

Chemical Analysis Report

NE-DIST-2022-12-13-03

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

Event Description: **Nassau North**
Request ID: **RQ-2022-11-21-03**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
Attn: Jeremy Parrish

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

Report Comment: Unauthorized to re-upload samples with Prep Batch P423907.

Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 17-JAN-2023 11:25



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: LITTLE ST. MARYS @ CR 121A

Collection Date/Time: 12/13/2022 09:25

Field ID: 19010046

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2374882	DEP SOP: NU-094-1	Color (true)	150		PCU	P423540	
	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P423536	
	EPA 300.0 Rev. 2.1	Chloride	29	A	mg Cl/L	P423714	
		Sulfate	7.6	A	mg SO4/L	P423717	
	SM 2320 B-2011	Total Alkalinity	21		mg CaCO3/L	P423927	
	SM 2540 C-2015	TDS	102		mg/L	P423893	
	SM 2540 D-2015	TSS	2	I	mg/L	P423786	
2374883	SM 4500-F- C-2011	Fluoride	0.048	I	mg F/L	P423931	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P424100	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.64		mg N/L	P423703	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P423590	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P423567	
2374890	SM 5310 B-2011	Organic Carbon	22		mg C/L	P423708	
	EPA 200.7 Rev. 4.4	Calcium	11.2		mg/L	P423520	
		Iron	750		ug/L	P423520	
		Magnesium	3.52		mg/L	P423520	
		Potassium	2.1		mg/L	P423520	
		Sodium	14.0		mg/L	P423520	
		Strontium	47.0		ug/L	P423520	
		Tin	3.0	U	ug/L	P423520	
		Titanium	1.5	I	ug/L	P423520	
		Vanadium	2.0	U	ug/L	P423520	
		Zinc	5.0	U	ug/L	P423520	
	EPA 200.8 Rev. 5.4	Aluminum	204		ug/L	P423520	
		Antimony	0.050	U	ug/L	P423520	
		Arsenic	0.57		ug/L	P423520	
		Barium	29.5		ug/L	P423520	
		Beryllium	0.020	I	ug/L	P423520	
		Boron	35.1		ug/L	P423520	
		Cadmium	0.020	U	ug/L	P423520	
		Chromium	0.48	I	ug/L	P423520	
		Cobalt	0.578		ug/L	P423520	
		Copper	0.40	U	ug/L	P423520	
		Lead	0.37	I	ug/L	P423520	
		Manganese	145		ug/L	P423520	
		Molybdenum	0.15	U	ug/L	P423520	
		Nickel	0.50	U	ug/L	P423520	
		Selenium	0.20	U	ug/L	P423520	
		Silver	0.010	U	ug/L	P423520	
		Thallium	0.10	U	ug/L	P423520	
	SM 2340 B-2011	Hardness	42.5		mg/L	P423520	

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: FB

Collection Date/Time: 12/13/2022 09:40

Field ID: FB_12132022

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2374884	DEP SOP: NU-094-1	Color (true)	2.5	U	PCU	P423540	
	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P423536	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P423714	
		Sulfate	0.20	U	mg SO4/L	P423717	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P423927	
	SM 2540 C-2015	TDS	15	U	mg/L	P423892	
	SM 2540 D-2015	TSS	2	U	mg/L	P423785	
	SM 4500-F- C-2011	Fluoride	0.025	U	mg F/L	P423931	
2374885	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P424100	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P423663	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P423590	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P423567	
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P423708	
2374892	EPA 200.7 Rev. 4.4	Calcium	0.075	U	mg/L	P423520	
		Iron	30	U	ug/L	P423816	
		Magnesium	0.040	U	mg/L	P423520	
		Potassium	0.30	U	mg/L	P423520	
		Sodium	0.50	U	mg/L	P423520	
		Strontium	2.0	U	ug/L	P423520	
		Tin	3.0	U	ug/L	P423520	
		Titanium	0.75	U	ug/L	P423520	
		Vanadium	2.0	U	ug/L	P423520	
		Zinc	5.0	U	ug/L	P423520	
	EPA 200.8 Rev. 5.4	Aluminum	5.0	U	ug/L	P423520	
		Antimony	0.050	U	ug/L	P423520	
		Arsenic	0.050	U	ug/L	P423520	
		Barium	0.20	U	ug/L	P423520	
		Beryllium	0.010	U	ug/L	P423520	
		Boron	2.0	U	ug/L	P423520	
		Cadmium	0.020	U	ug/L	P423520	
		Chromium	0.40	U	ug/L	P423520	
		Cobalt	0.020	U	ug/L	P423520	
		Copper	0.40	U	ug/L	P423520	
		Lead	0.20	U	ug/L	P423520	
		Manganese	0.10	U	ug/L	P423520	
		Molybdenum	0.15	U	ug/L	P423520	
		Nickel	0.50	U	ug/L	P423520	
		Selenium	0.20	U	ug/L	P423520	
		Silver	0.010	U	ug/L	P423520	
		Thallium	0.10	U	ug/L	P423520	
		Hardness	0.35	U	mg/L	P423520	

