

Chemical Analysis Report

SO-DIST-2023-11-15-02

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

Event Description: **2023 SMP : Myakka Cricks**
Request ID: **RQ-2023-11-13-46**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 314
Fort Myers, FL 33901-3381
Attn: Nicole Reistad

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Certified by: Colin Wright, Program Administrator

Date Certified: 13-DEC-2023 08:59

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light-colored 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: LITTLE ALLIGATOR CREEK AT MIDWAY BLVD Collection Date/Time: 11/14/2023 09:35

Field ID: G3SD0071

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2451728	DEP SOP: NU-094-1	Color (true)	33	A	PCU	P437839	
	EPA 180.1 Rev. 2.0	Turbidity	2.2	A	NTU	P437853	
	EPA 300.0 Rev. 2.1	Chloride	9.6E+03		mg Cl/L	P438316	
		Sulfate	1.4E+03		mg SO4/L	P438319	
	SM 2320 B-2011	Total Alkalinity	156		mg CaCO3/L	P438025	
	SM 2540 C-2015	TDS	1.67E+04	Q	mg/L	P438849	
	SM 2540 D-2015	TSS	3	I	mg/L	P438342	
2451730	SM 4500-F- C-2011	Fluoride	0.89		mg F/L	P438029	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.16		mg N/L	P438429	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.89		mg N/L	P437856	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.040		mg N/L	P438184	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P438041	
2451741	SM 5310 B-2011	Organic Carbon	7.8		mg C/L	P437994	
	EPA 200.7 Rev. 4.4	Calcium	241		mg/L	P438062	
		Iron	200	I	ug/L	P438062	
		Magnesium	570		mg/L	P438062	
		Potassium	173		mg/L	P438062	
		Sodium	5.06E+03		mg/L	P438062	
		Strontium	4.90E+03		ug/L	P438062	
		Tin	60	U	ug/L	P438062	
		Titanium	2.8	I	ug/L	P438062	
		Vanadium	6.0	U	ug/L	P438062	
		Zinc	15	U	ug/L	P438062	
	EPA 200.8 Rev. 5.4	Aluminum	141		ug/L	P438062	
		Antimony	0.31	I	ug/L	P438062	
		Arsenic	2.60		ug/L	P438062	
		Barium	24.6		ug/L	P438062	
		Beryllium	0.040	U	ug/L	P438062	
		Boron	2.03E+03		ug/L	P438062	
		Cadmium	0.080	U	ug/L	P438062	
		Chromium	4.0	U	ug/L	P438062	
		Cobalt	0.44		ug/L	P438062	
		Copper	1.6	U	ug/L	P438062	
		Lead	0.80	U	ug/L	P438062	
		Manganese	11.6		ug/L	P438062	
		Molybdenum	8.0		ug/L	P438062	
		Nickel	2.0	U	ug/L	P438062	
		Selenium	0.80	U	ug/L	P438062	
		Silver	0.040	U	ug/L	P438062	
		Thallium	0.40	U	ug/L	P438062	
	SM 2340 B-2011	Hardness	2.95E+03		mg/L	P438062	

Field ID: G3SD0071

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Ref. Method and Comment:
SM 2540 C-2015: The sample was analyzed out of holding time because of analytical difficulties.
SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, magnesium, potassium, sodium and strontium are unavailable because of high analyte concentration in the QC sample.
EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for boron are unavailable because of high analyte concentration in the QC sample.

Sample Location: ROCK CREEK AT EISENHOWER DR

Collection Date/Time: 11/14/2023 10:20

Field ID: G3SD0070

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2451729	DEP SOP: NU-094-1	Color (true)	110		PCU	P437839	
	EPA 180.1 Rev. 2.0	Turbidity	5.3		NTU	P437853	
	EPA 300.0 Rev. 2.1	Chloride	6.0E+03		mg Cl/L	P438358	
		Sulfate	910		mg SO4/L	P438319	
	SM 2320 B-2011	Total Alkalinity	108		mg CaCO3/L	P438025	
	SM 2540 C-2015	TDS	1.02E+04		mg/L	P438345	
	SM 2540 D-2015	TSS	11		mg/L	P438342	
2451731	SM 4500-F- C-2011	Fluoride	0.62		mg F/L	P438029	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.056		mg N/L	P438429	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P437856	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P438184	
	EPA 365.1 Rev. 2.0	Total-P	0.24		mg P/L	P438120	
2451742	SM 5310 B-2011	Organic Carbon	16		mg C/L	P437994	
	EPA 200.7 Rev. 4.4	Calcium	168		mg/L	P438062	
		Iron	450		ug/L	P438062	
		Magnesium	374		mg/L	P438062	
		Potassium	112		mg/L	P438062	
		Sodium	3.05E+03		mg/L	P438062	
		Strontium	3.95E+03		ug/L	P438062	
		Tin	9.0	U	ug/L	P438062	
		Titanium	5.1	I	ug/L	P438062	
		Vanadium	6.0	U	ug/L	P438062	
		Zinc	15	U	ug/L	P438062	
	EPA 200.8 Rev. 5.4	Aluminum	333		ug/L	P438062	
		Antimony	0.21	I	ug/L	P438062	
		Arsenic	2.31		ug/L	P438062	
		Barium	22.0		ug/L	P438062	
		Beryllium	0.040	U	ug/L	P438062	
		Boron	1.31E+03		ug/L	P438062	
		Cadmium	0.080	U	ug/L	P438062	
		Chromium	4.0	U	ug/L	P438062	
		Cobalt	0.24	I	ug/L	P438062	
		Copper	4.7		ug/L	P438062	
		Lead	0.80	U	ug/L	P438062	
		Manganese	19.0		ug/L	P438062	
		Molybdenum	4.8		ug/L	P438062	
		Nickel	2.0	U	ug/L	P438062	
		Selenium	0.80	U	ug/L	P438062	
		Silver	0.040	U	ug/L	P438062	
		Thallium	0.40	U	ug/L	P438062	
	SM 2340 B-2011	Hardness	1.96E+03		mg/L	P438062	

