

Chemical Analysis Report

NE-DIST-2021-04-29-02

Florida Department of Environmental Protection
Central Laboratory
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Tallahassee, FL 32399-2400
DOH Accreditation E31780

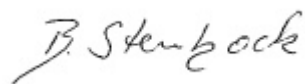
Event Description: **Nassau West 1**
Request ID: **RQ-2021-04-26-12**
Customer: **NE-DIST**
Project ID: **SMP**

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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 24-MAY-2021 11:54



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: UNNAMED STREAM @ CR 121

Collection Date/Time: 04/28/2021 10:00

Field ID: 19010127

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2243686	EPA 180.1 Rev. 2.0	Turbidity	3.1		NTU	P397430	
	EPA 300.0 Rev. 2.1	Chloride	7.3		mg Cl/L	P398427	
		Sulfate	1.5		mg SO4/L	P398428	
	SM 2120 B-2011	Color (true)	290		PCU	P397439	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P398015	
	SM 2540 C-2011	TDS	54		mg/L	P397911	
	SM 2540 D-2011	TSS	4	I	mg/L	P397790	
2243688	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P397576	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P398133	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.83		mg N/L	P397762	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P397640	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P397968	
2243690	SM 5310 B-2011	Organic Carbon	24		mg C/L	P397804	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P397421	
2243707	EPA 200.7 Rev. 4.4	Barium	12.6		ug/L	P398008	
		Calcium	3.48		mg/L	P398008	
		Iron	1.55E+03		ug/L	P398008	
		Magnesium	0.74		mg/L	P398008	
		Manganese	11.2		ug/L	P398008	
		Potassium	0.30	U	mg/L	P398008	
		Sodium	4.4		mg/L	P398008	
	EPA 200.8 Rev. 5.4	Zinc	5.3	I	ug/L	P398008	
		Aluminum	454		ug/L	P398008	
		Antimony	0.050	U	ug/L	P398254	
		Arsenic	0.39		ug/L	P398254	
		Beryllium	0.035	I	ug/L	P398008	
		Boron**	16.2		ug/L	P398254	
		Cadmium	0.020	U	ug/L	P398254	
		Chromium	0.66	I	ug/L	P398254	
		Copper	0.40	U	ug/L	P398254	
		Lead	0.41		ug/L	P398254	
		Nickel	0.66	I	ug/L	P398254	
		Selenium	0.40	U	ug/L	P398254	
		Silver	0.010	U	ug/L	P398008	
		Thallium	0.10	U	ug/L	P398254	
	SM 2340B	Hardness	11.7		mg/L	P398008	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: ST MARYS R @ STOKES RD

Collection Date/Time: 04/28/2021 10:55

Field ID: 19010093

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2243687	EPA 180.1 Rev. 2.0	Turbidity	3.9		NTU	P397430	
	EPA 300.0 Rev. 2.1	Chloride	7.2		mg Cl/L	P398427	
		Sulfate	0.76		mg SO4/L	P398428	
		Color (true)	370		PCU	P397439	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P398015	
	SM 2540 C-2011	TDS	84		mg/L	P397911	
	SM 2540 D-2011	TSS	4	IA	mg/L	P397790	
2243689	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P397576	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P398133	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.98		mg N/L	P397762	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.021		mg N/L	P397640	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P397676	
2243691	SM 5310 B-2011	Organic Carbon	36		mg C/L	P397804	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.017		mg P/L	P397421	
2243708	EPA 200.7 Rev. 4.4	Barium	14.2		ug/L	P398008	
		Calcium	2.48		mg/L	P398008	
		Iron	900		ug/L	P398008	
		Magnesium	0.97		mg/L	P398008	
		Manganese	14.1		ug/L	P398008	
		Potassium	0.36	I	mg/L	P398008	
		Sodium	4.4		mg/L	P398008	
	EPA 200.8 Rev. 5.4	Zinc	5.1	I	ug/L	P398008	
		Aluminum	532		ug/L	P398008	
		Antimony	0.050	U	ug/L	P398254	
		Arsenic	0.42		ug/L	P398254	
		Beryllium	0.037	I	ug/L	P398008	
		Boron**	13.9		ug/L	P398254	
		Cadmium	0.020	U	ug/L	P398254	
		Chromium	0.64	I	ug/L	P398254	
		Copper	0.40	U	ug/L	P398254	
		Lead	0.66		ug/L	P398254	
		Nickel	0.55	I	ug/L	P398254	
		Selenium	0.40	U	ug/L	P398254	
		Silver	0.010	U	ug/L	P398008	
		Thallium	0.10	U	ug/L	P398254	
		Hardness	10.2		mg/L	P398008	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: The lead result was confirmed on 05/13/2021.