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: Mills CR @ CR 108

Collection Date/Time: 12/13/2022 10:10

Field ID: 19010096

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2374891	EPA 200.7 Rev. 4.4	Calcium	3.89		mg/L	P423520	
		Iron	1.04E+03		ug/L	P423520	
		Magnesium	1.08		mg/L	P423520	
		Potassium	0.88	I	mg/L	P423520	
		Sodium	9.7		mg/L	P423520	
		Strontium	18.3		ug/L	P423520	
		Tin	3.0	U	ug/L	P423520	
		Titanium	0.79	I	ug/L	P423520	
		Vanadium	2.0	U	ug/L	P423520	
		Zinc	5.0	U	ug/L	P423520	
	EPA 200.8 Rev. 5.4	Aluminum	229		ug/L	P423520	
		Antimony	0.050	U	ug/L	P423520	
		Arsenic	0.29		ug/L	P423520	
		Barium	22.4		ug/L	P423520	
		Beryllium	0.017	I	ug/L	P423520	
		Boron	18.2		ug/L	P423520	
		Cadmium	0.020	U	ug/L	P423520	
		Chromium	0.40	U	ug/L	P423520	
		Cobalt	0.252		ug/L	P423520	
		Copper	0.40	U	ug/L	P423520	
		Lead	0.23	I	ug/L	P423520	
		Manganese	15.1		ug/L	P423520	
		Molybdenum	0.15	U	ug/L	P423520	
		Nickel	0.50	U	ug/L	P423520	
		Selenium	0.20	U	ug/L	P423520	
		Silver	0.010	U	ug/L	P423520	
		Thallium	0.10	U	ug/L	P423520	
	SM 2340 B-2011	Hardness	14.1		mg/L	P423520	

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P423540

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P423536

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P423520

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 200.7 Rev. 4.4
Batch ID: P423816

Component	Result	Code	Units
Iron	30	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P423520

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: P423714

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423717

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P424100

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P423663

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P423703

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P423590

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P423567

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

Reference Method: SM 2320 B-2011
Batch ID: P423927

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

Reference Method: SM 2540 C-2015
Batch ID: P423892

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2015
Batch ID: P423893

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P423785

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P423786

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P423931

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P423708

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: P423540

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P423536

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P423520

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	80 - 120
Iron	102		P	80 - 120
Magnesium	98.2		P	80 - 120
Potassium	94.7		P	80 - 120
Sodium	99.6		P	80 - 120
Strontium	97.3		P	80 - 120
Tin	95.7		P	80 - 120
Titanium	99.5		P	80 - 120
Vanadium	98.4		P	80 - 120
Zinc	98.6		P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P423816

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	99.9		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P423520

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	105		P	85 - 115
Antimony	104		P	85 - 115
Arsenic	105		P	85 - 115
Barium	104		P	85 - 115
Beryllium	96.0		P	85 - 115
Boron	106		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	99.8		P	85 - 115
Cobalt	102		P	85 - 115
Copper	105		P	85 - 115
Lead	94.0		P	85 - 115
Manganese	102		P	85 - 115
Molybdenum	101		P	85 - 115
Nickel	106		P	85 - 115
Selenium	104		P	85 - 115
Silver	102		P	85 - 115
Thallium	102		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423714

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423717

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P424100

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P423663

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P423703

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P423590

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: P423567

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

Reference Method: SM 2320 B-2011
Batch ID: P423927

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.6		P	94 - 106

Reference Method: SM 2540 C-2015
Batch ID: P423892

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	96.7		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2540 C-2015
Batch ID: P423893

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	92.2		P	90 - 110

Reference Method: SM 2540 D-2015
Batch ID: P423785

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	101		P	85 - 106

Reference Method: SM 2540 D-2015
Batch ID: P423786

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	95.2		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P423931

