

Chemical Analysis Report

SE-DIST-2023-12-06-01

Florida DEP Laboratory
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DOH Accreditation E31780

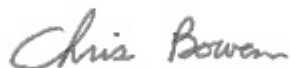
Event Description: **SMP - Highlands Canoe South**
Request ID: **RQ-2023-11-27-31**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Chris Bowen, Environmental Administrator

Date Certified: 22-DEC-2023 09:22



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: LAKE CARRIE NEAR CENTER

Collection Date/Time: 12/05/2023 12:30

Field ID: G4SE0164

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2454824	DEP SOP: NU-094-1	Color (true)	120		PCU	P438585	
	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P438590	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P438812	
		Sulfate	5.9		mg SO4/L	P438816	
	SM 2320 B-2011	Total Alkalinity	16		mg CaCO3/L	P438763	
	SM 2540 C-2015	TDS	85		mg/L	P439143	
	SM 2540 D-2015	TSS	2	I	mg/L	P439129	
	SM 4500-F- C-2011	Fluoride	0.043	I	mg F/L	P438765	
2454828	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P438667	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.77		mg N/L	P438748	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P438677	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P438837	
	SM 5310 B-2014	Organic Carbon	20		mg C/L	P438688	

Sample Location: LAKE CREWS NORTHERN SECTION

Collection Date/Time: 12/05/2023 12:40

Field ID: G4SE0168

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2454832	DEP SOP: NU-094-1	Color (true)	70	A	PCU	P438585	
	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P438590	
	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P439032	
		Sulfate	2.5		mg SO4/L	P439138	
	SM 2320 B-2011	Total Alkalinity	1.6	I	mg CaCO3/L	P438763	
	SM 2540 C-2015	TDS	57		mg/L	P439143	
	SM 2540 D-2015	TSS	2	I	mg/L	P439129	
2454833	SM 4500-F- C-2011	Fluoride	0.040	I	mg F/L	P438765	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P438667	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P438748	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P438677	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P438837	
2454849	SM 5310 B-2014	Organic Carbon	15		mg C/L	P438688	
	EPA 200.7 Rev. 4.4	Calcium	2.62		mg/L	P438706	
		Chromium	9.4		ug/L	P438706	
		Iron	90	I	ug/L	P438706	
		Magnesium	1.29		mg/L	P438706	
		Potassium	0.99	I	mg/L	P438706	
		Sodium	9.2		mg/L	P438706	
		Strontium	15.0		ug/L	P438706	
		Tin	3.0	U	ug/L	P438706	
		Titanium	0.75	U	ug/L	P438706	
		Vanadium	2.0	U	ug/L	P438706	
		Zinc	25		ug/L	P438706	
	EPA 200.8 Rev. 5.4	Aluminum	146		ug/L	P438706	
		Antimony	0.050	U	ug/L	P438706	
		Arsenic	1.26		ug/L	P438706	
		Barium	1.60		ug/L	P438706	
		Beryllium	0.010	U	ug/L	P438706	
		Boron	31.1		ug/L	P438706	
		Cadmium	0.020	U	ug/L	P438706	
		Cobalt	0.083		ug/L	P438706	
		Copper	0.63	I	ug/L	P438706	
		Lead	0.21	I	ug/L	P438706	
		Manganese	6.88		ug/L	P438706	
		Molybdenum	0.15	U	ug/L	P438706	
		Nickel	2.5		ug/L	P438706	
		Selenium	0.20	U	ug/L	P438706	
		Silver	0.010	U	ug/L	P438706	
		Thallium	0.10	U	ug/L	P438706	
	SM 2340 B-2011	Hardness	11.8		mg/L	P438706	

Sample Location: LAKE FRANCIS NEAR CENTER

Collection Date/Time: 12/05/2023 13:15

Field ID: G4SE0165

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2454825	DEP SOP: NU-094-1	Color (true)	13		PCU	P438585	
	EPA 180.1 Rev. 2.0	Turbidity	6.3		NTU	P438590	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P439032	
		Sulfate	26		mg SO4/L	P439138	
	SM 2320 B-2011	Total Alkalinity	22		mg CaCO3/L	P438763	
	SM 2540 C-2015	TDS	101		mg/L	P439143	
	SM 2540 D-2015	TSS	6	I	mg/L	P439129	
	SM 4500-F- C-2011	Fluoride	0.059	I	mg F/L	P438765	
	2454829	EPA 350.1 Rev. 2.0	0.005	I	mg N/L	P438667	
		EPA 351.2 Rev. 2.0	0.93		mg N/L	P438749	
		EPA 353.2 Rev. 2.0	0.20		mg N/L	P438677	
		EPA 365.1 Rev. 2.0	0.016		mg P/L	P438837	
		SM 5310 B-2014	8.1		mg C/L	P438688	

