

Chemical Analysis Report

SO-DIST-2023-01-19-01

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

Event Description: **2023 SMP: Continuous Pick Up**
Request ID: **RQ-2023-01-16-19**
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: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 09-FEB-2023 17:21



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: Cleveland Cemetary Ditch @ Riverside Rd.

Collection Date/Time: 01/18/2023 08:15

Field ID: G3SD0076

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2381898	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P424750	
	SM 2320 B-2011	Total Alkalinity	198		mg CaCO3/L	P425184	
	SM 2540 D-2015	TSS	3	U	mg/L	P425042	
	SM 4500-F- C-2011	Fluoride	0.29		mg F/L	P425151	
2381899	EPA 350.1 Rev. 2.0	Ammonia-N	0.061		mg N/L	P425412	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P424834	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15		mg N/L	P425202	
	EPA 365.1 Rev. 2.0	Total-P	0.18		mg P/L	P424978	
	SM 5310 B-2011	Organic Carbon	18		mg C/L	P425293	
2381904	EPA 200.7 Rev. 4.4	Calcium	121		mg/L	P425079	
		Chromium	3.0	U	ug/L	P425079	
		Iron	90	I	ug/L	P425079	
		Magnesium	150		mg/L	P425079	
		Strontium	1.55E+03		ug/L	P425079	
		Tin	9.0	U	ug/L	P425079	
		Titanium	2.2	U	ug/L	P425079	
	EPA 200.8 Rev. 5.4	Vanadium	6.0	U	ug/L	P425079	
		Zinc	15	U	ug/L	P425079	
		Aluminum	22	I	ug/L	P425079	
		Antimony	0.20	U	ug/L	P425079	
		Arsenic	2.07		ug/L	P425079	
		Beryllium	0.040	U	ug/L	P425079	
		Cadmium	0.080	U	ug/L	P425079	
		Cobalt	0.10	I	ug/L	P425079	
		Copper	1.6	U	ug/L	P425079	
		Lead	0.80	U	ug/L	P425079	
		Manganese	9.2		ug/L	P425079	
		Molybdenum	2.5		ug/L	P425079	
		Nickel	2.0	U	ug/L	P425079	
		Selenium	0.80	U	ug/L	P425079	
		Silver	0.040	U	ug/L	P425079	
		Thallium	0.40	U	ug/L	P425079	

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: 01/18/2023 09:30

Field ID: G2SD0052

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2381896	EPA 180.1 Rev. 2.0	Turbidity	4.1		NTU	P424750	
	SM 2320 B-2011	Total Alkalinity	134		mg CaCO3/L	P425146	
	SM 2540 D-2015	TSS	7	IA	mg/L	P425042	
	SM 4500-F- C-2011	Fluoride	1.0		mg F/L	P425152	
2381897	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P425412	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57		mg N/L	P424938	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P425203	
	EPA 365.1 Rev. 2.0	Total-P	0.091		mg P/L	P424978	
	SM 5310 B-2011	Organic Carbon	9.2		mg C/L	P425293	

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: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P424750

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P425079

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Chromium	1.0	U	ug/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: P425079

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
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: P425412

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424834

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424938

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P425202

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P425203

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424978

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

Reference Method: SM 2320 B-2011
Batch ID: P425146

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

Reference Method: SM 2320 B-2011
Batch ID: P425184

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

Reference Method: SM 2540 D-2015
Batch ID: P425042

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P425151

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 4500-F- C-2011
Batch ID: P425152

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P425293

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: P424750

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P425079

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	104		P	85 - 115
Chromium	104		P	85 - 115
Iron	104		P	85 - 115
Magnesium	104		P	85 - 115
Strontium	103		P	85 - 115
Tin	106		P	85 - 115
Titanium	102		P	85 - 115
Vanadium	103		P	85 - 115
Zinc	108		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P425079

