Chemical Analysis Report

SO-DIST-2023-08-18-03

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

Event Description: **2023 SMP: Continuous Pickup**
Request ID: **RQ-2023-08-14-49**
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: Nicole Reistad

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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant Date Certified: 12-SEP-2023 12:12

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: EMERALD POINTE CANAL **Collection Date/Time: 08/17/2023 10:30**

Field ID: G3SD0216 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2432199	DEP SOP: NU-094-1	Color (true)	66	A	PCU	P434061	
	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P434065	
	EPA 300.0 Rev. 2.1	Chloride	8.1E+03		mg Cl/L	P434199	
		Sulfate	1.1E+03		mg SO4/L	P434202	
	SM 2320 B-2011	Total Alkalinity	80	A	mg CaCO3/L	P434511	
	SM 2540 C-2015	TDS	1.28E+04		mg/L	P434585	
	SM 2540 D-2015	TSS	3	U	mg/L	P434583	
	SM 4500-F- C-2011	Fluoride	0.67		mg F/L	P434552	
2432200	EPA 350.1 Rev. 2.0	Ammonia-N	0.090		mg N/L	P434435	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P434647	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.042		mg N/L	P434557	
	EPA 365.1 Rev. 2.0	Total-P	0.32		mg P/L	P434211	
	SM 5310 B-2011	Organic Carbon	13		mg C/L	P434204	

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: PEACE RIVER GILCHRIST PARK **Collection Date/Time: 08/17/2023 11:00**

Field ID: G3SD0240 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2432204	EPA 200.7 Rev. 4.4	Calcium	238		mg/L	P434120	
		Iron	90	U	ug/L	P434120	
		Magnesium	707		mg/L	P434120	
		Potassium	212		mg/L	P434120	
		Sodium	5.82E+03		mg/L	P434120	
		Strontium	5.30E+03		ug/L	P434120	
		Tin	150	U	ug/L	P434120	
		Titanium	2.2	U	ug/L	P434120	
		Vanadium	6.0	U	ug/L	P434120	
		Zinc	15	U	ug/L	P434120	
	EPA 200.8 Rev. 5.4	Aluminum	50	U	ug/L	P434120	
		Antimony	0.20	U	ug/L	P434120	
		Arsenic	2.24		ug/L	P434120	
		Barium	16.5		ug/L	P434120	
		Beryllium	0.10	U	ug/L	P434120	
		Boron	2.31E+03		ug/L	P434120	
		Cadmium	0.080	U	ug/L	P434120	
		Chromium	1.6	U	ug/L	P434120	
		Cobalt	0.20	U	ug/L	P434120	
		Copper	4.0		ug/L	P434120	
		Lead	0.80	U	ug/L	P434120	
		Manganese	17.0		ug/L	P434120	
		Molybdenum	6.9		ug/L	P434120	
		Nickel	2.0	U	ug/L	P434120	
		Selenium	0.80	U	ug/L	P434120	
		Silver	0.040	U	ug/L	P434120	
		Thallium	0.40	U	ug/L	P434120	
	SM 2340 B-2011	Hardness	3.51E+03		mg/L	P434120	

Ref. Method and Comment:
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for magnesium, potassium and sodium are unavailable because of high analyte concentration in the QC sample.
EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for boron are unavailable because of high analyte concentration in the QC sample. The copper result was confirmed in the undigested sample on 08/24/2023.

Quality Assurance Report
Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P434061

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P434065

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P434120

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P434120

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434199

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434202

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434435

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434647

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434557

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434211

Component	Result	Code	Units
Total-P	0.010	U	mg P/L

Reference Method: SM 2320 B-2011
Batch ID: P434511

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

Reference Method: SM 2540 C-2015
Batch ID: P434585

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P434583

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P434552

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P434204

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P434061

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P434065

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P434120

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	105		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	104		P	85 - 115
Sodium	105		P	85 - 115
Strontium	104		P	85 - 115
Tin	103		P	85 - 115
Titanium	102		P	85 - 115
Vanadium	104		P	85 - 115
Zinc	106		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P434120