Sample Location: LAKE HENRY NEAR CENTER

Collection Date/Time: 12/05/2023 13:40

Field ID: G4SE0162

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2454826	DEP SOP: NU-094-1	Color (true)	12		PCU	P438585	
	EPA 180.1 Rev. 2.0	Turbidity	7.9		NTU	P438590	
	EPA 300.0 Rev. 2.1	Chloride	22		mg Cl/L	P439032	
		Sulfate	27		mg SO4/L	P439138	
	SM 2320 B-2011	Total Alkalinity	16		mg CaCO3/L	P438763	
	SM 2540 C-2015	TDS	102		mg/L	P439143	
	SM 2540 D-2015	TSS	6	I	mg/L	P439129	
	SM 4500-F- C-2011	Fluoride	0.069	I	mg F/L	P438765	
2454830	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P438667	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P438749	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P438677	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P438837	
	SM 5310 B-2014	Organic Carbon	8.4		mg C/L	P438688	

Quality Assurance Report

Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P438585

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P438590

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P438706

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Chromium	1.0	U	ug/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
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: P438706

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
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: P438812

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: P438816

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P439032

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P439138

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438667

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P438748

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P438749

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438677

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438837

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

Reference Method: SM 2320 B-2011
Batch ID: P438763

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2015
Batch ID: P439143

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P439129

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P438765

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2014
Batch ID: P438688

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: P438585

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: P438590

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P438706

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	110		P	85 - 115
Chromium	100		P	85 - 115
Iron	111		P	85 - 115
Magnesium	112		P	85 - 115
Potassium	101		P	85 - 115
Sodium	99.2		P	85 - 115
Strontium	97.7		P	85 - 115
Tin	98.1		P	85 - 115
Titanium	102		P	85 - 115
Vanadium	98.2		P	85 - 115
Zinc	94.9		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P438706

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.8		P	85 - 115
Antimony	98.9		P	85 - 115
Arsenic	97.0		P	85 - 115
Barium	98.4		P	85 - 115
Beryllium	103		P	85 - 115
Boron	103		P	85 - 115
Cadmium	98.0		P	85 - 115
Cobalt	98.2		P	85 - 115
Copper	96.5		P	85 - 115
Lead	101		P	85 - 115
Manganese	95.0		P	85 - 115
Molybdenum	97.2		P	85 - 115
Nickel	96.3		P	85 - 115
Selenium	97.6		P	85 - 115
Silver	104		P	85 - 115
Thallium	101		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438812

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438816

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P439032

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P439138

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438667

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P438748

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	105		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P438749

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: P438677

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438837

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

Reference Method: SM 2320 B-2011
Batch ID: P438763

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	95.6		P	92 - 105

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2540 C-2015
Batch ID: P439143

