

Chemical Analysis Report

SE-DIST-2023-08-18-01

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

Event Description: **Highlands Canoe Run**
Request ID: **RQ-2023-08-14-40**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Jordan Skaggs

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: 11-SEP-2023 13:48

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray 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: Buck Lake near center

Collection Date/Time: 08/17/2023 09:35

Field ID: G4SE0167

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2432063	DEP SOP: NU-094-1	Color (true)	5.1	I	PCU	P434059	
	EPA 180.1 Rev. 2.0	Turbidity	0.55	I	NTU	P434064	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P434299	
		Sulfate	53		mg SO4/L	P434304	
	SM 2320 B-2011	Total Alkalinity	20	A	mg CaCO3/L	P434416	
	SM 2540 C-2015	TDS	177		mg/L	P434584	
	SM 2540 D-2015	TSS	2	U	mg/L	P434581	
	SM 4500-F- C-2011	Fluoride	0.071	I	mg F/L	P434144	
2432067	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P434481	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P434462	
	EPA 353.2 Rev. 2.0	NO2NO3-N	9.0		mg N/L	P434402	
	EPA 365.1 Rev. 2.0	Total-P	0.003	I	mg P/L	P434112	
	SM 5310 B-2011	Organic Carbon	3.8		mg C/L	P434203	

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: Lake Henry near center

Collection Date/Time: 08/17/2023 10:20

Field ID: G4SE0162

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2432064	DEP SOP: NU-094-1	Color (true)	11		PCU	P434059	
	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P434064	
	EPA 300.0 Rev. 2.1	Chloride	22		mg Cl/L	P434299	
		Sulfate	27		mg SO4/L	P434304	
	SM 2320 B-2011	Total Alkalinity	20		mg CaCO3/L	P434416	
	SM 2540 C-2015	TDS	105		mg/L	P434584	
	SM 2540 D-2015	TSS	4	I	mg/L	P434581	
	SM 4500-F- C-2011	Fluoride	0.063	I	mg F/L	P434144	
2432068	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P434481	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P434462	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P434640	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P434112	
	SM 5310 B-2011	Organic Carbon	9.0		mg C/L	P434203	

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: Lake Crews Northern section

Collection Date/Time: 08/17/2023 11:05

Field ID: G4SE0168

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2432071	DEP SOP: NU-094-1	Color (true)	54		PCU	P434060	
	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P434064	
	EPA 300.0 Rev. 2.1	Chloride	16		mg Cl/L	P434199	
		Sulfate	2.6		mg SO4/L	P434202	
	SM 2320 B-2011	Total Alkalinity	2.3	I	mg CaCO3/L	P434416	
	SM 2540 C-2015	TDS	57		mg/L	P434584	
	SM 2540 D-2015	TSS	2	I	mg/L	P434581	
	SM 4500-F- C-2011	Fluoride	0.040	I	mg F/L	P434144	
2432072	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P434481	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P434462	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P434640	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P434112	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P434203	
2432078	EPA 200.7 Rev. 4.4	Calcium	2.53		mg/L	P434124	
		Iron	64	I	ug/L	P434124	
		Magnesium	1.23		mg/L	P434124	
		Potassium	1.0	I	mg/L	P434124	
		Sodium	9.4		mg/L	P434124	
		Strontium	16.3		ug/L	P434124	
		Tin	3.0	U	ug/L	P434124	
		Titanium	0.75	U	ug/L	P434124	
		Vanadium	2.0	U	ug/L	P434124	
		Zinc	5.0	U	ug/L	P434124	
	EPA 200.8 Rev. 5.4	Aluminum	106		ug/L	P434124	
		Antimony	0.050	U	ug/L	P434124	
		Arsenic	1.44		ug/L	P434124	
		Barium	1.66		ug/L	P434124	
		Beryllium	0.010	U	ug/L	P434124	
		Boron	32.0		ug/L	P434124	
		Cadmium	0.020	U	ug/L	P434124	
		Chromium	0.40	U	ug/L	P434124	
		Cobalt	0.020	U	ug/L	P434124	
		Copper	0.40	U	ug/L	P434124	
		Lead	0.20	U	ug/L	P434124	
		Manganese	6.96		ug/L	P434124	
		Molybdenum	0.15	U	ug/L	P434124	
		Nickel	0.50	U	ug/L	P434124	
		Selenium	0.20	U	ug/L	P434124	
		Silver	0.010	U	ug/L	P434124	
		Thallium	0.10	U	ug/L	P434124	
		Hardness	11.4		mg/L	P434124	