Field ID: G3SD0070

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Ref. Method and Comment:
SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, magnesium, potassium, sodium and strontium are unavailable because of high analyte concentration in the QC sample.
EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for boron are unavailable because of high analyte concentration in the QC sample. The copper result was confirmed in the undigested sample on 11/27/2023.

Sample Location: BIG SLOUGH CANAL

Collection Date/Time: 11/14/2023 10:45

Field ID: G3SD0161

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2451743	EPA 200.7 Rev. 4.4	Calcium	128		mg/L	P437910	
		Iron	450		ug/L	P437910	
		Magnesium	139		mg/L	P437910	
		Potassium	38.3		mg/L	P437910	
		Sodium	1.03E+03		mg/L	P437910	
		Strontium	3.07E+03		ug/L	P437910	
		Tin	15	U	ug/L	P437910	
		Titanium	1.4	I	ug/L	P437910	
		Vanadium	2.0	U	ug/L	P437910	
		Zinc	5.0	U	ug/L	P437910	
	EPA 200.8 Rev. 5.4	Aluminum	46		ug/L	P437910	
		Antimony	0.16	I	ug/L	P437910	
		Arsenic	1.77		ug/L	P437910	
		Barium	24.3		ug/L	P437910	
		Beryllium	0.011	I	ug/L	P437910	
		Boron	399		ug/L	P437910	
		Cadmium	0.020	U	ug/L	P437910	
		Chromium	0.40	U	ug/L	P437910	
		Cobalt	0.123		ug/L	P437910	
		Copper	0.48	I	ug/L	P437910	
		Lead	0.20	U	ug/L	P437910	
		Manganese	16.8		ug/L	P437910	
		Molybdenum	3.34		ug/L	P437910	
		Nickel	0.72	I	ug/L	P437910	
		Selenium	0.29	I	ug/L	P437910	
		Silver	0.010	U	ug/L	P437910	
		Thallium	0.10	U	ug/L	P437910	
	SM 2340 B-2011	Hardness	893		mg/L	P437910	

Sample Location: MYAKKA RIVER (TIDAL) AT US 41

Collection Date/Time: 11/14/2023 11:05

Field ID: G3SD0068

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2451732	DEP SOP: NU-094-1	Color (true)	180		PCU	P437839	
	EPA 180.1 Rev. 2.0	Turbidity	6.2		NTU	P437853	
	EPA 300.0 Rev. 2.1	Chloride	580		mg Cl/L	P438316	
		Sulfate	170		mg SO4/L	P438319	
	SM 2320 B-2011	Total Alkalinity	70		mg CaCO3/L	P438014	
	SM 2540 C-2015	TDS	1.21E+03		mg/L	P438344	
	SM 2540 D-2015	TSS	14		mg/L	P438340	
2451733	SM 4500-F- C-2011	Fluoride	0.31		mg F/L	P438332	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.028		mg N/L	P438431	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P438036	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.040		mg N/L	P438097	
	EPA 365.1 Rev. 2.0	Total-P	0.30		mg P/L	P438119	
	SM 5310 B-2011	Organic Carbon	24		mg C/L	P438145	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 4500-F- C-2011: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: BIG SLOUGH AT BUTLER PARK

Collection Date/Time: 11/14/2023 11:30

Field ID: G3SD0168

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2451744	EPA 200.7 Rev. 4.4	Calcium	98.0		mg/L	P437910	
		Iron	820		ug/L	P437910	
		Magnesium	14.4		mg/L	P437910	
		Potassium	1.9		mg/L	P437910	
		Sodium	56.1		mg/L	P437910	
		Strontium	1.16E+03		ug/L	P437910	
		Tin	3.0	U	ug/L	P437910	
		Titanium	1.1	I	ug/L	P437910	
		Vanadium	2.0	U	ug/L	P437910	
		Zinc	5.0	U	ug/L	P437910	
	EPA 200.8 Rev. 5.4	Aluminum	33		ug/L	P437910	
		Antimony	0.075	I	ug/L	P437910	
		Arsenic	1.43		ug/L	P437910	
		Barium	21.1		ug/L	P437910	
		Beryllium	0.010	U	ug/L	P437910	
		Boron	45.9		ug/L	P437910	
		Cadmium	0.020	U	ug/L	P437910	
		Chromium	0.63	I	ug/L	P437910	
		Cobalt	0.151		ug/L	P437910	
		Copper	0.40	U	ug/L	P437910	
		Lead	0.20	U	ug/L	P437910	
		Manganese	15.8		ug/L	P437910	
		Molybdenum	1.65		ug/L	P437910	
		Nickel	0.91	I	ug/L	P437910	
		Selenium	0.20	U	ug/L	P437910	
		Silver	0.010	U	ug/L	P437910	
		Thallium	0.10	U	ug/L	P437910	
	SM 2340 B-2011	Hardness	304		mg/L	P437910	