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	103		P	85 - 115

Reference Method: SM 2540 D-2015
Batch ID: P439129

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	106		P	85 - 115

Reference Method: SM 4500-F- C-2011
Batch ID: P438765

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	103		P	94 - 106

Reference Method: SM 5310 B-2014
Batch ID: P438688

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.7		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P438706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2454849	Calcium	109	109	P/P	80 - 120
2454849	Chromium	89.7	90.4	P/P	80 - 120
2454849	Iron	108	109	P/P	80 - 120
2454849	Magnesium	109	111	P/P	80 - 120
2454849	Potassium	99.5	99.4	P/P	80 - 120
2454849	Sodium	97.1		P	80 - 120
2454849	Strontium	96.5	96.9	P/P	80 - 120
2454849	Tin	96.6	97.0	P/P	80 - 120
2454849	Titanium	104	104	P/P	80 - 120
2454849	Vanadium	99.1	98.9	P/P	80 - 120
2454849	Zinc	93.2	91.6	P/P	80 - 120
2455252	Calcium	105		P	80 - 120
2455252	Chromium	99.7		P	80 - 120
2455252	Iron	111		P	80 - 120
2455252	Magnesium	112		P	80 - 120
2455252	Potassium	101		P	80 - 120
2455252	Sodium	100		P	80 - 120
2455252	Strontium	98.6		P	80 - 120
2455252	Tin	99.0		P	80 - 120
2455252	Titanium	103		P	80 - 120
2455252	Vanadium	99.2		P	80 - 120
2455252	Zinc	94.5		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P438706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2454849	Aluminum	97.8	95.7	P/P	80 - 120
2454849	Antimony	96.9	96.4	P/P	80 - 120
2454849	Arsenic	95.3	95.6	P/P	80 - 120
2454849	Barium	97.5	96.7	P/P	80 - 120
2454849	Beryllium	106	104	P/P	80 - 120
2454849	Boron	101	97.6	P/P	80 - 120
2454849	Cadmium	97.6	95.5	P/P	80 - 120
2454849	Cobalt	96.9	96.2	P/P	80 - 120
2454849	Copper	95.0	95.4	P/P	80 - 120
2454849	Lead	101	99.9	P/P	80 - 120
2454849	Manganese	90.9	90.2	P/P	80 - 120
2454849	Molybdenum	96.1	96.5	P/P	80 - 120
2454849	Nickel	83.0	83.0	P/P	80 - 120
2454849	Selenium	95.1	94.9	P/P	80 - 120
2454849	Silver	101	102	P/P	80 - 120
2454849	Thallium	103	103	P/P	80 - 120
2455252	Aluminum	90.2		P	80 - 120
2455252	Antimony	97.2		P	80 - 120
2455252	Arsenic	96.7		P	80 - 120
2455252	Barium	95.9		P	80 - 120
2455252	Beryllium	96.5		P	80 - 120
2455252	Boron	103		P	80 - 120
2455252	Cadmium	95.8		P	80 - 120
2455252	Cobalt	97.0		P	80 - 120
2455252	Copper	95.7		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P438706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2455252	Lead	99.9		P	80 - 120
2455252	Manganese	99.7		P	80 - 120
2455252	Molybdenum	96.3		P	80 - 120
2455252	Nickel	95.1		P	80 - 120
2455252	Selenium	92.8		P	80 - 120
2455252	Silver	102		P	80 - 120
2455252	Thallium	101		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438812

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2454598	Chloride	97.8		P	90 - 110
2454778	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438816

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2454598	Sulfate	98.8		P	90 - 110
2454778	Sulfate	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P439032

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2454834	Chloride	98.4		P	90 - 110
2454955	Chloride	99.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P439138

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2454834	Sulfate	98.7		P	90 - 110
2454955	Sulfate	98.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438667

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2454779	Ammonia-N	98.4	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P438748

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2454854	Kjeldahl Nitrogen	104	109	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P438749

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P438749

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2455386	Kjeldahl Nitrogen	101	95.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438677

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2454779	NO2NO3-N	95.4	96.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438837

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2454829	Total-P	106	107	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P438765

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2454955	Fluoride	103	103	P/P	94 - 106

Reference Method: SM 5310 B-2014
Batch ID: P438688

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2454779	Organic Carbon	98.5	99.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P438585

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2454832	Color (true)	0.244	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P438590

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2454739	Turbidity	7.14	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P438706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2454849	Calcium	0.315	Spike	P	0 - 20
2454849	Chromium	0.674	Spike	P	0 - 20
2454849	Iron	0.593	Spike	P	0 - 20
2454849	Magnesium	0.913	Spike	P	0 - 20
2454849	Potassium	0.0834	Spike	P	0 - 20
2454849	Sodium	0.623	Spike	P	0 - 20
2454849	Strontium	0.396	Spike	P	0 - 20
2454849	Tin	0.503	Spike	P	0 - 20
2454849	Titanium	0.125	Spike	P	0 - 20
2454849	Vanadium	0.223	Spike	P	0 - 20
2454849	Zinc	1.60	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P438706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2454849	Aluminum	1.79	Spike	P	0 - 20
2454849	Antimony	0.472	Spike	P	0 - 20
2454849	Arsenic	0.261	Spike	P	0 - 20
2454849	Barium	0.751	Spike	P	0 - 20
2454849	Beryllium	1.75	Spike	P	0 - 20
2454849	Boron	2.40	Spike	P	0 - 20
2454849	Cadmium	2.12	Spike	P	0 - 20
2454849	Cobalt	0.647	Spike	P	0 - 20
2454849	Copper	0.365	Spike	P	0 - 20
2454849	Lead	1.25	Spike	P	0 - 20
2454849	Manganese	0.653	Spike	P	0 - 20
2454849	Molybdenum	0.395	Spike	P	0 - 20
2454849	Nickel	0.0495	Spike	P	0 - 20
2454849	Selenium	0.190	Spike	P	0 - 20
2454849	Silver	1.21	Spike	P	0 - 20
2454849	Thallium	0.112	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438812