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	103		P	85 - 115
Antimony	95.0		P	85 - 115
Arsenic	99.8		P	85 - 115
Beryllium	89.9		P	85 - 115
Cadmium	103		P	85 - 115
Cobalt	97.4		P	85 - 115
Copper	99.4		P	85 - 115
Lead	97.9		P	85 - 115
Manganese	101		P	85 - 115
Molybdenum	96.0		P	85 - 115
Nickel	100		P	85 - 115
Selenium	97.8		P	85 - 115
Silver	98.6		P	85 - 115
Thallium	98.4		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425412

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424834

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424938

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P425202

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P425203

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424978

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

Reference Method: SM 2320 B-2011
Batch ID: P425146

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.2		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P425184

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	96.6		P	94 - 106

Reference Method: SM 2540 D-2015
Batch ID: P425042

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

Reference Method: SM 4500-F- C-2011
Batch ID: P425151

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.8		P	96 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P425152

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P425293

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P425079

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2383393	Chromium	96.9	95.0	P/P	70 - 130
2383393	Iron	100	101	P/P	70 - 130
2383393	Tin	91.0	87.7	P/P	70 - 130
2383393	Titanium	101	105	P/P	70 - 130
2383393	Vanadium	100	104	P/P	70 - 130
2383393	Zinc	99.8	100	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P425079

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2383393	Aluminum	112	120	P/P	70 - 130
2383393	Antimony	101	106	P/P	70 - 130
2383393	Arsenic	112	118	P/P	70 - 130
2383393	Beryllium	105	112	P/P	70 - 130
2383393	Cadmium	102	107	P/P	70 - 130
2383393	Cobalt	111	116	P/P	70 - 130
2383393	Copper	109	116	P/P	70 - 130
2383393	Lead	101	108	P/P	70 - 130
2383393	Manganese	104	110	P/P	70 - 130
2383393	Molybdenum	108	117	P/P	70 - 130
2383393	Nickel	116	123	P/P	70 - 130
2383393	Selenium	105	113	P/P	70 - 130
2383393	Silver	93.7	99.0	P/P	70 - 130
2383393	Thallium	104	111	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P425412

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2381732	Ammonia-N	105	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P424834

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2381343	Kjeldahl Nitrogen	103	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P424938

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2380148	Kjeldahl Nitrogen	106	109	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P425202

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2381734	NO2NO3-N	106	106	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P425203

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2381897	NO2NO3-N	106	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424978

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2381899	Total-P	106	106	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P425151

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2379229	Fluoride	98.8	99.4	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P425293

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2382373	Organic Carbon	91.6	92.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P424750

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2381819	Turbidity	17.9	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P425079

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2383393	Calcium	2.18	Spike	P	0 - 20
2383393	Chromium	1.89	Spike	P	0 - 20
2383393	Iron	0.677	Spike	P	0 - 20
2383393	Magnesium	5.12	Spike	P	0 - 20
2383393	Strontium	3.01	Spike	P	0 - 20
2383393	Tin	3.64	Spike	P	0 - 20
2383393	Titanium	3.44	Spike	P	0 - 20
2383393	Vanadium	3.69	Spike	P	0 - 20
2383393	Zinc	0.341	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P425079

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2383393	Aluminum	6.65	Spike	P	0 - 20
2383393	Antimony	5.56	Spike	P	0 - 20
2383393	Arsenic	5.69	Spike	P	0 - 20
2383393	Beryllium	5.95	Spike	P	0 - 20
2383393	Cadmium	4.79	Spike	P	0 - 20
2383393	Cobalt	4.63	Spike	P	0 - 20
2383393	Copper	5.92	Spike	P	0 - 20
2383393	Lead	6.42	Spike	P	0 - 20
2383393	Manganese	5.05	Spike	P	0 - 20
2383393	Molybdenum	6.83	Spike	P	0 - 20
2383393	Nickel	6.24	Spike	P	0 - 20
2383393	Selenium	7.35	Spike	P	0 - 20
2383393	Silver	5.50	Spike	P	0 - 20
2383393	Thallium	7.22	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425412