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P437839

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P437853

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P437910

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: P438062

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: P437910

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P437910

Component	Result	Code	Units
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	0.019	I	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P438062

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	0.012	I	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438316

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438319

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438358

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438429

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438429

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438431

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P437856

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P438036

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438097

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438184

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438041

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438119

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438120

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: P438014

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

Reference Method: SM 2320 B-2011
Batch ID: P438025

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

Reference Method: SM 2540 C-2015
Batch ID: P438344

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2015
Batch ID: P438345

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2015
Batch ID: P438849

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P438340

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P438342

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P438029

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 4500-F- C-2011
Batch ID: P438332

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P437994

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

Reference Method: SM 5310 B-2011
Batch ID: P438145

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: P437839

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

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P437853

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P437910

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	107		P	85 - 115
Iron	107		P	85 - 115
Magnesium	109		P	85 - 115
Potassium	103		P	85 - 115
Sodium	102		P	85 - 115
Strontium	101		P	85 - 115
Tin	101		P	85 - 115
Titanium	100		P	85 - 115
Vanadium	101		P	85 - 115
Zinc	100		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P438062

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	99.5		P	85 - 115
Magnesium	99.3		P	85 - 115
Potassium	97.9		P	85 - 115
Sodium	101		P	85 - 115
Strontium	97.5		P	85 - 115
Tin	94.4		P	85 - 115
Titanium	95.5		P	85 - 115
Vanadium	96.5		P	85 - 115
Zinc	94.8		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P437910

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	100		P	85 - 115
Antimony	103		P	85 - 115
Arsenic	103		P	85 - 115
Barium	103		P	85 - 115
Beryllium	98.0		P	85 - 115
Boron	99.7		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	101		P	85 - 115
Cobalt	100		P	85 - 115
Copper	99.6		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P437910

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Lead	97.2		P	85 - 115
Manganese	99.2		P	85 - 115
Molybdenum	101		P	85 - 115
Nickel	102		P	85 - 115
Selenium	103		P	85 - 115
Silver	107		P	85 - 115
Thallium	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P438062

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	105		P	85 - 115
Arsenic	103		P	85 - 115
Barium	105		P	85 - 115
Beryllium	94.1		P	85 - 115
Boron	104		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	104		P	85 - 115
Cobalt	102		P	85 - 115
Copper	100		P	85 - 115
Lead	98.4		P	85 - 115
Manganese	102		P	85 - 115
Molybdenum	103		P	85 - 115
Nickel	101		P	85 - 115
Selenium	105		P	85 - 115
Silver	108		P	85 - 115
Thallium	104		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438316

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438319

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438358

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438429

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

Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438429

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438431

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P437856

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P438036

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: P438097

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438184

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438041

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438119

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438120

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-2011
Batch ID: P438014

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	92 - 105

Reference Method: SM 2320 B-2011
Batch ID: P438025

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	92 - 105

Reference Method: SM 2540 C-2015
Batch ID: P438344

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	94.0		P	85 - 115

Reference Method: SM 2540 C-2015
Batch ID: P438345

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	96.8		P	85 - 115

Reference Method: SM 2540 C-2015
Batch ID: P438849

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	94.0		P	85 - 115

Reference Method: SM 2540 D-2015
Batch ID: P438340

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	107		P	85 - 115

Reference Method: SM 2540 D-2015
Batch ID: P438342

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	105		P	85 - 115

Reference Method: SM 4500-F- C-2011
Batch ID: P438029

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

Reference Method: SM 4500-F- C-2011
Batch ID: P438332

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	94 - 106

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P437994

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.7		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P438145

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.1		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P437910

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451123	Calcium	105	106	P/P	80 - 120
2451123	Iron	106	107	P/P	80 - 120
2451123	Magnesium	106	107	P/P	80 - 120
2451123	Potassium	102	101	P/P	80 - 120
2451123	Sodium	101		P	80 - 120
2451123	Strontium	101	101	P/P	80 - 120
2451123	Tin	100	101	P/P	80 - 120
2451123	Titanium	102	102	P/P	80 - 120
2451123	Vanadium	104	104	P/P	80 - 120
2451123	Zinc	102	103	P/P	80 - 120
2451582	Calcium	102		P	80 - 120
2451582	Iron	105		P	80 - 120
2451582	Magnesium	107		P	80 - 120
2451582	Potassium	99.4		P	80 - 120
2451582	Sodium	99.1		P	80 - 120
2451582	Strontium	97.4		P	80 - 120
2451582	Tin	99.4		P	80 - 120
2451582	Titanium	102		P	80 - 120
2451582	Vanadium	103		P	80 - 120
2451582	Zinc	102		P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P438062