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2454598	Chloride	1.22	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438816

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2454598	Sulfate	1.55	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P439032

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2454834	Chloride	0.101	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P439138

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2454834	Sulfate	0.282	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438667

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2454779	Ammonia-N	0.158	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P438748

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2454854	Kjeldahl Nitrogen	3.76	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P438749

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2455386	Kjeldahl Nitrogen	4.46	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438677

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2454779	NO2NO3-N	1.14	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2454829	Total-P	1.05	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P438763

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2454955	Total Alkalinity	2.56	Sample	P	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P439143

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2454289	TDS	3.89	Sample	P	0 - 10

Reference Method: SM 2540 D-2015
Batch ID: P439129

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2454289	TSS	8.33	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P438765

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2454955	Fluoride	0.516	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2014
Batch ID: P438688

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2454779	Organic Carbon	0.412	Spike	P	0 - 15

* 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: A123059

Included Lab Sample IDs: 2454824, 2454825, 2454826, 2454832

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A123061

Included Lab Sample IDs: 2454824, 2454825, 2454826, 2454832

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A123081

Included Lab Sample IDs: 2454828, 2454829, 2454830, 2454833

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.9	99.3	P/P	90 - 110
Ammonia-N	99.3	99.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A123088

Included Lab Sample IDs: 2454828, 2454829, 2454830, 2454833

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

Reference Method: SM 5310 B-2014

Run ID: A123093

Included Lab Sample IDs: 2454828, 2454829, 2454830, 2454833

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	108	96.2	P/P	70 - 130

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A123118

Included Lab Sample IDs: 2454824

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	103	P/P	90 - 110
Sulfate	101	101	P/P	90 - 110
Sulfate	99.7	101	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A123130

Included Lab Sample IDs: 2454824, 2454825, 2454826, 2454832

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.1	97.4	P/P	90 - 110
Total Alkalinity	97.4	95.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500-F- C-2011

Run ID: A123130

Included Lab Sample IDs: 2454824, 2454825, 2454826, 2454832

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A123144

Included Lab Sample IDs: 2454849

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.2	99.1	P/P	90 - 110
Antimony	97.1	96.0	P/P	90 - 110
Arsenic	96.9	97.0	P/P	90 - 110
Barium	96.5	95.7	P/P	90 - 110
Boron	99.1	103	P/P	90 - 110
Cadmium	96.7	95.5	P/P	90 - 110
Cobalt	98.6	99.0	P/P	90 - 110
Copper	96.1	96.3	P/P	90 - 110
Lead	99.4	99.2	P/P	90 - 110
Manganese	92.5	91.8	P/P	90 - 110
Molybdenum	97.5	96.1	P/P	90 - 110
Nickel	98.0	98.2	P/P	90 - 110
Selenium	96.6	96.6	P/P	90 - 110
Silver	100	99.6	P/P	90 - 110
Thallium	98.6	99.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A123170

Included Lab Sample IDs: 2454849

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	104	108	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A123174

Included Lab Sample IDs: 2454828, 2454829, 2454830, 2454833

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.0	96.4	P/P	90 - 110
Kjeldahl Nitrogen	99.6	95.4	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A123206

Included Lab Sample IDs: 2454849

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	102	P/P	90 - 110
Chromium	102	101	P/P	90 - 110
Iron	102	102	P/P	90 - 110
Magnesium	102	103	P/P	90 - 110
Potassium	101	100	P/P	90 - 110
Sodium	97.2	97.7	P/P	90 - 110
Strontium	98.0	98.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A123206

Included Lab Sample IDs: 2454849

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Tin	103	101	P/P	90 - 110
Titanium	104	103	P/P	90 - 110
Vanadium	100	99.4	P/P	90 - 110
Zinc	100	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A123232

