reference Method: SM 2540 D-2015
Batch ID: P430687

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P430444

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 4500-F- C-2011
Batch ID: P430531

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P430727

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: P430080

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	99.4		P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P430250

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	97.9		P	85 - 115
Iron	97.8		P	85 - 115
Magnesium	94.8		P	85 - 115
Strontium	95.4		P	85 - 115
Tin	97.1		P	85 - 115
Titanium	98.2		P	85 - 115
Vanadium	96.6		P	85 - 115
Zinc	94.6		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P430250

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.9		P	85 - 115
Antimony	96.3		P	85 - 115
Arsenic	97.6		P	85 - 115
Beryllium	93.6		P	85 - 115
Cadmium	97.1		P	85 - 115
Chromium	95.8		P	85 - 115
Cobalt	99.0		P	85 - 115
Copper	96.1		P	85 - 115
Lead	98.6		P	85 - 115
Manganese	94.8		P	85 - 115
Molybdenum	95.9		P	85 - 115
Nickel	96.4		P	85 - 115
Selenium	97.6		P	85 - 115
Silver	100		P	85 - 115
Thallium	97.6		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430412

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430235

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: P430947

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: P430216

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.6		P	90 - 110

Reference Method: SM 2320 B-2011
Batch ID: P430440

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.8		P	92 - 105

Reference Method: SM 2540 D-2015
Batch ID: P430687

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	99.5		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P430444

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	104		P	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P430531

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

Reference Method: SM 5310 B-2011
Batch ID: P430727

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.9		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P430250

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410517	Iron	95.7	96.4	P/P	80 - 120
2410517	Tin	94.6	96.2	P/P	80 - 120
2410517	Titanium	95.8	103	P/P	80 - 120
2410517	Vanadium	96.8	95.2	P/P	80 - 120
2410517	Zinc	91.2	90.9	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P430250

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410517	Aluminum	105	109	P/P	70 - 130
2410517	Antimony	102	102	P/P	70 - 130
2410517	Arsenic	105	106	P/P	70 - 130
2410517	Beryllium	107	104	P/P	70 - 130
2410517	Cadmium	94.8	93.4	P/P	70 - 130
2410517	Chromium	95.7	95.0	P/P	70 - 130
2410517	Cobalt	89.4	90.2	P/P	70 - 130
2410517	Copper	90.2	90.1	P/P	70 - 130
2410517	Lead	105	105	P/P	70 - 130
2410517	Manganese	83.5	83.5	P/P	70 - 130
2410517	Molybdenum	108	109	P/P	70 - 130
2410517	Nickel	90.3	90.3	P/P	70 - 130
2410517	Selenium	101	102	P/P	70 - 130
2410517	Silver	91.5	91.9	P/P	70 - 130
2410517	Thallium	99.1	102	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P430412

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2411055	Ammonia-N	99.8	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P430235

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410513	Kjeldahl Nitrogen	101	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P430947

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2411055	NO2NO3-N	103	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P430216

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2411706	Total-P	94.9	97.4	P/P	90 - 110

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P430444

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2408857	Fluoride	108	108	F/F	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P430531

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410591	Fluoride	99.2	100	P/P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P430727

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2411706	Organic Carbon	87.2	89.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P430080

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410862	Turbidity	2.39	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P430250

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410517	Calcium	1.04	Spike	P	0 - 20
2410517	Iron	0.705	Spike	P	0 - 20
2410517	Magnesium	0.556	Spike	P	0 - 20
2410517	Strontium	1.23	Spike	P	0 - 20
2410517	Tin	1.71	Spike	P	0 - 20
2410517	Titanium	6.48	Spike	P	0 - 20
2410517	Vanadium	1.65	Spike	P	0 - 20
2410517	Zinc	0.326	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P430250