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

Reference Method: SM 5310 B-2011
Batch ID: P423708

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P423520

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374640	Calcium	107		P	80 - 120
2374640	Iron	104	101	P/P	80 - 120
2374640	Magnesium	99.9	96.0	P/P	80 - 120
2374640	Potassium	101	97.0	P/P	80 - 120
2374640	Sodium	103	100	P/P	80 - 120
2374640	Strontium	99.9	97.7	P/P	80 - 120
2374640	Tin	96.0	91.9	P/P	80 - 120
2374640	Titanium	102	98.4	P/P	80 - 120
2374640	Vanadium	99.9	95.5	P/P	80 - 120
2374640	Zinc	98.6	94.4	P/P	80 - 120
2374878	Calcium	94.6		P	80 - 120
2374878	Iron	102		P	80 - 120
2374878	Magnesium	97.4		P	80 - 120
2374878	Potassium	98.9		P	80 - 120
2374878	Sodium	102		P	80 - 120
2374878	Strontium	99.4		P	80 - 120
2374878	Tin	97.3		P	80 - 120
2374878	Titanium	102		P	80 - 120
2374878	Vanadium	102		P	80 - 120
2374878	Zinc	100		P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P423816

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2376313	Iron	98.0	96.7	P/P	80 - 120
2376889	Iron	96.4		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P423520

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374640	Aluminum	104	105	P/P	80 - 120
2374640	Antimony	103	104	P/P	80 - 120
2374640	Arsenic	103	104	P/P	80 - 120
2374640	Barium	105	108	P/P	80 - 120
2374640	Beryllium	97.2	97.6	P/P	80 - 120
2374640	Boron	105	105	P/P	80 - 120
2374640	Cadmium	109	110	P/P	80 - 120
2374640	Chromium	105	107	P/P	80 - 120
2374640	Cobalt	103	103	P/P	80 - 120
2374640	Copper	96.5	96.4	P/P	80 - 120
2374640	Lead	95.9	96.8	P/P	80 - 120
2374640	Manganese	107	107	P/P	80 - 120
2374640	Molybdenum	106	108	P/P	80 - 120
2374640	Nickel	106	106	P/P	80 - 120
2374640	Selenium	103	102	P/P	80 - 120
2374640	Silver	103	105	P/P	80 - 120
2374640	Thallium	105	107	P/P	80 - 120
2374878	Aluminum	102		P	80 - 120
2374878	Antimony	106		P	80 - 120
2374878	Arsenic	106		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P423520

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374878	Barium	105		P	80 - 120
2374878	Beryllium	96.6		P	80 - 120
2374878	Boron	103		P	80 - 120
2374878	Cadmium	110		P	80 - 120
2374878	Chromium	101		P	80 - 120
2374878	Cobalt	102		P	80 - 120
2374878	Copper	104		P	80 - 120
2374878	Lead	96.8		P	80 - 120
2374878	Manganese	105		P	80 - 120
2374878	Molybdenum	108		P	80 - 120
2374878	Nickel	105		P	80 - 120
2374878	Selenium	106		P	80 - 120
2374878	Silver	105		P	80 - 120
2374878	Thallium	105		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423714

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374882	Chloride	95.2		P	90 - 110
2375057	Chloride	98.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423717

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374882	Sulfate	96.6		P	90 - 110
2375057	Sulfate	95.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P424100

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374775	Ammonia-N	99.8	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P423663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2375530	Kjeldahl Nitrogen	105	114	P/F	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P423703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2375418	Kjeldahl Nitrogen	93.8	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P423590

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374946	NO2NO3-N	100	100	P/P	90 - 110

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P423567

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374883	Total-P	104	104	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P423931

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374629	Fluoride	98.1	97.5	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P423708

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374775	Organic Carbon	99.2	99.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P423540

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374911	Color (true)	2.36	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P423536

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374898	Turbidity	0.531	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P423520

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374640	Calcium	2.26	Spike	P	0 - 20
2374640	Iron	2.76	Spike	P	0 - 20
2374640	Magnesium	2.69	Spike	P	0 - 20
2374640	Potassium	3.16	Spike	P	0 - 20
2374640	Sodium	2.06	Spike	P	0 - 20
2374640	Strontium	2.14	Spike	P	0 - 20
2374640	Tin	4.41	Spike	P	0 - 20
2374640	Titanium	4.02	Spike	P	0 - 20
2374640	Vanadium	4.41	Spike	P	0 - 20
2374640	Zinc	4.33	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P423816