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: Huckleberry Lake near center

Collection Date/Time: 08/17/2023 12:00

Field ID: G4SE0160

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2432065	DEP SOP: NU-094-1	Color (true)	67		PCU	P434059	
	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P434064	
	EPA 300.0 Rev. 2.1	Chloride	16		mg Cl/L	P434299	
		Sulfate	4.2		mg SO4/L	P434304	
	SM 2320 B-2011	Total Alkalinity	12		mg CaCO3/L	P434416	
	SM 2540 C-2015	TDS	78		mg/L	P434584	
	SM 2540 D-2015	TSS	2	I	mg/L	P434581	
	SM 4500-F- C-2011	Fluoride	0.081	I	mg F/L	P434144	
2432069	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P434481	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P434462	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P434640	
	EPA 365.1 Rev. 2.0	Total-P	0.037		mg P/L	P434112	
	SM 5310 B-2011	Organic Carbon	15		mg C/L	P434203	

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: Little Lake Jackson near center

Collection Date/Time: 08/17/2023 12:35

Field ID: G4SE0166

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2432066	DEP SOP: NU-094-1	Color (true)	18	A	PCU	P434060	
	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P434064	
	EPA 300.0 Rev. 2.1	Chloride	16		mg Cl/L	P434299	
		Sulfate	13		mg SO4/L	P434304	
	SM 2320 B-2011	Total Alkalinity	16		mg CaCO3/L	P434416	
	SM 2540 C-2015	TDS	81		mg/L	P434584	
	SM 2540 D-2015	TSS	3	I	mg/L	P434581	
	SM 4500-F- C-2011	Fluoride	0.080	I	mg F/L	P434144	
2432070	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P434481	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P434462	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P434640	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P434112	
	SM 5310 B-2011	Organic Carbon	7.3		mg C/L	P434203	

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: DEP SOP: NU-094-1
Batch ID: P434059

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: DEP SOP: NU-094-1
Batch ID: P434060

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P434064

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P434124

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: P434124

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

Quality Assurance Report Method Blank Results

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

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

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 300.0 Rev. 2.1
Batch ID: P434299

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434304

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434481

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434462

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434402

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434640

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434112

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P434416

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

Reference Method: SM 2540 C-2015
Batch ID: P434584

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P434581

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P434144

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P434203

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: P434059

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.9		P	90 - 110

Reference Method: DEP SOP: NU-094-1
Batch ID: P434060

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.4		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P434064

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: P434124

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	105		P	85 - 115
Iron	105		P	85 - 115
Magnesium	105		P	85 - 115
Potassium	103		P	85 - 115
Sodium	99.9		P	85 - 115
Strontium	101		P	85 - 115
Tin	105		P	85 - 115
Titanium	102		P	85 - 115
Vanadium	101		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P434124

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.3		P	85 - 115
Antimony	98.5		P	85 - 115
Arsenic	93.5		P	85 - 115
Barium	100		P	85 - 115
Beryllium	91.7		P	85 - 115
Boron	100		P	85 - 115
Cadmium	97.0		P	85 - 115
Chromium	92.5		P	85 - 115
Cobalt	90.0		P	85 - 115
Copper	93.8		P	85 - 115
Lead	95.4		P	85 - 115
Manganese	97.3		P	85 - 115
Molybdenum	94.2		P	85 - 115
Nickel	89.8		P	85 - 115
Selenium	96.2		P	85 - 115
Silver	108		P	85 - 115
Thallium	96.3		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