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410517	Aluminum	3.62	Spike	P	0 - 20
2410517	Antimony	0.128	Spike	P	0 - 20
2410517	Arsenic	0.365	Spike	P	0 - 20
2410517	Beryllium	2.28	Spike	P	0 - 20
2410517	Cadmium	1.54	Spike	P	0 - 20
2410517	Chromium	0.724	Spike	P	0 - 20
2410517	Cobalt	0.869	Spike	P	0 - 20
2410517	Copper	0.0794	Spike	P	0 - 20
2410517	Lead	0.478	Spike	P	0 - 20
2410517	Manganese	0.0420	Spike	P	0 - 20
2410517	Molybdenum	0.380	Spike	P	0 - 20
2410517	Nickel	0.0363	Spike	P	0 - 20
2410517	Selenium	0.841	Spike	P	0 - 20
2410517	Silver	0.400	Spike	P	0 - 20
2410517	Thallium	2.89	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430412

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2411055	Ammonia-N	1.49	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430235

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410513	Kjeldahl Nitrogen	4.56	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430947

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2411055	NO2NO3-N	2.32	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P430216

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2411706	Total-P	1.95	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P430440

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410185	Total Alkalinity	0.321	Sample	P	0 - 3.9

Reference Method: SM 4500-F- C-2011
Batch ID: P430444

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2408857	Fluoride	0.0	Spike	P	0 - 1.9

Reference Method: SM 4500-F- C-2011
Batch ID: P430531

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410591	Fluoride	0.953	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2011
Batch ID: P430727

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2411706	Organic Carbon	1.63	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: A119260

Included Lab Sample IDs: 2411098, 2411100

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A119358

Included Lab Sample IDs: 2411120

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	95.0	95.6	P/P	90 - 110
Iron	95.4	96.6	P/P	90 - 110
Magnesium	93.5	94.7	P/P	90 - 110
Strontium	96.2	98.2	P/P	90 - 110
Tin	94.8	94.8	P/P	90 - 110
Titanium	96.6	96.5	P/P	90 - 110
Vanadium	95.3	95.1	P/P	90 - 110
Zinc	91.1	91.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A119373

Included Lab Sample IDs: 2411099, 2411101

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A119376

Included Lab Sample IDs: 2411099, 2411101

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.4	96.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A119393

Included Lab Sample IDs: 2411120

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	97.8	99.9	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Beryllium	98.1	99.5	P/P	90 - 110
Cadmium	97.7	98.2	P/P	90 - 110
Chromium	98.4	98.7	P/P	90 - 110
Cobalt	100	100	P/P	90 - 110
Copper	97.7	97.3	P/P	90 - 110
Lead	100	100	P/P	90 - 110
Manganese	94.7	94.9	P/P	90 - 110
Molybdenum	98.0	98.1	P/P	90 - 110
Nickel	99.6	99.9	P/P	90 - 110
Selenium	99.8	101	P/P	90 - 110
Silver	100	99.9	P/P	90 - 110
Thallium	103	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A119408

Included Lab Sample IDs: 2411099, 2411101

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.5	98.2	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A119421

Included Lab Sample IDs: 2411098, 2411100

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	94.3	98.9	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A119421

Included Lab Sample IDs: 2411098

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	107	108	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A119428

Included Lab Sample IDs: 2411120

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.3	98.5	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A119457

Included Lab Sample IDs: 2411100

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

Reference Method: SM 5310 B-2011

Run ID: A119540

Included Lab Sample IDs: 2411099, 2411101

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.2	93.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A119645