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2376313	Iron	1.26	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P423520

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374640	Aluminum	0.439	Spike	P	0 - 20
2374640	Antimony	1.07	Spike	P	0 - 20
2374640	Arsenic	0.756	Spike	P	0 - 20
2374640	Barium	1.81	Spike	P	0 - 20
2374640	Beryllium	0.461	Spike	P	0 - 20
2374640	Boron	0.148	Spike	P	0 - 20
2374640	Cadmium	0.681	Spike	P	0 - 20
2374640	Chromium	1.66	Spike	P	0 - 20
2374640	Cobalt	0.785	Spike	P	0 - 20
2374640	Copper	0.104	Spike	P	0 - 20
2374640	Lead	0.973	Spike	P	0 - 20
2374640	Manganese	0.307	Spike	P	0 - 20
2374640	Molybdenum	1.44	Spike	P	0 - 20
2374640	Nickel	0.589	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P423520

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374640	Selenium	0.725	Spike	P	0 - 20
2374640	Silver	2.57	Spike	P	0 - 20
2374640	Thallium	2.41	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P423714

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374882	Chloride	3.46	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P423717

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374882	Sulfate	4.46	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P424100

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374775	Ammonia-N	0.141	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P423663

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2375530	Kjeldahl Nitrogen	7.60	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P423703

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2375418	Kjeldahl Nitrogen	5.82	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P423590

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374946	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P423567

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
------------	-----------	-----------	-------------------	-----------	----------------

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P423567

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374883	Total-P	0.275	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P423927

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374629	Total Alkalinity	1.30	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2015
Batch ID: P423892

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374477	TDS	5.39	Sample	P	0 - 10

Reference Method: SM 2540 C-2015
Batch ID: P423893

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374869	TDS	5.86	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P423931

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374629	Fluoride	0.472	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P423708

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374775	Organic Carbon	0.176	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A116398

Included Lab Sample IDs: 2374882, 2374884

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A116438

Included Lab Sample IDs: 2374882, 2374884

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

Reference Method: DEP SOP: NU-094-1

Run ID: A116439

Included Lab Sample IDs: 2374882, 2374884

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	98.0	P/P	90 - 110
Color (true)	97.8	98.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A116461

Included Lab Sample IDs: 2374883, 2374885

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	98.0	P/P	90 - 110
NO2NO3-N	94.5	94.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A116508

Included Lab Sample IDs: 2374883, 2374885

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	106	104	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A116546

Included Lab Sample IDs: 2374883, 2374885

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.0	99.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A116548

Included Lab Sample IDs: 2374885

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.8	96.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A116556

Included Lab Sample IDs: 2374890, 2374891, 2374892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	98.0	99.4	P/P	90 - 110
Calcium	99.7	100	P/P	90 - 110
Iron	101	102	P/P	90 - 110
Magnesium	97.3	99.0	P/P	90 - 110
Magnesium	98.3	99.3	P/P	90 - 110
Potassium	97.2	98.2	P/P	90 - 110
Potassium	97.9	99.2	P/P	90 - 110
Sodium	100	101	P/P	90 - 110
Sodium	98.8	100	P/P	90 - 110
Strontium	102	97.0	P/P	90 - 110
Strontium	97.9	100	P/P	90 - 110
Tin	100	101	P/P	90 - 110
Tin	97.0	95.3	P/P	90 - 110
Titanium	101	102	P/P	90 - 110
Titanium	97.9	96.7	P/P	90 - 110
Vanadium	97.7	95.2	P/P	90 - 110
Vanadium	99.4	102	P/P	90 - 110
Zinc	101	102	P/P	90 - 110
Zinc	97.3	97.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A116567

Included Lab Sample IDs: 2374883

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.8	94.8	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A116645

Included Lab Sample IDs: 2374882, 2374884

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	94.6	101	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A116645

Included Lab Sample IDs: 2374882, 2374884

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A116722

Included Lab Sample IDs: 2374883, 2374885

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.7	98.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A116837