Sample Location: Unnamed Drain to Brandy Branch at US301

Collection Date/Time: 04/28/2021 11:45

Field ID: G4NE0302

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2243692	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P397430	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P398427	
		Sulfate	0.76		mg SO4/L	P398428	
		Color (true)	300		PCU	P397440	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P398015	
	SM 2540 C-2011	TDS	56		mg/L	P397912	
	SM 2540 D-2011	TSS	2	I	mg/L	P397791	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P397576	
2243693	EPA 350.1 Rev. 2.0	Ammonia-N	0.032		mg N/L	P398133	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.89		mg N/L	P397762	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P397640	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P397676	
	SM 5310 B-2011	Organic Carbon	31		mg C/L	P397804	
2243694	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.010		mg P/L	P397421	
2243709	EPA 200.7 Rev. 4.4	Barium	11.6		ug/L	P398008	
		Calcium	2.40		mg/L	P398008	
		Iron	1.14E+03		ug/L	P398008	
		Magnesium	0.79		mg/L	P398008	
		Manganese	10.5		ug/L	P398008	
		Potassium	0.30	U	mg/L	P398008	
		Sodium	6.2		mg/L	P398008	
	EPA 200.8 Rev. 5.4	Zinc	5.3	I	ug/L	P398008	
		Aluminum	462		ug/L	P398008	
		Antimony	0.050	U	ug/L	P398254	
		Arsenic	0.31		ug/L	P398254	
		Beryllium	0.040	I	ug/L	P398008	
		Boron**	13.3		ug/L	P398254	
		Cadmium	0.020	U	ug/L	P398254	
		Chromium	0.57	I	ug/L	P398254	
		Copper	0.40	U	ug/L	P398254	
		Lead	0.34	I	ug/L	P398254	
		Nickel	0.72	I	ug/L	P398254	
		Selenium	0.40	U	ug/L	P398254	
		Silver	0.010	U	ug/L	P398008	
		Thallium	0.10	U	ug/L	P398254	
		Hardness	9.2		mg/L	P398008	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P397430

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P398008

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398008

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Beryllium	0.010	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398254

Component	Result	Code	Units
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.40	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398427

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398428

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398133

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P397762

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397640

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397676

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397968

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P397421

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: SM 2120 B-2011
Batch ID: P397439

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B-2011
Batch ID: P397440

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P398015

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2011
Batch ID: P397911

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2011
Batch ID: P397912

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P397790

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P397791

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P397576

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P397804

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P398008

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	103		P	85 - 115
Calcium	112		P	85 - 115
Iron	106		P	85 - 115
Magnesium	106		P	85 - 115
Manganese	105		P	85 - 115
Potassium	103		P	85 - 115
Sodium	108		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398008

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.7		P	85 - 115
Beryllium	94.6		P	85 - 115
Silver	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398254

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Antimony	94.1		P	85 - 115
Arsenic	98.8		P	85 - 115
Boron	97.0		P	85 - 115
Cadmium	99.2		P	85 - 115
Chromium	95.3		P	85 - 115
Copper	95.0		P	85 - 115
Lead	90.5		P	85 - 115
Nickel	95.2		P	85 - 115
Selenium	96.7		P	85 - 115
Thallium	97.5		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398427

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398428

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398133

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P397762

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397640

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	97.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397676