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451742	Iron	90.5	91.8	P/P	70 - 130
2451742	Tin	76.5	79.1	P/P	70 - 130
2451742	Titanium	90.7	97.8	P/P	70 - 130
2451742	Vanadium	97.7	99.9	P/P	70 - 130
2451742	Zinc	93.0	94.8	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P437910

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451123	Aluminum	102	102	P/P	80 - 120
2451123	Antimony	103	103	P/P	80 - 120
2451123	Arsenic	103	103	P/P	80 - 120
2451123	Barium	104	103	P/P	80 - 120
2451123	Beryllium	97.8	98.5	P/P	80 - 120
2451123	Boron	104	106	P/P	80 - 120
2451123	Cadmium	103	101	P/P	80 - 120
2451123	Chromium	100	101	P/P	80 - 120
2451123	Cobalt	98.6	99.1	P/P	80 - 120
2451123	Copper	100	99.8	P/P	80 - 120
2451123	Lead	98.5	98.8	P/P	80 - 120
2451123	Manganese	99.8	100	P/P	80 - 120
2451123	Molybdenum	102	102	P/P	80 - 120
2451123	Nickel	99.4	99.6	P/P	80 - 120
2451123	Selenium	101	102	P/P	80 - 120
2451123	Silver	106	105	P/P	80 - 120
2451123	Thallium	102	103	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P437910

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451582	Aluminum	101		P	80 - 120
2451582	Antimony	102		P	80 - 120
2451582	Arsenic	102		P	80 - 120
2451582	Barium	103		P	80 - 120
2451582	Beryllium	97.3		P	80 - 120
2451582	Boron	102		P	80 - 120
2451582	Cadmium	101		P	80 - 120
2451582	Chromium	97.1		P	80 - 120
2451582	Cobalt	96.9		P	80 - 120
2451582	Copper	96.6		P	80 - 120
2451582	Lead	97.5		P	80 - 120
2451582	Manganese	96.8		P	80 - 120
2451582	Molybdenum	102		P	80 - 120
2451582	Nickel	98.9		P	80 - 120
2451582	Selenium	102		P	80 - 120
2451582	Silver	106		P	80 - 120
2451582	Thallium	101		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P438062

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451742	Aluminum	110	113	P/P	70 - 130
2451742	Antimony	104	104	P/P	70 - 130
2451742	Arsenic	116	115	P/P	70 - 130
2451742	Barium	107	105	P/P	70 - 130
2451742	Beryllium	97.4	97.7	P/P	70 - 130
2451742	Cadmium	96.5	97.2	P/P	70 - 130
2451742	Chromium	97.9	98.4	P/P	70 - 130
2451742	Cobalt	94.0	93.2	P/P	70 - 130
2451742	Copper	88.3	88.5	P/P	70 - 130
2451742	Lead	107	105	P/P	70 - 130
2451742	Manganese	89.5	89.0	P/P	70 - 130
2451742	Molybdenum	120	117	P/P	70 - 130
2451742	Nickel	96.9	95.4	P/P	70 - 130
2451742	Selenium	105	104	P/P	70 - 130
2451742	Silver	99.8	98.1	P/P	70 - 130
2451742	Thallium	113	114	P/P	70 - 130

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438316

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451672	Chloride	101		P	90 - 110
2451803	Chloride	105		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438319

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451672	Sulfate	101		P	90 - 110
2451803	Sulfate	106		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438358

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2452492	Chloride	101		P	90 - 110
2452502	Chloride	106		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438429

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451499	Ammonia-N	103	106	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438431

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451675	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P437856

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451405	Kjeldahl Nitrogen	105	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P438036

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451810	Kjeldahl Nitrogen	109	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438097

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451634	NO2NO3-N	99.3	97.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438184

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451500	NO2NO3-N	99.4	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438041

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451499	Total-P	98.0	97.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438119

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451700	Total-P	104	106	P/P	90 - 110

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438120

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2452154	Total-P	105	104	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P438029

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2450882	Fluoride	102	104	P/P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P437994

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451730	Organic Carbon	85.1	88.5	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P438145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2451619	Organic Carbon	95.3	95.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P437839

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451728	Color (true)	1.97	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P437853

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451728	Turbidity	2.25	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P437910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451123	Calcium	0.705	Spike	P	0 - 20
2451123	Iron	0.482	Spike	P	0 - 20
2451123	Magnesium	0.467	Spike	P	0 - 20
2451123	Potassium	0.533	Spike	P	0 - 20
2451123	Sodium	0.245	Spike	P	0 - 20
2451123	Strontium	0.0943	Spike	P	0 - 20
2451123	Tin	0.953	Spike	P	0 - 20
2451123	Titanium	0.175	Spike	P	0 - 20
2451123	Vanadium	0.0278	Spike	P	0 - 20
2451123	Zinc	0.616	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P438062