Included Lab Sample IDs: 2454828, 2454829, 2454830, 2454833

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	97.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A123254

Included Lab Sample IDs: 2454825, 2454826, 2454832

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.4	101	P/P	90 - 110

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
DEP SOP: NU-094-1	Color (true)	101				0.244	
EPA 180.1 Rev. 2.0	Turbidity	104				7.14	
EPA 200.7 Rev. 4.4	Calcium	110	109	109	105		0.315
	Chromium	100	89.7	90.4	99.7		0.674
	Iron	111	108	109	111		0.593
	Magnesium	112	109	111	112		0.913
	Potassium	101	99.5	99.4	101		0.0834
	Sodium	99.2	97.1	100			0.623
	Strontium	97.7	96.5	96.9	98.6		0.396
	Tin	98.1	96.6	97.0	99.0		0.503
	Titanium	102	104	104	103		0.125
	Vanadium	98.2	99.1	98.9	99.2		0.223
	Zinc	94.9	93.2	91.6	94.5		1.60
EPA 200.8 Rev. 5.4	Aluminum	97.8	97.8	95.7	90.2		1.79
	Antimony	98.9	96.9	96.4	97.2		0.472
	Arsenic	97.0	95.3	95.6	96.7		0.261
	Barium	98.4	97.5	96.7	95.9		0.751
	Beryllium	103	106	104	96.5		1.75
	Boron	103	101	97.6	103		2.40
	Cadmium	98.0	97.6	95.5	95.8		2.12
	Cobalt	98.2	96.9	96.2	97.0		0.647
	Copper	96.5	95.0	95.4	95.7		0.365
	Lead	101	101	99.9	99.9		1.25
	Manganese	95.0	90.9	90.2	99.7		0.653
	Molybdenum	97.2	96.1	96.5	96.3		0.395
	Nickel	96.3	83.0	83.0	95.1		0.0495
	Selenium	97.6	95.1	94.9	92.8		0.190
	Silver	104	101	102	102		1.21
	Thallium	101	103	103	101		0.112
EPA 300.0 Rev. 2.1	Chloride	104	97.8	102		1.22	
	Chloride	99.1	98.4	99.0		0.101	
	Sulfate	102	98.8	102		1.55	
	Sulfate	99.2	98.7	98.8		0.282	
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	98.4	98.6			0.158
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	104	109			3.76
	Kjeldahl Nitrogen	104	101	95.0			4.46
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	95.4	96.9			1.14
EPA 365.1 Rev. 2.0	Total-P	106	106	107			1.05
SM 2320 B-2011	Total Alkalinity	95.6				2.56	
SM 2540 C-2015	TDS	103				3.89	
SM 2540 D-2015	TSS	106				8.33	
SM 4500-F- C-2011	Fluoride	103	103	103			0.516
SM 5310 B-2014	Organic Carbon	98.7	98.5	99.0			0.412

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2454824, 2454825, 2454826, 2454832
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2454824, 2454825, 2454826, 2454832
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2454849
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2454849

Reference Method Descriptions

Method	Description	Associated Samples
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2454824, 2454825, 2454826, 2454832
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2454824, 2454825, 2454826, 2454832
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2454828, 2454829, 2454830, 2454833
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2454828, 2454829, 2454830, 2454833
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2454828, 2454829, 2454830, 2454833
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2454828, 2454829, 2454830, 2454833
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2454824, 2454825, 2454826, 2454832
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2454849
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2454824, 2454825, 2454826, 2454832
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2454824, 2454825, 2454826, 2454832
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2454824, 2454825, 2454826, 2454832
SM 5310 B-2014	Nonpurgeable Organic Carbon in aqueous matrices	2454828, 2454829, 2454830, 2454833