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397968

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P397421

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.4		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P397439

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	103		P	85 - 115

Reference Method: SM 2120 B-2011
Batch ID: P397440

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P398015

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.9		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P397576

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	90 - 106

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P397804

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: P398008

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243833	Barium	101		P	80 - 120
2243833	Calcium	108		P	80 - 120
2243833	Iron	107		P	80 - 120
2243833	Magnesium	102		P	80 - 120
2243833	Manganese	104		P	80 - 120
2243833	Potassium	104		P	80 - 120
2243833	Sodium	103		P	80 - 120
2243833	Zinc	105		P	80 - 120
2243979	Barium	102	103	P/P	80 - 120
2243979	Calcium	112	111	P/P	80 - 120
2243979	Iron	107	108	P/P	80 - 120
2243979	Magnesium	107	108	P/P	80 - 120
2243979	Manganese	104	105	P/P	80 - 120
2243979	Potassium	102	103	P/P	80 - 120
2243979	Sodium	105	104	P/P	80 - 120
2243979	Zinc	101	101	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P398008

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243833	Aluminum	99.0		P	80 - 120
2243833	Beryllium	99.0		P	80 - 120
2243833	Silver	103		P	80 - 120
2243979	Aluminum	117	108	P/P	80 - 120
2243979	Beryllium	110	93.3	P/P	80 - 120
2243979	Silver	106	105	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P398254

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243340	Antimony	93.0	92.4	P/P	80 - 120
2243340	Arsenic	98.9	98.3	P/P	80 - 120
2243340	Boron	100	99.7	P/P	80 - 120
2243340	Cadmium	101	100	P/P	80 - 120
2243340	Chromium	95.2	95.3	P/P	80 - 120
2243340	Copper	98.2	97.4	P/P	80 - 120
2243340	Lead	92.5	92.6	P/P	80 - 120
2243340	Nickel	96.0	95.5	P/P	80 - 120
2243340	Selenium	95.6	95.7	P/P	80 - 120
2243340	Thallium	101	102	P/P	80 - 120
2243647	Antimony	95.9		P	80 - 120
2243647	Arsenic	103		P	80 - 120
2243647	Boron	101		P	80 - 120
2243647	Cadmium	103		P	80 - 120
2243647	Chromium	96.5		P	80 - 120
2243647	Copper	100		P	80 - 120
2243647	Lead	93.3		P	80 - 120
2243647	Nickel	97.6		P	80 - 120
2243647	Selenium	99.3		P	80 - 120
2243647	Thallium	102		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398427

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243654	Chloride	99.5		P	90 - 110
2244094	Chloride	99.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398428

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243654	Sulfate	100		P	90 - 110
2244094	Sulfate	99.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398133

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243618	Ammonia-N	93.2	93.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397640

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243727	NO2NO3-N	93.5	94.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397676

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243689	Total-P	108	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397968

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243688	Total-P	104	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P397421

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243728	O-Phosphate-P	93.4	94.6	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P397576

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243829	Fluoride	101	101	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P397804

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243830	Organic Carbon	95.3	96.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P397430

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243614	Turbidity	4.76	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P398008

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243979	Barium	0.361	Spike	P	0 - 20
2243979	Calcium	0.328	Spike	P	0 - 20
2243979	Iron	0.350	Spike	P	0 - 20
2243979	Magnesium	0.441	Spike	P	0 - 20
2243979	Manganese	0.273	Spike	P	0 - 20
2243979	Potassium	1.04	Spike	P	0 - 20
2243979	Sodium	0.221	Spike	P	0 - 20
2243979	Zinc	0.0603	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P398008

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243979	Aluminum	7.42	Spike	P	0 - 20
2243979	Beryllium	15.6	Spike	P	0 - 20
2243979	Silver	1.14	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P398254