Included Lab Sample IDs: 2411099, 2411101

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

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity	99.4				2.39	
EPA 200.7 Rev. 4.4	Calcium	97.9					1.04
	Iron	97.8	95.7	96.4			0.705
	Magnesium	94.8					0.556
	Strontium	95.4					1.23
	Tin	97.1	96.2	94.6			1.71
	Titanium	98.2	95.8	103			6.48
	Vanadium	96.6	96.8	95.2			1.65
	Zinc	94.6	90.9	91.2			0.326
EPA 200.8 Rev. 5.4	Aluminum	97.9	105	109			3.62
	Antimony	96.3	102	102			0.128
	Arsenic	97.6	105	106			0.365
	Beryllium	93.6	107	104			2.28
	Cadmium	97.1	94.8	93.4			1.54
	Chromium	95.8	95.7	95.0			0.724
	Cobalt	99.0	89.4	90.2			0.869
	Copper	96.1	90.2	90.1			0.0794
	Lead	98.6	105	105			0.478
	Manganese	94.8	83.5	83.5			0.0420
	Molybdenum	95.9	108	109			0.380
	Nickel	96.4	90.3	90.3			0.0363
	Selenium	97.6	101	102			0.841
	Silver	100	91.5	91.9			0.400
	Thallium	97.6	99.1	102			2.89
EPA 350.1 Rev. 2.0	Ammonia-N	96.2	99.8	102			1.49
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	101	107			4.56
EPA 353.2 Rev. 2.0	NO2NO3-N	103	103	106			2.32
EPA 365.1 Rev. 2.0	Total-P	98.6	94.9	97.4			1.95
SM 2320 B-2011	Total Alkalinity	99.8				0.321	
SM 2540 D-2015	TSS	99.5					
SM 4500-F- C-2011	Fluoride	104	108	108			0.0
	Fluoride	99.6	99.2	100			0.953
SM 5310 B-2011	Organic Carbon	95.9	87.2	89.1			1.63

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2411098, 2411100
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2411120
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2411120
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2411099, 2411101
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2411099, 2411101
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2411099, 2411101
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2411099, 2411101
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2411098, 2411100
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2411098, 2411100
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2411098, 2411100
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2411099, 2411101

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	05/18/2023			05/18/2023 15:19	Khloe J Berg	2411098
	05/18/2023			05/18/2023 15:20	Khloe J Berg	2411100
EPA 200.7 Rev. 4.4	05/18/2023	05/23/2023 11:20	George D Taylor	05/23/2023 22:58	McKinley C Carter	2411120
EPA 200.8 Rev. 5.4	05/18/2023	05/23/2023 11:20	George D Taylor	05/25/2023 01:32	Conrad Hartmann	2411120
	05/18/2023	05/23/2023 11:20	George D Taylor	05/25/2023 03:19	Conrad Hartmann	2411120
	05/18/2023	05/23/2023 11:20	George D Taylor	05/25/2023 18:53	Emily M Philpot	2411120
	05/18/2023			05/25/2023 12:40	Khloe J Berg	2411099
EPA 350.1 Rev. 2.0	05/18/2023			05/25/2023 12:42	Khloe J Berg	2411101
	05/18/2023	05/23/2023 11:55	Dana G. Hughes	05/24/2023 12:11	Samantha L Bates	2411099
EPA 351.2 Rev. 2.0	05/18/2023	05/23/2023 11:55	Dana G. Hughes	05/24/2023 12:13	Samantha L Bates	2411101
	05/18/2023			06/07/2023 14:00	Anna M. Plaviak	2411099
EPA 353.2 Rev. 2.0	05/18/2023			06/07/2023 14:01	Anna M. Plaviak	2411101
	05/18/2023	05/23/2023 14:40	Simonne.V. Calhoun	05/24/2023 11:07	Simonne.V. Calhoun	2411099
	05/18/2023	05/23/2023 14:40	Simonne.V. Calhoun	05/24/2023 11:08	Simonne.V. Calhoun	2411101
SM 2320 B-2011	05/18/2023			05/25/2023 13:06	Dale L. Simmons	2411098
	05/18/2023			05/25/2023 13:20	Dale L. Simmons	2411100
SM 2540 D-2015	05/18/2023			05/23/2023 15:32	Yijie Li	2411098, 2411100
SM 4500-F- C-2011	05/18/2023			05/25/2023 08:49	Dale L. Simmons	2411098
	05/18/2023			05/27/2023 10:44	Dale L. Simmons	2411100
SM 5310 B-2011	05/18/2023			06/01/2023 23:53	Elise M. Gillis	2411099
	05/18/2023			06/02/2023 00:11	Elise M. Gillis	2411101