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2381732	Ammonia-N	0.170	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424834

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2381343	Kjeldahl Nitrogen	0.974	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P424938

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2380148	Kjeldahl Nitrogen	2.16	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P425202

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2381734	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P425203

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2381897	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424978

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2381899	Total-P	0.0970	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P425146

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2382111	Total Alkalinity	1.36	Sample	P	0 - 3.8

Reference Method: SM 2320 B-2011
Batch ID: P425184

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2382077	Total Alkalinity	0.401	Sample	P	0 - 3.8

Reference Method: SM 4500-F- C-2011
Batch ID: P425151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2379229	Fluoride	0.487	Spike	P	0 - 1.6

Reference Method: SM 4500-F- C-2011
Batch ID: P425152

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2379371	Fluoride	1.42	Spike	P	0 - 1.6

Quality Assurance Report
Precision

Reference Method: SM 5310 B-2011
Batch ID: P425293

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2382373	Organic Carbon	0.779	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: A116988

Included Lab Sample IDs: 2381896, 2381898

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A117076

Included Lab Sample IDs: 2381899

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A117110

Included Lab Sample IDs: 2381899

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A117119

Included Lab Sample IDs: 2381897

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.2	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A117128

Included Lab Sample IDs: 2381897

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	102	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A117157

Included Lab Sample IDs: 2381896

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	94.9	98.3	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A117157

Included Lab Sample IDs: 2381896, 2381898

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	104	P/P	90 - 110
Fluoride	104	103	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A117172

Included Lab Sample IDs: 2381898

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.3	94.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A117179

Included Lab Sample IDs: 2381897, 2381899

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A117195

Included Lab Sample IDs: 2381904

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	99.9	101	P/P	90 - 110
Chromium	102	101	P/P	90 - 110
Iron	99.3	102	P/P	90 - 110
Magnesium	99.2	102	P/P	90 - 110
Strontium	102	104	P/P	90 - 110
Tin	102	99.8	P/P	90 - 110
Titanium	98.9	101	P/P	90 - 110
Vanadium	99.8	100	P/P	90 - 110
Zinc	105	101	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A117216

Included Lab Sample IDs: 2381897, 2381899

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.7	99.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A117245

Included Lab Sample IDs: 2381904

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	103	104	P/P	90 - 110
Antimony	95.9	96.6	P/P	90 - 110
Arsenic	101	102	P/P	90 - 110
Beryllium	98.2	101	P/P	90 - 110
Cadmium	101	100	P/P	90 - 110
Copper	101	102	P/P	90 - 110
Lead	99.3	98.8	P/P	90 - 110
Manganese	103	104	P/P	90 - 110
Molybdenum	95.6	96.0	P/P	90 - 110
Nickel	102	104	P/P	90 - 110
Selenium	101	103	P/P	90 - 110
Silver	99.6	99.3	P/P	90 - 110
Thallium	98.7	98.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A117272