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243340	Antimony	0.650	Spike	P	0 - 20
2243340	Arsenic	0.638	Spike	P	0 - 20
2243340	Boron	0.597	Spike	P	0 - 20
2243340	Cadmium	1.05	Spike	P	0 - 20
2243340	Chromium	0.0842	Spike	P	0 - 20
2243340	Copper	0.831	Spike	P	0 - 20
2243340	Lead	0.0389	Spike	P	0 - 20
2243340	Nickel	0.551	Spike	P	0 - 20
2243340	Selenium	0.114	Spike	P	0 - 20
2243340	Thallium	0.498	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P398427

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244094	Chloride	2.57	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398428

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244094	Sulfate	5.54	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398133

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243618	Ammonia-N	0.421	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P397762

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243772	Kjeldahl Nitrogen	9.67	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397640

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243727	NO2NO3-N	0.519	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397676

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243689	Total-P	0.341	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397968

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243688	Total-P	1.58	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P397421

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243728	O-Phosphate-P	1.28	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P397439

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243771	Color (true)	0.628	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
Batch ID: P397440

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243858	Color (true)	0.915	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P398015

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243829	Total Alkalinity	0.128	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P397911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243771	TDS	2.55	Sample	P	0 - 10

Reference Method: SM 2540 C-2011
Batch ID: P397912

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243829	TDS	3.44	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P397576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243829	Fluoride	0.0	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P397804

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243830	Organic Carbon	0.689	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A105087

Included Lab Sample IDs: 2243690, 2243691, 2243694

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A105090

Included Lab Sample IDs: 2243686, 2243687, 2243692

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

Reference Method: SM 2120 B-2011

Run ID: A105091

Included Lab Sample IDs: 2243686, 2243687, 2243692

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	102	P/P	90 - 115

Reference Method: SM 4500 F-C-2011

Run ID: A105140

Included Lab Sample IDs: 2243686, 2243687, 2243692

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	101	P/P	90 - 110
Fluoride	101	99.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A105164

Included Lab Sample IDs: 2243688, 2243689, 2243693

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.5	96.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A105214

Included Lab Sample IDs: 2243689, 2243693

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

Reference Method: SM 5310 B-2011

Run ID: A105235

Included Lab Sample IDs: 2243688, 2243689, 2243693

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.9	96.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A105283

Included Lab Sample IDs: 2243688, 2243689, 2243693

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.6	94.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-2011

Run ID: A105344

Included Lab Sample IDs: 2243686, 2243687, 2243692

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	97.4	P/P	90 - 110
Total Alkalinity	97.4	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A105367

Included Lab Sample IDs: 2243688

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A105387

Included Lab Sample IDs: 2243707, 2243708, 2243709

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	104	102	P/P	90 - 110
Calcium	105	100	P/P	90 - 110
Iron	103	98.9	P/P	90 - 110
Magnesium	103	98.7	P/P	90 - 110
Manganese	105	104	P/P	90 - 110
Potassium	103	98.0	P/P	90 - 110
Sodium	101	97.5	P/P	90 - 110
Zinc	103	99.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A105391

Included Lab Sample IDs: 2243707, 2243708, 2243709

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A105402

Included Lab Sample IDs: 2243688, 2243689, 2243693

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.3	99.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A105428

Included Lab Sample IDs: 2243707, 2243708, 2243709

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A105480

Included Lab Sample IDs: 2243707, 2243708, 2243709

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A105480

Included Lab Sample IDs: 2243707, 2243708, 2243709

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	95.9	96.2	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Boron	98.8	99.5	P/P	90 - 110
Cadmium	99.1	101	P/P	90 - 110
Chromium	97.3	96.2	P/P	90 - 110
Copper	97.5	95.7	P/P	90 - 110
Lead	95.5	96.5	P/P	90 - 110
Nickel	97.8	95.7	P/P	90 - 110
Selenium	102	101	P/P	90 - 110
Thallium	91.2	93.7	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A105509