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

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 300.0 Rev. 2.1
Batch ID: P434299

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434304

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434481

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434462

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	108		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434402

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434640

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	107		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434112

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-2011
Batch ID: P434416

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.2		P	92 - 105

Reference Method: SM 2540 C-2015
Batch ID: P434584

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	96.8		P	90 - 110

Reference Method: SM 2540 D-2015
Batch ID: P434581

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	93.9		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P434144

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.1		P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P434203

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	92.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P434124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432078	Calcium	106	102	P/P	80 - 120
2432078	Iron	105	103	P/P	80 - 120
2432078	Magnesium	104	103	P/P	80 - 120
2432078	Potassium	103	99.2	P/P	80 - 120
2432078	Sodium	97.9		P	80 - 120
2432078	Strontium	100	98.6	P/P	80 - 120
2432078	Tin	105	100	P/P	80 - 120
2432078	Titanium	104	101	P/P	80 - 120
2432078	Vanadium	104	101	P/P	80 - 120
2432078	Zinc	106	103	P/P	80 - 120
2432154	Calcium	99.2		P	80 - 120
2432154	Iron	100		P	80 - 120
2432154	Magnesium	98.6		P	80 - 120
2432154	Potassium	96.9		P	80 - 120
2432154	Sodium	99.3		P	80 - 120
2432154	Strontium	96.1		P	80 - 120
2432154	Tin	96.6		P	80 - 120
2432154	Titanium	96.5		P	80 - 120
2432154	Vanadium	98.4		P	80 - 120
2432154	Zinc	101		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P434124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432078	Aluminum	97.1	98.2	P/P	80 - 120
2432078	Antimony	98.6	97.5	P/P	80 - 120
2432078	Arsenic	94.0	93.6	P/P	80 - 120
2432078	Barium	99.1	99.0	P/P	80 - 120
2432078	Beryllium	92.2	91.6	P/P	80 - 120
2432078	Boron	101	101	P/P	80 - 120
2432078	Cadmium	97.1	95.9	P/P	80 - 120
2432078	Chromium	93.1	93.3	P/P	80 - 120
2432078	Cobalt	89.4	89.4	P/P	80 - 120
2432078	Copper	95.4	95.6	P/P	80 - 120
2432078	Lead	96.1	97.1	P/P	80 - 120
2432078	Manganese	96.5	95.8	P/P	80 - 120
2432078	Molybdenum	94.8	94.6	P/P	80 - 120
2432078	Nickel	89.7	89.2	P/P	80 - 120
2432078	Selenium	97.3	94.1	P/P	80 - 120
2432078	Silver	106	105	P/P	80 - 120
2432078	Thallium	98.3	99.2	P/P	80 - 120
2432154	Aluminum	98.2		P	80 - 120
2432154	Antimony	97.7		P	80 - 120
2432154	Arsenic	92.2		P	80 - 120
2432154	Barium	98.1		P	80 - 120
2432154	Beryllium	89.2		P	80 - 120
2432154	Boron	102		P	80 - 120
2432154	Cadmium	97.0		P	80 - 120
2432154	Chromium	91.9		P	80 - 120
2432154	Cobalt	91.1		P	80 - 120
2432154	Copper	92.1		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P434124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432154	Lead	95.0		P	80 - 120
2432154	Manganese	95.6		P	80 - 120
2432154	Molybdenum	94.5		P	80 - 120
2432154	Nickel	92.9		P	80 - 120
2432154	Selenium	93.7		P	80 - 120
2432154	Silver	105		P	80 - 120
2432154	Thallium	98.5		P	80 - 120

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 300.0 Rev. 2.1
Batch ID: P434299

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2431932	Chloride	103		P	90 - 110
2432064	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434304