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451742	Calcium	2.47	Spike	P	0 - 20
2451742	Iron	1.27	Spike	P	0 - 20
2451742	Magnesium	2.25	Spike	P	0 - 20
2451742	Potassium	3.36	Spike	P	0 - 20
2451742	Sodium	3.52	Spike	P	0 - 20
2451742	Strontium	1.64	Spike	P	0 - 20
2451742	Tin	3.37	Spike	P	0 - 20
2451742	Titanium	6.60	Spike	P	0 - 20
2451742	Vanadium	2.18	Spike	P	0 - 20
2451742	Zinc	1.91	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P437910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451123	Aluminum	0.0441	Spike	P	0 - 20
2451123	Antimony	0.247	Spike	P	0 - 20
2451123	Arsenic	0.138	Spike	P	0 - 20
2451123	Barium	0.436	Spike	P	0 - 20
2451123	Beryllium	0.668	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P437910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451123	Boron	1.53	Spike	P	0 - 20
2451123	Cadmium	1.64	Spike	P	0 - 20
2451123	Chromium	0.813	Spike	P	0 - 20
2451123	Cobalt	0.489	Spike	P	0 - 20
2451123	Copper	0.448	Spike	P	0 - 20
2451123	Lead	0.305	Spike	P	0 - 20
2451123	Manganese	0.233	Spike	P	0 - 20
2451123	Molybdenum	0.427	Spike	P	0 - 20
2451123	Nickel	0.171	Spike	P	0 - 20
2451123	Selenium	0.950	Spike	P	0 - 20
2451123	Silver	0.942	Spike	P	0 - 20
2451123	Thallium	0.793	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P438062

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451742	Aluminum	1.84	Spike	P	0 - 20
2451742	Antimony	0.869	Spike	P	0 - 20
2451742	Arsenic	1.44	Spike	P	0 - 20
2451742	Barium	1.52	Spike	P	0 - 20
2451742	Beryllium	0.326	Spike	P	0 - 20
2451742	Boron	2.49	Spike	P	0 - 20
2451742	Cadmium	0.734	Spike	P	0 - 20
2451742	Chromium	0.498	Spike	P	0 - 20
2451742	Cobalt	0.883	Spike	P	0 - 20
2451742	Copper	0.204	Spike	P	0 - 20
2451742	Lead	1.35	Spike	P	0 - 20
2451742	Manganese	0.404	Spike	P	0 - 20
2451742	Molybdenum	1.83	Spike	P	0 - 20
2451742	Nickel	1.53	Spike	P	0 - 20
2451742	Selenium	1.03	Spike	P	0 - 20
2451742	Silver	1.70	Spike	P	0 - 20
2451742	Thallium	0.909	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P438316

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451672	Chloride	0.161	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P438319

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451672	Sulfate	0.316	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438358

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452492	Chloride	2.72	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438429

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451499	Ammonia-N	1.72	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438431

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451675	Ammonia-N	0.549	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P437856

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451405	Kjeldahl Nitrogen	3.42	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P438036

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451810	Kjeldahl Nitrogen	5.38	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451634	NO2NO3-N	1.61	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P438184

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451500	NO2NO3-N	1.29	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438041

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451499	Total-P	0.713	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438119

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451700	Total-P	0.917	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P438120

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452154	Total-P	0.144	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P438014

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451614	Total Alkalinity	1.72	Sample	P	0 - 3.9

Reference Method: SM 2320 B-2011
Batch ID: P438025

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2450882	Total Alkalinity	0.0647	Sample	P	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P438344

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451565	TDS	2.12	Sample	P	0 - 10

Reference Method: SM 2540 C-2015
Batch ID: P438345

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451786	TDS	2.74	Sample	P	0 - 10

Reference Method: SM 2540 C-2015
Batch ID: P438849

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2453779	TDS	6.95	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P438029

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2450882	Fluoride	1.40	Spike	P	0 - 1.9

Quality Assurance Report Precision

Reference Method: SM 4500-F- C-2011
Batch ID: P438332

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2452866	Fluoride	0.986	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2011
Batch ID: P437994

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451730	Organic Carbon	3.20	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P438145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2451619	Organic Carbon	0.262	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: A122745

Included Lab Sample IDs: 2451728, 2451729, 2451732

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.8	99.9	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A122747

Included Lab Sample IDs: 2451728, 2451729, 2451732

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.5	P/P	95 - 105

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A122798

Included Lab Sample IDs: 2451730, 2451731

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	108	P/P	90 - 110
Kjeldahl Nitrogen	108	103	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A122810

Included Lab Sample IDs: 2451730, 2451731

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.8	95.0	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A122815

Included Lab Sample IDs: 2451732

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.8	96.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A122816

Included Lab Sample IDs: 2451743, 2451744

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	103	P/P	90 - 110
Antimony	101	100	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Barium	101	101	P/P	90 - 110
Beryllium	100	101	P/P	90 - 110
Boron	99.7	101	P/P	90 - 110
Cadmium	101	101	P/P	90 - 110
Chromium	103	100	P/P	90 - 110
Cobalt	98.8	97.8	P/P	90 - 110
Copper	97.8	97.9	P/P	90 - 110
Lead	97.1	96.8	P/P	90 - 110
Manganese	102	99.8	P/P	90 - 110
Molybdenum	101	101	P/P	90 - 110
Nickel	99.7	99.6	P/P	90 - 110
Selenium	100	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A122816