Included Lab Sample IDs: 2243686, 2243687, 2243692

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

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

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						4.76	
EPA 200.7 Rev. 4.4	Barium	103	101	102	103			0.361
	Calcium	112	108	112	111			0.328
	Iron	106	107	107	108			0.350
	Magnesium	106	102	107	108			0.441
	Manganese	105	104	104	105			0.273
	Potassium	103	104	102	103			1.04
	Sodium	108	103	105	104			0.221
	Zinc	104	105	101	101			0.0603
EPA 200.8 Rev. 5.4	Aluminum	99.7	117	108	99.0			7.42
	Antimony	94.1	93.0	92.4	95.9			0.650
	Arsenic	98.8	98.9	98.3	103			0.638
	Beryllium	94.6	110	93.3	99.0			15.6
	Boron	97.0	100	99.7	101			0.597
	Cadmium	99.2	101	100	103			1.05
	Chromium	95.3	95.2	95.3	96.5			0.0842
	Copper	95.0	98.2	97.4	100			0.831
	Lead	90.5	92.5	92.6	93.3			0.0389
	Nickel	95.2	96.0	95.5	97.6			0.551
	Selenium	96.7	95.6	95.7	99.3			0.114
	Silver	104	106	105	103			1.14
	Thallium	97.5	101	102	102			0.498
EPA 300.0 Rev. 2.1	Chloride	99.9	99.5	99.5			2.57	
	Sulfate	100	99.0	100			5.54	
EPA 350.1 Rev. 2.0	Ammonia-N	100	93.2	93.8				0.421
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106						9.67
EPA 353.2 Rev. 2.0	NO2NO3-N	97.0	93.5	94.0				0.519
EPA 365.1 Rev. 2.0	Total-P	107	108	108				0.341
	Total-P	106	104	106				1.58
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.4	93.4	94.6				1.28
SM 2120 B-2011	Color (true)	103					0.628	
	Color (true)	102					0.915	
SM 2320 B-2011	Total Alkalinity	98.9					0.128	
SM 2540 C-2011	TDS						2.55	
	TDS						3.44	
SM 4500 F-C-2011	Fluoride	98.2	101	101				0.0
SM 5310 B-2011	Organic Carbon	95.4	95.3	96.4				0.689

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2243686, 2243687, 2243692
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2243707, 2243708, 2243709
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2243707, 2243708, 2243709
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2243686, 2243687, 2243692
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2243686, 2243687, 2243692
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2243688, 2243689, 2243693
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2243688, 2243689, 2243693
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2243688, 2243689, 2243693
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2243688, 2243689, 2243693

Reference Method Descriptions

Method	Description	Associated Samples
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2243690, 2243691, 2243694
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2243686, 2243687, 2243692
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2243686, 2243687, 2243692
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2243707, 2243708, 2243709
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2243686, 2243687, 2243692
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2243686, 2243687, 2243692
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2243686, 2243687, 2243692
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2243688, 2243689, 2243693