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2431932	Sulfate	98.8		P	90 - 110
2432064	Sulfate	99.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434481

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432067	Ammonia-N	98.0	95.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434462

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432118	Kjeldahl Nitrogen	103	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434402

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434402

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2430551	NO2NO3-N	96.4	96.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434640

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2431908	NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434112

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432067	Total-P	105	106	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P434144

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432063	Fluoride	97.4	98.6	P/P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P434203

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2431923	Organic Carbon	95.0	96.5	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P434059

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432021	Color (true)	6.52	Sample	P	0 - 20

Reference Method: DEP SOP: NU-094-1
Batch ID: P434060

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432066	Color (true)	1.24	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P434064

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432022	Turbidity	5.11	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P434124

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432078	Calcium	2.49	Spike	P	0 - 20
2432078	Iron	1.01	Spike	P	0 - 20
2432078	Magnesium	1.16	Spike	P	0 - 20
2432078	Potassium	2.95	Spike	P	0 - 20
2432078	Sodium	1.82	Spike	P	0 - 20
2432078	Strontium	1.44	Spike	P	0 - 20
2432078	Tin	4.19	Spike	P	0 - 20
2432078	Titanium	2.76	Spike	P	0 - 20
2432078	Vanadium	2.92	Spike	P	0 - 20
2432078	Zinc	2.28	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P434124

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432078	Aluminum	1.01	Spike	P	0 - 20
2432078	Antimony	1.04	Spike	P	0 - 20
2432078	Arsenic	0.482	Spike	P	0 - 20
2432078	Barium	0.136	Spike	P	0 - 20
2432078	Beryllium	0.705	Spike	P	0 - 20
2432078	Boron	0.124	Spike	P	0 - 20
2432078	Cadmium	1.24	Spike	P	0 - 20
2432078	Chromium	0.266	Spike	P	0 - 20
2432078	Cobalt	0.0368	Spike	P	0 - 20
2432078	Copper	0.215	Spike	P	0 - 20
2432078	Lead	1.03	Spike	P	0 - 20
2432078	Manganese	0.683	Spike	P	0 - 20
2432078	Molybdenum	0.221	Spike	P	0 - 20
2432078	Nickel	0.636	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P434124

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432078	Selenium	3.33	Spike	P	0 - 20
2432078	Silver	0.675	Spike	P	0 - 20
2432078	Thallium	0.894	Spike	P	0 - 20

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 300.0 Rev. 2.1
Batch ID: P434299

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2431932	Chloride	1.49	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434304

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2431932	Sulfate	1.27	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434481

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432067	Ammonia-N	2.04	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432118	Kjeldahl Nitrogen	2.45	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434402

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434402

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2430551	NO2NO3-N	0.504	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434640

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2431908	NO2NO3-N	0.952	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434112

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432067	Total-P	1.16	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P434416

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432063	Total Alkalinity	0.737	Sample	P	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P434584

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432097	TDS	5.41	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P434144

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432063	Fluoride	1.01	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2011
Batch ID: P434203

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2431923	Organic Carbon	1.11	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: 2432063, 2432064, 2432065, 2432066, 2432071

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	100	P/P	90 - 110
Color (true)	99.1	100	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A121130

Included Lab Sample IDs: 2432063, 2432064, 2432065, 2432066, 2432071

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

Reference Method: SM 4500-F- C-2011

Run ID: A121155

Included Lab Sample IDs: 2432063, 2432064, 2432065, 2432066, 2432071

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A121176

Included Lab Sample IDs: 2432067, 2432068, 2432069, 2432070, 2432072

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	99.2	P/P	90 - 110
Total-P	99.2	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A121182

Included Lab Sample IDs: 2432063, 2432064, 2432065, 2432066, 2432071

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Chloride	99.9	99.9	P/P	90 - 110
Chloride	99.9	100	P/P	90 - 110
Sulfate	100	100	P/P	90 - 110
Sulfate	99.0	99.4	P/P	90 - 110
Sulfate	99.4	99.9	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A121186