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.1		P	85 - 115
Antimony	96.8		P	85 - 115
Arsenic	97.5		P	85 - 115
Barium	99.6		P	85 - 115
Beryllium	93.3		P	85 - 115
Boron	98.0		P	85 - 115
Cadmium	95.6		P	85 - 115
Chromium	96.5		P	85 - 115
Cobalt	96.3		P	85 - 115
Copper	98.3		P	85 - 115
Lead	93.8		P	85 - 115
Manganese	98.1		P	85 - 115
Molybdenum	95.6		P	85 - 115
Nickel	97.0		P	85 - 115
Selenium	100		P	85 - 115
Silver	108		P	85 - 115
Thallium	98.2		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434199

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434202

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434435

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434647

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434557

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434211

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

Reference Method: SM 2320 B-2011
Batch ID: P434511

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.0		P	92 - 105

Reference Method: SM 2540 C-2015
Batch ID: P434585

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	95.3		P	90 - 110

Reference Method: SM 2540 D-2015
Batch ID: P434583

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	98.2		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P434552

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.9		P	94 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P434204

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.1		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P434120

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2431398	Calcium	111		P	80 - 120
2431398	Iron	97.5	107	P/P	80 - 120
2431398	Strontium	95.1	106	P/P	80 - 120
2431398	Tin	95.2	108	P/P	80 - 120
2431398	Titanium	102	108	P/P	80 - 120
2431398	Vanadium	103	108	P/P	80 - 120
2431398	Zinc	105	109	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P434120

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2431398	Aluminum	97.2	99.2	P/P	70 - 130
2431398	Antimony	99.1	98.8	P/P	70 - 130
2431398	Arsenic	106	105	P/P	70 - 130
2431398	Barium	103	102	P/P	70 - 130
2431398	Beryllium	107	98.8	P/P	70 - 130
2431398	Cadmium	96.4	93.8	P/P	70 - 130
2431398	Chromium	102	101	P/P	70 - 130
2431398	Cobalt	96.3	94.8	P/P	70 - 130
2431398	Copper	109	106	P/P	70 - 130
2431398	Lead	96.6	95.9	P/P	70 - 130
2431398	Manganese	106	103	P/P	70 - 130
2431398	Molybdenum	101	101	P/P	70 - 130
2431398	Nickel	96.8	95.3	P/P	70 - 130
2431398	Selenium	111	108	P/P	70 - 130
2431398	Silver	104	104	P/P	70 - 130
2431398	Thallium	99.8	101	P/P	70 - 130

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434199

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432095	Chloride	102		P	90 - 110
2432147	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434202

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432095	Sulfate	99.8		P	90 - 110
2432147	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434435

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2431898	Ammonia-N	99.4	100	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434647

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432936	Kjeldahl Nitrogen	101	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434557

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2431897	NO2NO3-N	96.2	96.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434211

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432584	Total-P	101	102	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P434552

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432583	Fluoride	102	102	P/P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P434204

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432200	Organic Carbon	88.5	91.2	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P434061

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432199	Color (true)	0.923	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P434065

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432172	Turbidity	0.780	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P434120

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2431398	Calcium	7.86	Spike	P	0 - 20
2431398	Iron	8.47	Spike	P	0 - 20
2431398	Magnesium	8.42	Spike	P	0 - 20
2431398	Potassium	8.36	Spike	P	0 - 20
2431398	Sodium	0.421	Spike	P	0 - 20
2431398	Strontium	7.84	Spike	P	0 - 20
2431398	Tin	12.4	Spike	P	0 - 20
2431398	Titanium	5.20	Spike	P	0 - 20
2431398	Vanadium	5.10	Spike	P	0 - 20
2431398	Zinc	3.04	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P434120