Included Lab Sample IDs: 2374890, 2374891, 2374892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	104	104	P/P	90 - 110
Aluminum	104	104	P/P	90 - 110
Barium	102	103	P/P	90 - 110
Barium	103	102	P/P	90 - 110
Beryllium	100	102	P/P	90 - 110
Beryllium	102	101	P/P	90 - 110
Boron	103	104	P/P	90 - 110
Boron	106	103	P/P	90 - 110
Cadmium	104	106	P/P	90 - 110
Cadmium	106	106	P/P	90 - 110
Chromium	103	102	P/P	90 - 110
Chromium	98.2	103	P/P	90 - 110
Cobalt	102	99.9	P/P	90 - 110
Cobalt	99.9	99.1	P/P	90 - 110
Copper	104	104	P/P	90 - 110
Copper	106	104	P/P	90 - 110
Lead	93.8	94.8	P/P	90 - 110
Lead	94.8	95.3	P/P	90 - 110
Manganese	104	103	P/P	90 - 110
Molybdenum	102	103	P/P	90 - 110
Molybdenum	103	103	P/P	90 - 110
Nickel	103	103	P/P	90 - 110
Nickel	106	103	P/P	90 - 110
Silver	101	100	P/P	90 - 110
Silver	98.8	101	P/P	90 - 110
Thallium	101	102	P/P	90 - 110
Thallium	102	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A116858

Included Lab Sample IDs: 2374890, 2374891, 2374892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	101	100	P/P	90 - 110
Antimony	97.8	101	P/P	90 - 110
Arsenic	102	103	P/P	90 - 110
Arsenic	103	102	P/P	90 - 110
Selenium	102	103	P/P	90 - 110
Selenium	103	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A116863

Included Lab Sample IDs: 2374892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Manganese	97.4	97.7	P/P	90 - 110

Quality Assurance Report

Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A116904

Included Lab Sample IDs: 2374892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	98.5	98.4	P/P	95 - 105

* 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)	101				2.36	
EPA 180.1 Rev. 2.0	Turbidity	102				0.531	
EPA 200.7 Rev. 4.4	Calcium	101	107	94.6			2.26
	Iron	102	104	101	102		2.76
	Iron	99.9	96.7	98.0	96.4		1.26
	Magnesium	98.2	99.9	96.0	97.4		2.69
	Potassium	94.7	101	97.0	98.9		3.16
	Sodium	99.6	103	100	102		2.06
	Strontium	97.3	99.9	97.7	99.4		2.14
	Tin	95.7	96.0	91.9	97.3		4.41
	Titanium	99.5	102	98.4	102		4.02
	Vanadium	98.4	99.9	95.5	102		4.41
	Zinc	98.6	98.6	94.4	100		4.33
EPA 200.8 Rev. 5.4	Aluminum	105	104	105	102		0.439
	Antimony	104	103	104	106		1.07
	Arsenic	105	103	104	106		0.756
	Barium	104	105	108	105		1.81
	Beryllium	96.0	97.2	97.6	96.6		0.461
	Boron	106	105	105	103		0.148
	Cadmium	103	109	110	110		0.681
	Chromium	99.8	105	107	101		1.66
	Cobalt	102	103	103	102		0.785
	Copper	105	104	96.5	96.4		0.104
	Lead	94.0	95.9	96.8	96.8		0.973
	Manganese	102	107	107	105		0.307
	Molybdenum	101	106	108	108		1.44
	Nickel	106	106	106	105		0.589
	Selenium	104	103	102	106		0.725
	Silver	102	103	105	105		2.57
	Thallium	102	105	107	105		2.41
EPA 300.0 Rev. 2.1	Chloride	100	95.2	98.7		3.46	
	Sulfate	101	96.6	95.1		4.46	
EPA 350.1 Rev. 2.0	Ammonia-N	98.0	99.8	100			0.141
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	105	114			7.60
	Kjeldahl Nitrogen	102	93.8	100			5.82
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	100	100			0.0
EPA 365.1 Rev. 2.0	Total-P	104	104	104			0.275
SM 2320 B-2011	Total Alkalinity	97.6				1.30	
SM 2540 C-2015	TDS	96.7				5.39	
	TDS	92.2				5.86	
SM 2540 D-2015	TSS	101					
	TSS	95.2					
SM 4500-F- C-2011	Fluoride	101	98.1	97.5			0.472
SM 5310 B-2011	Organic Carbon	95.4	99.2	99.4			0.176

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2374882, 2374884
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2374882, 2374884
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2374890, 2374891, 2374892