Included Lab Sample IDs: 2451743, 2451744

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	101	101	P/P	90 - 110
Thallium	100	99.9	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A122817

Included Lab Sample IDs: 2451743, 2451744

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	100	P/P	90 - 110
Iron	103	100	P/P	90 - 110
Magnesium	102	100	P/P	90 - 110
Potassium	98.7	97.2	P/P	90 - 110
Sodium	98.7	97.1	P/P	90 - 110
Strontium	98.0	96.9	P/P	90 - 110
Tin	99.5	96.3	P/P	90 - 110
Titanium	97.8	97.0	P/P	90 - 110
Vanadium	98.1	97.4	P/P	90 - 110
Zinc	101	98.8	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A122818

Included Lab Sample IDs: 2451728, 2451729

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	97.3	P/P	90 - 110
Total Alkalinity	97.3	100	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A122818

Included Lab Sample IDs: 2451728, 2451729

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	104	P/P	90 - 110
Fluoride	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A122846

Included Lab Sample IDs: 2451730

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.7	97.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A122849

Included Lab Sample IDs: 2451733

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

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-2011

Run ID: A122873

Included Lab Sample IDs: 2451733

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.4	95.8	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A122877

Included Lab Sample IDs: 2451741, 2451742

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	97.9	94.5	P/P	90 - 110
Calcium	99.8	97.4	P/P	90 - 110
Iron	93.9	94.0	P/P	90 - 110
Iron	97.7	93.9	P/P	90 - 110
Magnesium	93.7	90.3	P/P	90 - 110
Magnesium	97.1	93.7	P/P	90 - 110
Potassium	95.5	92.3	P/P	90 - 110
Potassium	97.5	95.1	P/P	90 - 110
Sodium	96.1	92.9	P/P	90 - 110
Strontium	97.3	94.3	P/P	90 - 110
Strontium	97.5	97.3	P/P	90 - 110
Tin	94.3	93.2	P/P	90 - 110
Tin	98.4	94.3	P/P	90 - 110
Titanium	96.1	93.8	P/P	90 - 110
Titanium	98.8	96.1	P/P	90 - 110
Vanadium	96.4	94.8	P/P	90 - 110
Vanadium	99.4	96.4	P/P	90 - 110
Zinc	101	96.7	P/P	90 - 110
Zinc	96.7	95.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A122880

Included Lab Sample IDs: 2451741, 2451742

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	104	107	P/P	90 - 110
Aluminum	107	105	P/P	90 - 110
Antimony	103	104	P/P	90 - 110
Antimony	103	103	P/P	90 - 110
Arsenic	105	106	P/P	90 - 110
Arsenic	106	106	P/P	90 - 110
Barium	103	104	P/P	90 - 110
Barium	104	104	P/P	90 - 110
Beryllium	104	103	P/P	90 - 110
Beryllium	99.5	104	P/P	90 - 110
Boron	102	103	P/P	90 - 110
Cadmium	103	103	P/P	90 - 110
Cadmium	103	103	P/P	90 - 110
Chromium	104	104	P/P	90 - 110
Chromium	104	104	P/P	90 - 110
Cobalt	102	103	P/P	90 - 110
Cobalt	103	103	P/P	90 - 110
Copper	102	104	P/P	90 - 110
Copper	104	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A122880

Included Lab Sample IDs: 2451741, 2451742

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	98.6	99.5	P/P	90 - 110
Lead	99.5	99.0	P/P	90 - 110
Manganese	102	102	P/P	90 - 110
Manganese	102	102	P/P	90 - 110
Molybdenum	103	103	P/P	90 - 110
Molybdenum	104	103	P/P	90 - 110
Nickel	103	104	P/P	90 - 110
Nickel	104	105	P/P	90 - 110
Selenium	104	104	P/P	90 - 110
Selenium	104	104	P/P	90 - 110
Silver	103	103	P/P	90 - 110
Silver	103	103	P/P	90 - 110
Thallium	102	102	P/P	90 - 110
Thallium	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A122886

Included Lab Sample IDs: 2451731

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	93.5	97.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A122891

Included Lab Sample IDs: 2451730, 2451731

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A122899

Included Lab Sample IDs: 2451733

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.6	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A122909

Included Lab Sample IDs: 2451733

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.9	99.2	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A122921

Included Lab Sample IDs: 2451741

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sodium	99.8	107	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A122949

Included Lab Sample IDs: 2451728, 2451729, 2451732

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	103	P/P	90 - 110
Chloride	103	104	P/P	90 - 110
Chloride	97.1	101	P/P	90 - 110
Sulfate	102	103	P/P	90 - 110
Sulfate	103	104	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A122950

Included Lab Sample IDs: 2451732

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: A122988

Included Lab Sample IDs: 2451730, 2451731, 2451733

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.6	98.7	P/P	90 - 110
Ammonia-N	99.0	98.7	P/P	90 - 110