Included Lab Sample IDs: 2432067, 2432068, 2432069, 2432070, 2432072

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A121188

Included Lab Sample IDs: 2432078

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A121188

Included Lab Sample IDs: 2432078

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	100	99.1	P/P	90 - 110
Antimony	96.3	95.7	P/P	90 - 110
Arsenic	95.5	94.3	P/P	90 - 110
Barium	98.0	97.0	P/P	90 - 110
Beryllium	94.5	92.4	P/P	90 - 110
Boron	96.2	99.9	P/P	90 - 110
Cadmium	98.5	96.8	P/P	90 - 110
Chromium	94.6	94.5	P/P	90 - 110
Cobalt	91.3	90.1	P/P	90 - 110
Copper	94.3	93.0	P/P	90 - 110
Manganese	97.8	97.3	P/P	90 - 110
Molybdenum	94.6	93.7	P/P	90 - 110
Nickel	91.7	91.0	P/P	90 - 110
Selenium	99.3	97.7	P/P	90 - 110
Silver	93.6	92.3	P/P	90 - 110
Thallium	92.7	93.7	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A121209

Included Lab Sample IDs: 2432078

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	98.3	95.8	P/P	95 - 105
Iron	101	100	P/P	95 - 105
Magnesium	100	100	P/P	95 - 105
Potassium	99.3	99.4	P/P	95 - 105
Sodium	99.2	98.0	P/P	95 - 105
Strontium	98.9	98.7	P/P	95 - 105
Tin	98.8	99.1	P/P	95 - 105
Titanium	98.8	99.0	P/P	95 - 105
Vanadium	98.7	99.2	P/P	95 - 105
Zinc	101	100	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A121217

Included Lab Sample IDs: 2432078

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	94.9	93.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A121266

Included Lab Sample IDs: 2432067

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.0	98.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-2011

Run ID: A121272

Included Lab Sample IDs: 2432063, 2432064, 2432065, 2432066, 2432071

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.3	96.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A121307

Included Lab Sample IDs: 2432067, 2432068, 2432069, 2432070, 2432072

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A121364

Included Lab Sample IDs: 2432067, 2432068, 2432069, 2432070, 2432072

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	108	107	P/P	90 - 110
Kjeldahl Nitrogen	109	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A121386

Included Lab Sample IDs: 2432068, 2432069, 2432070, 2432072

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	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			Precision SMP	MS
			LCS				
DEP SOP: NU-094-1	Color (true)	98.9				6.52	
	Color (true)	99.4				1.24	
EPA 180.1 Rev. 2.0	Turbidity	99.4				5.11	
EPA 200.7 Rev. 4.4	Calcium	105	99.2	106	102		2.49
	Iron	105	105	103	100		1.01
	Magnesium	105	104	103	98.6		1.16
	Potassium	103	103	99.2	96.9		2.95
	Sodium	99.9	97.9	99.3			1.82
	Strontium	101	100	98.6	96.1		1.44
	Tin	105	105	100	96.6		4.19
	Titanium	102	104	101	96.5		2.76
	Vanadium	101	104	101	98.4		2.92
	Zinc	103	106	103	101		2.28
EPA 200.8 Rev. 5.4	Aluminum	97.3	97.1	98.2	98.2		1.01
	Antimony	98.5	98.6	97.5	97.7		1.04
	Arsenic	93.5	94.0	93.6	92.2		0.482
	Barium	100	99.1	99.0	98.1		0.136
	Beryllium	91.7	92.2	91.6	89.2		0.705
	Boron	100	101	101	102		0.124
	Cadmium	97.0	97.1	95.9	97.0		1.24
	Chromium	92.5	93.1	93.3	91.9		0.266
	Cobalt	90.0	89.4	89.4	91.1		0.0368
	Copper	93.8	95.4	95.6	92.1		0.215
	Lead	95.4	96.1	97.1	95.0		1.03
	Manganese	97.3	96.5	95.8	95.6		0.683
	Molybdenum	94.2	94.8	94.6	94.5		0.221
	Nickel	89.8	89.7	89.2	92.9		0.636
	Selenium	96.2	97.3	94.1	93.7		3.33
	Silver	108	106	105	105		0.675
	Thallium	96.3	98.3	99.2	98.5		0.894
EPA 300.0 Rev. 2.1	Chloride	102	102	104		0.932	
	Chloride	102	103	102		1.49	
	Sulfate	100	99.8	101		0.879	
	Sulfate	99.1	98.8	99.0		1.27	
EPA 350.1 Rev. 2.0	Ammonia-N	99.8	98.0	95.6			2.04
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108	103	99.2			2.45
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	96.4	96.9			0.504
	NO2NO3-N	107	102	103			0.952
EPA 365.1 Rev. 2.0	Total-P	103	105	106			1.16
SM 2320 B-2011	Total Alkalinity	98.2				0.737	
SM 2540 C-2015	TDS	96.8				5.41	
SM 2540 D-2015	TSS	93.9					
SM 4500-F- C-2011	Fluoride	97.1	97.4	98.6			1.01
SM 5310 B-2011	Organic Carbon	92.8	95.0	96.5			1.11