Included Lab Sample IDs: 2381897, 2381899

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	98.3	P/P	90 - 110

Quality Assurance Report

Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A117292

Included Lab Sample IDs: 2381904

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cobalt	99.6	101	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	101				17.9	
EPA 200.7 Rev. 4.4	Calcium	104					2.18
	Chromium	104	96.9	95.0			1.89
	Iron	104	100	101			0.677
	Magnesium	104					5.12
	Strontium	103					3.01
	Tin	106	91.0	87.7			3.64
	Titanium	102	101	105			3.44
	Vanadium	103	100	104			3.69
	Zinc	108	99.8	100			0.341
EPA 200.8 Rev. 5.4	Aluminum	103	112	120			6.65
	Antimony	95.0	101	106			5.56
	Arsenic	99.8	112	118			5.69
	Beryllium	89.9	105	112			5.95
	Cadmium	103	102	107			4.79
	Cobalt	97.4	111	116			4.63
	Copper	99.4	109	116			5.92
	Lead	97.9	101	108			6.42
	Manganese	101	104	110			5.05
	Molybdenum	96.0	108	117			6.83
	Nickel	100	116	123			6.24
	Selenium	97.8	105	113			7.35
	Silver	98.6	93.7	99.0			5.50
	Thallium	98.4	104	111			7.22
EPA 350.1 Rev. 2.0	Ammonia-N	98.6	105	105			0.170
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.6	103	104			0.974
	Kjeldahl Nitrogen	103	106	109			2.16
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	104	106	106			0.0
	NO ₂ NO ₃ -N	102	106	106			0.0
EPA 365.1 Rev. 2.0	Total-P	106	106	106			0.0970
SM 2320 B-2011	Total Alkalinity	98.2				1.36	
	Total Alkalinity	96.6				0.401	
SM 2540 D-2015	TSS	96.0					
SM 4500-F- C-2011	Fluoride	99.8	98.8	99.4			0.487
	Fluoride	102					1.42
SM 5310 B-2011	Organic Carbon	98.0	91.6	92.6			0.779

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2381896, 2381898
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2381904
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2381904
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2381897, 2381899
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2381897, 2381899
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2381897, 2381899
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2381897, 2381899
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2381896, 2381898
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2381896, 2381898
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2381896, 2381898
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2381897, 2381899

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	01/19/2023			01/19/2023 13:29	Chandler E Cox	2381896
	01/19/2023			01/19/2023 13:30	Chandler E Cox	2381898
EPA 200.7 Rev. 4.4	01/19/2023	01/27/2023 11:00	Vijayalakshmi Reddy	01/31/2023 19:50	McKinley C Carter	2381904
EPA 200.8 Rev. 5.4	01/19/2023	01/27/2023 11:00	Vijayalakshmi Reddy	02/02/2023 22:49	Emily M Philpot	2381904
	01/19/2023	01/27/2023 11:00	Vijayalakshmi Reddy	02/03/2023 17:34	Emily M Philpot	2381904
EPA 350.1 Rev. 2.0	01/19/2023			02/06/2023 11:22	Ping Hua	2381897
	01/19/2023			02/06/2023 11:24	Ping Hua	2381899
EPA 351.2 Rev. 2.0	01/19/2023	01/23/2023 12:30	Simonne.V. Calhoun	01/24/2023 15:29	Samantha L Bates	2381899
	01/19/2023	01/25/2023 14:17	Samantha L Bates	01/26/2023 15:07	Samantha L Bates	2381897
EPA 353.2 Rev. 2.0	01/19/2023			01/31/2023 10:22	Beverly Y. Sanders	2381899
	01/19/2023			01/31/2023 10:29	Beverly Y. Sanders	2381897
EPA 365.1 Rev. 2.0	01/19/2023	01/25/2023 13:55	Adam P Silver	01/26/2023 10:51	James L Waggeberby	2381899
	01/19/2023	01/25/2023 13:55	Adam P Silver	01/26/2023 14:01	James L Waggeberby	2381897
SM 2320 B-2011	01/19/2023			01/28/2023 13:51	Dale L. Simmons	2381896
	01/19/2023			01/30/2023 22:44	Dale L. Simmons	2381898
SM 2540 D-2015	01/19/2023			01/23/2023 16:20	Yijie Li	2381896, 2381898
SM 4500-F- C-2011	01/19/2023			01/28/2023 10:52	Dale L. Simmons	2381898
	01/19/2023			01/28/2023 12:33	Dale L. Simmons	2381896
SM 5310 B-2011	01/19/2023			02/02/2023 08:59	Elise M. Gillis	2381897
	01/19/2023			02/02/2023 09:16	Elise M. Gillis	2381899