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			LCS	Precision SMP	MS
DEP SOP: NU-094-1	Color (true)	102					1.97	
EPA 180.1 Rev. 2.0	Turbidity	103					2.25	
EPA 200.7 Rev. 4.4	Calcium	107	105	106	102			0.705
	Calcium	101						2.47
	Iron	107	106	107	105			0.482
	Iron	99.5	90.5	91.8				1.27
	Magnesium	109	106	107	107			0.467
	Magnesium	99.3						2.25
	Potassium	103	102	101	99.4			0.533
	Potassium	97.9						3.36
	Sodium	102	101	99.1				0.245
	Sodium	101						3.52
	Strontium	101	101	101	97.4			0.0943
	Strontium	97.5						1.64
	Tin	101	100	101	99.4			0.953
	Tin	94.4	76.5	79.1				3.37
	Titanium	100	102	102	102			0.175
	Titanium	95.5	90.7	97.8				6.60
	Vanadium	101	104	104	103			0.0278
	Vanadium	96.5	97.7	99.9				2.18
	Zinc	100	102	103	102			0.616
	Zinc	94.8	93.0	94.8				1.91
EPA 200.8 Rev. 5.4	Aluminum	100	102	102	101			0.0441
	Aluminum	102	110	113				1.84
	Antimony	103	103	103	102			0.247
	Antimony	105	104	104				0.869
	Arsenic	103	103	103	102			0.138
	Arsenic	103	116	115				1.44
	Barium	103	104	103	103			0.436
	Barium	105	107	105				1.52
	Beryllium	98.0	97.8	98.5	97.3			0.668
	Beryllium	94.1	97.4	97.7				0.326
	Boron	99.7	104	106	102			1.53
	Boron	104						2.49
	Cadmium	100	103	101	101			1.64
	Cadmium	103	96.5	97.2				0.734
	Chromium	101	100	101	97.1			0.813
	Chromium	104	97.9	98.4				0.498
	Cobalt	100	98.6	99.1	96.9			0.489
	Cobalt	102	94.0	93.2				0.883
	Copper	99.6	100	99.8	96.6			0.448
	Copper	100	88.3	88.5				0.204
	Lead	97.2	98.5	98.8	97.5			0.305
	Lead	98.4	107	105				1.35
	Manganese	99.2	99.8	100	96.8			0.233
	Manganese	102	89.5	89.0				0.404
	Molybdenum	101	102	102	102			0.427
	Molybdenum	103	120	117				1.83
	Nickel	102	99.4	99.6	98.9			0.171
	Nickel	101	96.9	95.4				1.53
	Selenium	103	101	102	102			0.950
	Selenium	105	105	104				1.03
	Silver	107	106	105	106			0.942
	Silver	108	99.8	98.1				1.70

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision	MS
			LCS	SMP	MS		
EPA 200.8 Rev. 5.4	Thallium	101	102	103	101		0.793
	Thallium	104	113	114			0.909
EPA 300.0 Rev. 2.1	Chloride	103	101	105		0.161	
	Chloride	99.3	101	106		2.72	
	Sulfate	104	101	106		0.316	
EPA 350.1 Rev. 2.0	Ammonia-N	92.2	103	106			1.72
	Ammonia-N	95.2	101	102			0.549
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	105	101			3.42
	Kjeldahl Nitrogen	104	109	103			5.38
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	99.3	97.3			1.61
	NO2NO3-N	100	99.4	101			1.29
EPA 365.1 Rev. 2.0	Total-P	104	98.0	97.3			0.713
	Total-P	104	104	106			0.917
	Total-P	105	105	104			0.144
SM 2320 B-2011	Total Alkalinity	100				1.72	
	Total Alkalinity	101				0.0647	
SM 2540 C-2015	TDS	94.0				2.12	
	TDS	96.8				2.74	
	TDS	94.0				6.95	
SM 2540 D-2015	TSS	107					
	TSS	105					
SM 4500-F- C-2011	Fluoride	102	102	104			1.40
	Fluoride	101					0.986
SM 5310 B-2011	Organic Carbon	95.7	85.1	88.5			3.20
	Organic Carbon	94.1	95.3	95.6			0.262

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2451728, 2451729, 2451732
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2451728, 2451729, 2451732
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2451741, 2451742, 2451743, 2451744
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2451741, 2451742, 2451743, 2451744
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2451728, 2451729, 2451732
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2451728, 2451729, 2451732
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2451730, 2451731, 2451733
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2451730, 2451731, 2451733
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2451730, 2451731, 2451733
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2451730, 2451731, 2451733
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2451728, 2451729, 2451732
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2451741, 2451742, 2451743, 2451744
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2451728, 2451729, 2451732
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2451728, 2451729, 2451732
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2451728, 2451729, 2451732
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2451730, 2451731, 2451733