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2431398	Aluminum	1.86	Spike	P	0 - 20
2431398	Antimony	0.307	Spike	P	0 - 20
2431398	Arsenic	0.547	Spike	P	0 - 20
2431398	Barium	0.701	Spike	P	0 - 20
2431398	Beryllium	7.88	Spike	P	0 - 20
2431398	Boron	3.52	Spike	P	0 - 20
2431398	Cadmium	2.77	Spike	P	0 - 20
2431398	Chromium	1.48	Spike	P	0 - 20
2431398	Cobalt	1.59	Spike	P	0 - 20
2431398	Copper	2.57	Spike	P	0 - 20
2431398	Lead	0.777	Spike	P	0 - 20
2431398	Manganese	1.65	Spike	P	0 - 20
2431398	Molybdenum	0.605	Spike	P	0 - 20
2431398	Nickel	1.60	Spike	P	0 - 20
2431398	Selenium	3.16	Spike	P	0 - 20
2431398	Silver	0.279	Spike	P	0 - 20
2431398	Thallium	1.11	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434199

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432095	Chloride	0.932	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434202

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432095	Sulfate	0.879	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434435

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2431898	Ammonia-N	0.907	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434647

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432936	Kjeldahl Nitrogen	1.86	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434557

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2431897	NO2NO3-N	0.518	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434211

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432584	Total-P	0.702	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P434511

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432199	Total Alkalinity	2.87	Sample	P	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P434585

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432530	TDS	7.02	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500-F- C-2011
Batch ID: P434552

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432583	Fluoride	0.0	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2011
Batch ID: P434204

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432200	Organic Carbon	2.22	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: DEP SOP: NU-094-1
Run ID: A121128
Included Lab Sample IDs: 2432199

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	99.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A121130
Included Lab Sample IDs: 2432199

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	99.0	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A121182
Included Lab Sample IDs: 2432199

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

Reference Method: SM 5310 B-2011
Run ID: A121186
Included Lab Sample IDs: 2432200

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.4	93.9	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A121191
Included Lab Sample IDs: 2432204

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	104	P/P	90 - 110
Iron	101	103	P/P	90 - 110
Magnesium	102	104	P/P	90 - 110
Potassium	99.7	102	P/P	90 - 110
Sodium	103	104	P/P	90 - 110
Strontium	104	102	P/P	90 - 110
Tin	102	101	P/P	90 - 110
Titanium	99.5	99.5	P/P	90 - 110
Vanadium	101	101	P/P	90 - 110
Zinc	104	102	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A121218
Included Lab Sample IDs: 2432204

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.2	102	P/P	90 - 110
Antimony	93.9	93.6	P/P	90 - 110
Arsenic	100	100	P/P	90 - 110
Barium	98.6	98.0	P/P	90 - 110
Beryllium	98.3	100	P/P	90 - 110
Boron	97.3	96.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A121218
Included Lab Sample IDs: 2432204

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cadmium	95.8	96.2	P/P	90 - 110
Chromium	99.0	97.7	P/P	90 - 110
Cobalt	97.6	97.4	P/P	90 - 110
Copper	104	103	P/P	90 - 110
Lead	93.3	93.9	P/P	90 - 110
Manganese	102	100	P/P	90 - 110
Molybdenum	96.1	95.5	P/P	90 - 110
Nickel	98.7	98.7	P/P	90 - 110
Selenium	100	97.7	P/P	90 - 110
Silver	94.5	94.0	P/P	90 - 110
Thallium	96.7	96.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A121224
Included Lab Sample IDs: 2432200

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A121289
Included Lab Sample IDs: 2432200

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

Reference Method: SM 2320 B-2011
Run ID: A121328
Included Lab Sample IDs: 2432199

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.8	99.3	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A121345
Included Lab Sample IDs: 2432199

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A121351
Included Lab Sample IDs: 2432200

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A121418
Included Lab Sample IDs: 2432200