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2432063, 2432064, 2432065, 2432066, 2432071
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2432063, 2432064, 2432065, 2432066, 2432071

Reference Method Descriptions

Method	Description	Associated Samples
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2432078
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2432078
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2432063, 2432064, 2432065, 2432066, 2432071
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2432063, 2432064, 2432065, 2432066, 2432071
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2432067, 2432068, 2432069, 2432070, 2432072
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2432067, 2432068, 2432069, 2432070, 2432072
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2432067, 2432068, 2432069, 2432070, 2432072
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2432067, 2432068, 2432069, 2432070, 2432072
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2432063, 2432064, 2432065, 2432066, 2432071
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2432078
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2432063, 2432064, 2432065, 2432066, 2432071
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2432063, 2432064, 2432065, 2432066, 2432071
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2432063, 2432064, 2432065, 2432066, 2432071
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2432067, 2432068, 2432069, 2432070, 2432072

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 14:46	Anna M. Plaviak	2432063
	08/18/2023			08/18/2023 14:47	Anna M. Plaviak	2432064, 2432065
	08/18/2023			08/18/2023 14:52	Anna M. Plaviak	2432066, 2432071
EPA 180.1 Rev. 2.0	08/18/2023			08/18/2023 13:52	Alexis Price	2432063
	08/18/2023			08/18/2023 13:57	Alexis Price	2432064
	08/18/2023			08/18/2023 14:00	Alexis Price	2432065
	08/18/2023			08/18/2023 14:02	Alexis Price	2432066
	08/18/2023			08/18/2023 14:07	Alexis Price	2432071
EPA 200.7 Rev. 4.4	08/18/2023	08/21/2023 12:45	George D Taylor	08/23/2023 13:49	Samatha Luckman	2432078
EPA 200.8 Rev. 5.4	08/18/2023	08/21/2023 12:45	George D Taylor	08/22/2023 17:45	Conrad Hartmann	2432078
	08/18/2023	08/21/2023 12:45	George D Taylor	08/23/2023 13:29	Conrad Hartmann	2432078
EPA 300.0 Rev. 2.1	08/18/2023			08/22/2023 10:16	James L Waggeberby	2432071
	08/18/2023			08/24/2023 05:27	James L Waggeberby	2432064
	08/18/2023			08/24/2023 09:36	James L Waggeberby	2432063
	08/18/2023			08/24/2023 09:51	James L Waggeberby	2432065
	08/18/2023			08/24/2023 10:06	James L Waggeberby	2432066