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	04/29/2021			04/29/2021 17:28	Yen Ta	2243686, 2243687, 2243692
EPA 200.7 Rev. 4.4	04/29/2021	05/11/2021 17:00	Elliott D. Healy	05/12/2021 20:43	Betina Topolski	2243707
	04/29/2021	05/11/2021 17:00	Elliott D. Healy	05/12/2021 20:51	Betina Topolski	2243708
	04/29/2021	05/11/2021 17:00	Elliott D. Healy	05/12/2021 20:58	Betina Topolski	2243709
EPA 200.8 Rev. 5.4	04/29/2021	05/11/2021 17:00	Elliott D. Healy	05/12/2021 21:04	McKinley C Carter	2243707
	04/29/2021	05/11/2021 17:00	Elliott D. Healy	05/12/2021 21:12	McKinley C Carter	2243708
	04/29/2021	05/11/2021 17:00	Elliott D. Healy	05/12/2021 21:21	McKinley C Carter	2243709
	04/29/2021	05/11/2021 17:00	Elliott D. Healy	05/14/2021 00:28	Alexander Thompson	2243707
	04/29/2021	05/11/2021 17:00	Elliott D. Healy	05/14/2021 00:38	Alexander Thompson	2243708
	04/29/2021	05/11/2021 17:00	Elliott D. Healy	05/14/2021 00:47	Alexander Thompson	2243709
	04/29/2021	05/17/2021 10:05	Alexander Thompson	05/17/2021 18:30	Alexander Thompson	2243707
	04/29/2021	05/17/2021 10:05	Alexander Thompson	05/17/2021 18:39	Alexander Thompson	2243708
	04/29/2021	05/17/2021 10:05	Alexander Thompson	05/17/2021 18:49	Alexander Thompson	2243709
EPA 300.0 Rev. 2.1	04/29/2021			05/18/2021 20:18	Lipi Saha	2243686
	04/29/2021			05/18/2021 20:38	Lipi Saha	2243687
	04/29/2021			05/18/2021 20:57	Lipi Saha	2243692
EPA 350.1 Rev. 2.0	04/29/2021			05/12/2021 13:57	Julia Storbeck	2243688
	04/29/2021			05/12/2021 13:58	Julia Storbeck	2243689
	04/29/2021			05/12/2021 14:00	Julia Storbeck	2243693
EPA 351.2 Rev. 2.0	04/29/2021	05/06/2021 13:53	Benjamin T. Nordmann	05/07/2021 18:03	Virginia P. Brown	2243688
	04/29/2021	05/06/2021 13:53	Benjamin T. Nordmann	05/07/2021 18:05	Virginia P. Brown	2243689
	04/29/2021	05/06/2021 13:53	Benjamin T. Nordmann	05/07/2021 18:07	Virginia P. Brown	2243693
EPA 353.2 Rev. 2.0	04/29/2021			05/04/2021 11:33	Beverly Y. Sanders	2243688
	04/29/2021			05/04/2021 11:34	Beverly Y. Sanders	2243689
	04/29/2021			05/04/2021 11:35	Beverly Y. Sanders	2243693
EPA 365.1 Rev. 2.0	04/29/2021	05/05/2021 14:05	Yen Ta	05/06/2021 10:47	Shengyu Ding	2243689
	04/29/2021	05/05/2021 14:05	Yen Ta	05/06/2021 10:48	Shengyu Ding	2243693
	04/29/2021	05/11/2021 14:29	Yen Ta	05/12/2021 12:10	Shengyu Ding	2243688
EPA 365.1 Rev. 2.0 dissolved	04/29/2021			04/29/2021 14:31	Blanca Fach	2243690, 2243691
	04/29/2021			04/29/2021 14:32	Blanca Fach	2243694
SM 2120 B-2011	04/29/2021			04/29/2021 17:14	Sarah A Nixon	2243686
	04/29/2021			04/29/2021 17:15	Sarah A Nixon	2243687
	04/29/2021			04/29/2021 17:16	Sarah A Nixon	2243692
SM 2320 B-2011	04/29/2021			05/11/2021 18:03	Dale L. Simmons	2243686
	04/29/2021			05/11/2021 18:33	Dale L. Simmons	2243687
	04/29/2021			05/11/2021 18:37	Dale L. Simmons	2243692
SM 2340B	04/29/2021			05/12/2021 20:43	Betina Topolski	2243707
	04/29/2021			05/12/2021 20:51	Betina Topolski	2243708
	04/29/2021			05/12/2021 20:58	Betina Topolski	2243709
SM 2540 C-2011	04/29/2021			05/04/2021 15:06	Yijie Li	2243686, 2243687, 2243692

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 D-2011	04/29/2021			05/04/2021 15:06	Yijie Li	2243686, 2243687, 2243692
SM 4500 F-C-2011	04/29/2021			05/03/2021 19:25	Dale L. Simmons	2243686
	04/29/2021			05/03/2021 19:32	Dale L. Simmons	2243687
	04/29/2021			05/03/2021 20:17	Dale L. Simmons	2243692
SM 5310 B-2011	04/29/2021			05/06/2021 07:01	Madeline Gruver	2243688
	04/29/2021			05/06/2021 07:12	Madeline Gruver	2243689
	04/29/2021			05/06/2021 07:22	Madeline Gruver	2243693