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	12/06/2023			12/06/2023 14:11	Blanca Fach	2454832
	12/06/2023			12/06/2023 14:14	Blanca Fach	2454824, 2454825
	12/06/2023			12/06/2023 14:15	Blanca Fach	2454826
EPA 180.1 Rev. 2.0	12/06/2023			12/06/2023 14:25	Anna M. Plaviak	2454824
	12/06/2023			12/06/2023 14:26	Anna M. Plaviak	2454825
	12/06/2023			12/06/2023 14:27	Anna M. Plaviak	2454826
	12/06/2023			12/06/2023 14:28	Anna M. Plaviak	2454832
EPA 200.7 Rev. 4.4	12/06/2023	12/08/2023 12:10	George D Taylor	12/13/2023 16:40	Chase Roberts	2454849
EPA 200.8 Rev. 5.4	12/06/2023	12/08/2023 12:10	George D Taylor	12/11/2023 17:48	Conrad Hartmann	2454849
	12/06/2023	12/08/2023 12:10	George D Taylor	12/13/2023 00:49	Conrad Hartmann	2454849
EPA 300.0 Rev. 2.1	12/06/2023			12/09/2023 10:59	Anna M. Plaviak	2454824
	12/06/2023			12/12/2023 17:59	Anna M. Plaviak	2454825
	12/06/2023			12/12/2023 18:14	Anna M. Plaviak	2454826
	12/06/2023			12/12/2023 18:29	Anna M. Plaviak	2454832
	12/06/2023			12/15/2023 13:13	James L Waggeberby	2454825
	12/06/2023			12/15/2023 13:28	James L Waggeberby	2454826
EPA 350.1 Rev. 2.0	12/06/2023			12/15/2023 13:43	James L Waggeberby	2454832
	12/06/2023			12/07/2023 12:51	Khloe J Berg	2454829
	12/06/2023			12/07/2023 12:52	Khloe J Berg	2454830
	12/06/2023			12/07/2023 12:53	Khloe J Berg	2454833
	12/06/2023			12/07/2023 13:13	Khloe J Berg	2454828
EPA 351.2 Rev. 2.0	12/06/2023	12/11/2023 12:28	Simonne.V. Calhoun	12/12/2023 15:56	Samantha L Bates	2454828
	12/06/2023	12/11/2023 12:28	Simonne.V. Calhoun	12/12/2023 15:58	Samantha L Bates	2454833
	12/06/2023	12/11/2023 12:28	Simonne.V. Calhoun	12/12/2023 16:40	Samantha L Bates	2454829
	12/06/2023	12/11/2023 12:28	Simonne.V. Calhoun	12/12/2023 16:41	Samantha L Bates	2454830
EPA 353.2 Rev. 2.0	12/06/2023			12/07/2023 14:29	Fadila Guebre	2454828
	12/06/2023			12/07/2023 14:30	Fadila Guebre	2454829
	12/06/2023			12/07/2023 14:31	Fadila Guebre	2454830
	12/06/2023			12/07/2023 14:33	Fadila Guebre	2454833
EPA 365.1 Rev. 2.0	12/06/2023	12/12/2023 14:15	Adam P Silver	12/14/2023 13:31	James L Waggeberby	2454828
	12/06/2023	12/12/2023 14:15	Adam P Silver	12/14/2023 13:32	James L Waggeberby	2454829
	12/06/2023	12/12/2023 14:15	Adam P Silver	12/14/2023 13:33	James L Waggeberby	2454830
	12/06/2023	12/12/2023 14:15	Adam P Silver	12/14/2023 13:34	James L Waggeberby	2454833
SM 2320 B-2011	12/06/2023			12/08/2023 00:55	Adam P Silver	2454824
	12/06/2023			12/08/2023 01:42	Adam P Silver	2454825
	12/06/2023			12/08/2023 01:54	Adam P Silver	2454826
	12/06/2023			12/08/2023 02:04	Adam P Silver	2454832
SM 2340 B-2011	12/06/2023			12/13/2023 16:40	Chase Roberts	2454849
SM 2540 C-2015	12/06/2023			12/08/2023 16:18	Yijie Li	2454824, 2454825, 2454826, 2454832
SM 2540 D-2015	12/06/2023			12/08/2023 16:18	Yijie Li	2454824, 2454825, 2454826, 2454832

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500-F- C-2011	12/06/2023			12/08/2023 00:55	Adam P Silver	2454824
	12/06/2023			12/08/2023 01:42	Adam P Silver	2454825
	12/06/2023			12/08/2023 01:54	Adam P Silver	2454826
	12/06/2023			12/08/2023 02:04	Adam P Silver	2454832
SM 5310 B-2014	12/06/2023			12/07/2023 21:56	Kenneth H Lee	2454828
	12/06/2023			12/07/2023 22:10	Kenneth H Lee	2454829
	12/06/2023			12/07/2023 22:23	Kenneth H Lee	2454830
	12/06/2023			12/07/2023 22:37	Kenneth H Lee	2454833