EPA 350.1 Rev. 2.0	08/18/2023			08/29/2023 10:44	Ping Hua	2432067
	08/18/2023			08/29/2023 10:55	Ping Hua	2432068
	08/18/2023			08/29/2023 10:56	Ping Hua	2432069
	08/18/2023			08/29/2023 10:57	Ping Hua	2432070
	08/18/2023			08/29/2023 10:59	Ping Hua	2432072
EPA 351.2 Rev. 2.0	08/18/2023	09/01/2023 14:11	Simonne.V. Calhoun	09/05/2023 14:32	Samantha L Bates	2432067
	08/18/2023	09/01/2023 14:11	Simonne.V. Calhoun	09/05/2023 14:33	Samantha L Bates	2432068
	08/18/2023	09/01/2023 14:11	Simonne.V. Calhoun	09/05/2023 14:38	Samantha L Bates	2432069
	08/18/2023	09/01/2023 14:11	Simonne.V. Calhoun	09/05/2023 14:40	Samantha L Bates	2432070
	08/18/2023	09/01/2023 14:11	Simonne.V. Calhoun	09/05/2023 14:41	Samantha L Bates	2432072
EPA 353.2 Rev. 2.0	08/18/2023			08/25/2023 14:56	Anna M. Plaviak	2432067
	08/18/2023			09/06/2023 16:03	Anna M. Plaviak	2432068
	08/18/2023			09/06/2023 16:04	Anna M. Plaviak	2432069
	08/18/2023			09/06/2023 16:05	Anna M. Plaviak	2432070
	08/18/2023			09/06/2023 16:06	Anna M. Plaviak	2432072
EPA 365.1 Rev. 2.0	08/18/2023	08/21/2023 16:54	Adam P Silver	08/22/2023 13:36	James L Waggeberby	2432067
	08/18/2023	08/21/2023 16:54	Adam P Silver	08/22/2023 13:38	James L Waggeberby	2432068
	08/18/2023	08/21/2023 16:54	Adam P Silver	08/22/2023 13:39	James L Waggeberby	2432069
	08/18/2023	08/21/2023 16:54	Adam P Silver	08/22/2023 13:40	James L Waggeberby	2432070
	08/18/2023	08/21/2023 16:54	Adam P Silver	08/22/2023 13:47	James L Waggeberby	2432072
SM 2320 B-2011	08/18/2023			08/28/2023 00:41	Dale L. Simmons	2432063
	08/18/2023			08/28/2023 01:30	Dale L. Simmons	2432064
	08/18/2023			08/28/2023 01:40	Dale L. Simmons	2432065
	08/18/2023			08/28/2023 01:49	Dale L. Simmons	2432066

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-2011	08/18/2023			08/28/2023 01:57	Dale L. Simmons	2432071
SM 2340 B-2011	08/18/2023			08/23/2023 13:49	Samatha Luckman	2432078
SM 2540 C-2015	08/18/2023			08/23/2023 16:38	Yijie Li	2432063, 2432064, 2432065, 2432066, 2432071
SM 2540 D-2015	08/18/2023			08/23/2023 16:38	Yijie Li	2432063, 2432064, 2432065, 2432066, 2432071
SM 4500-F- C-2011	08/18/2023			08/21/2023 22:42	Dale L. Simmons	2432063
	08/18/2023			08/22/2023 00:38	Dale L. Simmons	2432064
	08/18/2023			08/22/2023 00:50	Dale L. Simmons	2432065
	08/18/2023			08/22/2023 01:03	Dale L. Simmons	2432066
	08/18/2023			08/22/2023 01:14	Dale L. Simmons	2432071
SM 5310 B-2011	08/18/2023			08/22/2023 16:50	Elise M. Gillis	2432067
	08/18/2023			08/22/2023 17:03	Elise M. Gillis	2432068
	08/18/2023			08/22/2023 17:44	Elise M. Gillis	2432069
	08/18/2023			08/22/2023 17:57	Elise M. Gillis	2432070
	08/18/2023			08/22/2023 18:11	Elise M. Gillis	2432072