Reference Method Descriptions

Method	Description	Associated Samples
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2374890, 2374891, 2374892
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2374882, 2374884
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2374882, 2374884
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2374883, 2374885
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2374883, 2374885
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2374883, 2374885
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2374883, 2374885
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2374882, 2374884
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2374890, 2374891, 2374892
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2374882, 2374884
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2374882, 2374884
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2374882, 2374884
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2374883, 2374885

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	12/13/2022			12/14/2022 14:38	Alexis Price	2374884
	12/13/2022			12/14/2022 14:53	Alexis Price	2374882
EPA 180.1 Rev. 2.0	12/13/2022			12/14/2022 13:21	Chandler E Cox	2374882
	12/13/2022			12/14/2022 13:22	Chandler E Cox	2374884
EPA 200.7 Rev. 4.4	12/13/2022	12/14/2022 11:50	George D Taylor	12/19/2022 17:51	Betina Topolski	2374892
	12/13/2022	12/14/2022 11:50	George D Taylor	12/19/2022 21:47	Betina Topolski	2374890
	12/13/2022	12/14/2022 11:50	George D Taylor	12/19/2022 21:55	Betina Topolski	2374891
EPA 200.8 Rev. 5.4	12/13/2022	12/21/2022 12:45	George D Taylor	01/13/2023 10:44	McKinley C Carter	2374892
	12/13/2022	12/14/2022 11:50	George D Taylor	01/10/2023 22:14	Emily M Philpot	2374892
	12/13/2022	12/14/2022 11:50	George D Taylor	01/11/2023 00:28	Emily M Philpot	2374890
	12/13/2022	12/14/2022 11:50	George D Taylor	01/11/2023 00:38	Emily M Philpot	2374891
	12/13/2022	12/14/2022 11:50	George D Taylor	01/11/2023 17:35	Emily M Philpot	2374892
	12/13/2022	12/14/2022 11:50	George D Taylor	01/11/2023 19:05	Emily M Philpot	2374890
	12/13/2022	12/14/2022 11:50	George D Taylor	01/11/2023 19:13	Emily M Philpot	2374891
	12/13/2022	12/14/2022 11:50	George D Taylor	01/12/2023 01:13	Emily M Philpot	2374892
EPA 300.0 Rev. 2.1	12/13/2022			12/17/2022 05:01	Anna M. Plaviak	2374882
	12/13/2022			12/17/2022 07:31	Anna M. Plaviak	2374884
EPA 350.1 Rev. 2.0	12/13/2022			01/04/2023 12:17	Ping Hua	2374883
	12/13/2022			01/04/2023 12:19	Ping Hua	2374885
EPA 351.2 Rev. 2.0	12/13/2022	12/16/2022 11:30	Judith K. Clark	12/19/2022 10:40	Samantha L Bates	2374885
	12/13/2022	12/19/2022 12:30	Simonne.V. Calhoun	12/20/2022 11:00	Samantha L Bates	2374883
EPA 353.2 Rev. 2.0	12/13/2022			12/15/2022 09:28	Beverly Y. Sanders	2374885
	12/13/2022			12/15/2022 10:46	Beverly Y. Sanders	2374883
EPA 365.1 Rev. 2.0	12/13/2022	12/15/2022 15:15	Simonne.V. Calhoun	12/16/2022 12:54	James L Waggeberby	2374885
	12/13/2022	12/15/2022 15:15	Simonne.V. Calhoun	12/16/2022 12:55	James L Waggeberby	2374883
SM 2320 B-2011	12/13/2022			12/22/2022 11:24	Dale L. Simmons	2374882
	12/13/2022			12/22/2022 11:34	Dale L. Simmons	2374884
SM 2340 B-2011	12/13/2022			12/19/2022 17:51	Betina Topolski	2374892
	12/13/2022			12/19/2022 21:47	Betina Topolski	2374890
	12/13/2022			12/19/2022 21:55	Betina Topolski	2374891
SM 2540 C-2015	12/13/2022			12/15/2022 16:01	Yijie Li	2374882, 2374884
SM 2540 D-2015	12/13/2022			12/15/2022 16:01	Yijie Li	2374882, 2374884
SM 4500-F- C-2011	12/13/2022			12/22/2022 11:24	Dale L. Simmons	2374882
	12/13/2022			12/22/2022 11:34	Dale L. Simmons	2374884
SM 5310 B-2011	12/13/2022			12/17/2022 00:38	Elise M. Gillis	2374883
	12/13/2022			12/17/2022 00:52	Elise M. Gillis	2374885