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	11/15/2023			11/15/2023 14:36	Samantha L Bates	2451728
	11/15/2023			11/15/2023 14:37	Samantha L Bates	2451729
	11/15/2023			11/15/2023 14:38	Samantha L Bates	2451732
EPA 180.1 Rev. 2.0	11/15/2023			11/15/2023 14:22	Khloe J Berg	2451728
	11/15/2023			11/15/2023 14:24	Khloe J Berg	2451729
	11/15/2023			11/15/2023 14:25	Khloe J Berg	2451732
EPA 200.7 Rev. 4.4	11/15/2023	11/16/2023 14:25	George D Taylor	11/17/2023 22:42	Samatha Luckman	2451743
	11/15/2023	11/16/2023 14:25	George D Taylor	11/17/2023 22:52	Samatha Luckman	2451743
	11/15/2023	11/16/2023 14:25	George D Taylor	11/17/2023 23:00	Samatha Luckman	2451743
	11/15/2023	11/16/2023 14:25	George D Taylor	11/17/2023 23:08	Samatha Luckman	2451744
	11/15/2023	11/20/2023 12:25	George D Taylor	11/21/2023 20:57	Samatha Luckman	2451741
	11/15/2023	11/20/2023 12:25	George D Taylor	11/21/2023 21:07	Samatha Luckman	2451741
	11/15/2023	11/20/2023 12:25	George D Taylor	11/21/2023 21:41	Samatha Luckman	2451742
	11/15/2023	11/20/2023 12:25	George D Taylor	11/21/2023 22:45	Samatha Luckman	2451742
EPA 200.8 Rev. 5.4	11/15/2023	11/20/2023 12:25	George D Taylor	11/28/2023 16:11	Samatha Luckman	2451741
	11/15/2023	11/16/2023 14:25	George D Taylor	11/17/2023 23:22	Emily M Philpot	2451743
	11/15/2023	11/16/2023 14:25	George D Taylor	11/17/2023 23:32	Emily M Philpot	2451744
	11/15/2023	11/20/2023 12:25	George D Taylor	11/21/2023 15:38	Emily M Philpot	2451742
	11/15/2023	11/20/2023 12:25	George D Taylor	11/21/2023 17:03	Emily M Philpot	2451741
	11/15/2023	11/20/2023 12:25	George D Taylor	11/21/2023 17:41	Emily M Philpot	2451742
	11/15/2023	11/20/2023 12:25	George D Taylor	11/21/2023 19:06	Emily M Philpot	2451741
EPA 300.0 Rev. 2.1	11/15/2023			11/27/2023 23:44	James L Waggeberby	2451728
	11/15/2023			11/28/2023 00:29	James L Waggeberby	2451729
	11/15/2023			11/28/2023 00:44	James L Waggeberby	2451732
	11/15/2023			11/29/2023 19:28	James L Waggeberby	2451729
EPA 350.1 Rev. 2.0	11/15/2023			12/01/2023 12:41	Khloe J Berg	2451730
	11/15/2023			12/01/2023 12:42	Khloe J Berg	2451731
	11/15/2023			12/01/2023 13:35	Khloe J Berg	2451733
EPA 351.2 Rev. 2.0	11/15/2023	11/16/2023 10:44	Simonne.V. Calhoun	11/17/2023 13:33	Ping Hua	2451730
	11/15/2023	11/16/2023 10:44	Simonne.V. Calhoun	11/17/2023 13:38	Ping Hua	2451731
	11/15/2023	11/20/2023 21:15	Simonne.V. Calhoun	11/27/2023 18:00	Ping Hua	2451733
EPA 353.2 Rev. 2.0	11/15/2023			11/20/2023 12:25	Anna M. Plaviak	2451733
	11/15/2023			11/27/2023 13:14	Fadila Guebre	2451730
	11/15/2023			11/27/2023 13:16	Fadila Guebre	2451731
EPA 365.1 Rev. 2.0	11/15/2023	11/20/2023 12:58	Adam P Silver	11/20/2023 18:01	Simonne.V. Calhoun	2451730
	11/15/2023	11/21/2023 12:58	Adam P Silver	11/27/2023 11:49	Chandler E Cox	2451731
	11/15/2023	11/21/2023 12:58	Adam P Silver	11/27/2023 12:54	Chandler E Cox	2451733
SM 2320 B-2011	11/15/2023			11/17/2023 07:25	Dale L. Simmons	2451729
	11/15/2023			11/17/2023 10:15	Dale L. Simmons	2451728
	11/15/2023			11/18/2023 17:05	Adam P Silver	2451732

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2340 B-2011	11/15/2023			11/17/2023 22:52	Samatha Luckman	2451743
	11/15/2023			11/17/2023 23:08	Samatha Luckman	2451744
	11/15/2023			11/21/2023 21:07	Samatha Luckman	2451741
	11/15/2023			11/21/2023 22:45	Samatha Luckman	2451742
SM 2540 C-2015	11/15/2023			11/20/2023 15:30	Yijie Li	2451729, 2451732
	11/15/2023			12/05/2023 16:11	Yijie Li	2451728
SM 2540 D-2015	11/15/2023			11/20/2023 15:30	Yijie Li	2451728, 2451729, 2451732
SM 4500-F- C-2011	11/15/2023			11/17/2023 05:09	Dale L. Simmons	2451729
	11/15/2023			11/17/2023 06:30	Dale L. Simmons	2451728
	11/15/2023			11/29/2023 22:48	Chandler E Cox	2451732
SM 5310 B-2011	11/15/2023			11/17/2023 21:59	Kenneth H Lee	2451730
	11/15/2023			11/17/2023 22:54	Kenneth H Lee	2451731
	11/15/2023			11/22/2023 00:14	Kenneth H Lee	2451733