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	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	MS
DEP SOP: NU-094-1	Color (true)	100				0.923	
EPA 180.1 Rev. 2.0	Turbidity	99.0				0.780	
EPA 200.7 Rev. 4.4	Calcium	103	111				7.86
	Iron	105	97.5	107			8.47
	Magnesium	104					8.42
	Potassium	104					8.36
	Sodium	105					0.421
	Strontium	104	95.1	106			7.84
	Tin	103	95.2	108			12.4
	Titanium	102	102	108			5.20
	Vanadium	104	103	108			5.10
	Zinc	106	105	109			3.04
EPA 200.8 Rev. 5.4	Aluminum	97.1	97.2	99.2			1.86
	Antimony	96.8	99.1	98.8			0.307
	Arsenic	97.5	106	105			0.547
	Barium	99.6	103	102			0.701
	Beryllium	93.3	107	98.8			7.88
	Boron	98.0					3.52
	Cadmium	95.6	96.4	93.8			2.77
	Chromium	96.5	102	101			1.48
	Cobalt	96.3	96.3	94.8			1.59
	Copper	98.3	109	106			2.57
	Lead	93.8	96.6	95.9			0.777
	Manganese	98.1	106	103			1.65
	Molybdenum	95.6	101	101			0.605
	Nickel	97.0	96.8	95.3			1.60
	Selenium	100	111	108			3.16
	Silver	108	104	104			0.279
	Thallium	98.2	99.8	101			1.11
EPA 300.0 Rev. 2.1	Chloride	102	102	104		0.932	
	Sulfate	100	99.8	101		0.879	
EPA 350.1 Rev. 2.0	Ammonia-N	100	99.4	100			0.907
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	101	103			1.86
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	96.2	96.7			0.518
EPA 365.1 Rev. 2.0	Total-P	102	101	102			0.702
SM 2320 B-2011	Total Alkalinity	97.0				2.87	
SM 2540 C-2015	TDS	95.3				7.02	
SM 2540 D-2015	TSS	98.2					
SM 4500-F- C-2011	Fluoride	98.9	102	102			0.0
SM 5310 B-2011	Organic Carbon	95.1	88.5	91.2			2.22

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2432199
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2432199
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2432204
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2432204
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2432199
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2432199
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2432200

Reference Method Descriptions

Method	Description	Associated Samples
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2432200
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2432200
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2432200
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2432199
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2432204
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2432199
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2432199
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2432199
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2432200

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	08/18/2023			08/18/2023 15:07	Anna M. Plaviak	2432199
EPA 180.1 Rev. 2.0	08/18/2023			08/18/2023 14:46	Alexis Price	2432199
EPA 200.7 Rev. 4.4	08/18/2023	08/21/2023 12:45	George D Taylor	08/22/2023 20:50	McKinley C Carter	2432204
	08/18/2023	08/21/2023 12:45	George D Taylor	08/22/2023 20:58	McKinley C Carter	2432204
EPA 200.8 Rev. 5.4	08/18/2023	08/21/2023 12:45	George D Taylor	08/23/2023 23:59	Emily M Philpot	2432204
	08/18/2023	08/21/2023 12:45	George D Taylor	08/24/2023 02:04	Emily M Philpot	2432204
EPA 300.0 Rev. 2.1	08/18/2023			08/22/2023 13:40	James L Waggerby	2432199
EPA 350.1 Rev. 2.0	08/18/2023			08/28/2023 13:50	Khloe J Berg	2432200
EPA 351.2 Rev. 2.0	08/18/2023	09/07/2023 13:14	Simonne.V. Calhoun	09/08/2023 11:45	Samantha L Bates	2432200
EPA 353.2 Rev. 2.0	08/18/2023			08/29/2023 11:42	Anna M. Plaviak	2432200
EPA 365.1 Rev. 2.0	08/18/2023	08/23/2023 18:21	Adam P Silver	08/24/2023 11:28	Simonne.V. Calhoun	2432200
SM 2320 B-2011	08/18/2023			08/29/2023 17:51	Dale L. Simmons	2432199
SM 2340 B-2011	08/18/2023			08/22/2023 20:58	McKinley C Carter	2432204
SM 2540 C-2015	08/18/2023			08/23/2023 16:38	Yijie Li	2432199
SM 2540 D-2015	08/18/2023			08/23/2023 16:38	Yijie Li	2432199
SM 4500-F- C-2011	08/18/2023			09/02/2023 01:33	Dale L. Simmons	2432199
SM 5310 B-2011	08/18/2023			08/22/2023 19:59	Elise M. Gillis	2432200