

Chemical Analysis Report

NW-DIST-2020-07-31-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Pace Run**
Request ID: **RQ-2020-07-27-26**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government Street
Suite 208
Pensacola, FL 32502-5794
Attn: Cheryl Bunch

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 19-AUG-2020 13:55

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored 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: Clear Creek upstream of Pat Brown Road

Collection Date/Time: 07/30/2020 10:10

Field ID: G4NW0360

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2187532	EPA 180.1 Rev. 2.0	Turbidity	4.4		NTU	P385470	
	EPA 300.0 Rev. 2.1	Chloride	3.6		mg Cl/L	P385888	
		Sulfate	0.43	I	mg SO4/L	P385893	
	SM 2120 B-2011	Color (true)	30		PCU	P385454	
	SM 2320 B-2011	Total Alkalinity	2.3	I	mg CaCO3/L	P385725	
	SM 2540 C-2011	TDS	17	I	mg/L	P386001	
	SM 2540 D-2011	TSS	4	I	mg/L	P385872	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P385566	
2187534	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P385485	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	I	mg N/L	P385669	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.73		mg N/L	P385531	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P385573	
	SM 5310 B-2011	Organic Carbon	3.2		mg C/L	P385840	
2187536	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P385497	
2187555	EPA 200.7 Rev. 4.4	Barium	25.2		ug/L	P385537	
		Calcium	1.34		mg/L	P385537	
		Iron	720		ug/L	P385537	
		Magnesium	1.06		mg/L	P385537	
		Potassium	0.30	U	mg/L	P385537	
		Sodium	2.1		mg/L	P385537	
		Zinc	5.0	U	ug/L	P385537	
	EPA 200.8 Rev. 5.4	Aluminum	142		ug/L	P385537	
		Antimony	0.050	U	ug/L	P385537	
		Arsenic	0.34		ug/L	P385537	
		Beryllium	0.017	I	ug/L	P385537	
		Boron**	9.6		ug/L	P385537	
		Cadmium	0.020	U	ug/L	P385537	
		Chromium	0.40	U	ug/L	P385537	
		Cobalt	0.219		ug/L	P385537	
		Copper	0.40	U	ug/L	P385537	
		Lead	0.31	I	ug/L	P385537	
		Manganese	13.5		ug/L	P385537	
		Molybdenum	0.15	U	ug/L	P385537	
		Nickel	0.50	U	ug/L	P385537	
		Selenium	0.20	U	ug/L	P385537	
		Silver	0.010	U	ug/L	P385537	
		Thallium	0.10	U	ug/L	P385537	
		Hardness	7.7		mg/L	P385537	

Ref. Method and Comment:

SM 2540 D-2011: 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 potassium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: Clear Creek upstream of Hwy 87A

Collection Date/Time: 07/30/2020 10:50

Field ID: G4NW0510

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2187538	EPA 180.1 Rev. 2.0	Turbidity	4.6		NTU	P385470	
	EPA 300.0 Rev. 2.1	Chloride	3.9		mg Cl/L	P385888	
		Sulfate	0.33	I	mg SO4/L	P385893	
	SM 2120 B-2011	Color (true)	15		PCU	P385454	
	SM 2320 B-2011	Total Alkalinity	2.5	I	mg CaCO3/L	P385725	
	SM 2540 C-2011	TDS	19	I	mg/L	P386001	
	SM 2540 D-2011	TSS	3	I	mg/L	P385872	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P385566	
2187540	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P385485	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.15	I	mg N/L	P385669	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.2		mg N/L	P385532	
	EPA 365.1 Rev. 2.0	Total-P	0.005		mg P/L	P385573	
	SM 5310 B-2011	Organic Carbon	2.2		mg C/L	P385840	
2187542	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P385497	

Ref. Method and Comment:

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

Sample Location: Big Coldwater Creek West Fork upstream of Walling Rd

Collection Date/Time: 07/30/2020 11:30

Field ID: G4NW0436

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2187533	EPA 180.1 Rev. 2.0	Turbidity	5.6		NTU	P385470	
	EPA 300.0 Rev. 2.1	Chloride	5.7		mg Cl/L	P385888	
		Sulfate	1.4		mg SO4/L	P385893	
		Color (true)	51		PCU	P385454	
	SM 2320 B-2011	Total Alkalinity	3.7		mg CaCO3/L	P385725	
	SM 2540 C-2011	TDS	39		mg/L	P386001	
	SM 2540 D-2011	TSS	7	I	mg/L	P385872	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P385566	
2187535	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P385485	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27		mg N/L	P385669	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.86		mg N/L	P385531	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P385573	
	SM 5310 B-2011	Organic Carbon	5.4		mg C/L	P385840	
2187537	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P385497	
2187556	EPA 200.7 Rev. 4.4	Barium	60.4		ug/L	P385537	
		Calcium	2.64		mg/L	P385537	
		Iron	750		ug/L	P385537	
		Magnesium	1.83		mg/L	P385537	
		Potassium	1.1	I	mg/L	P385537	
		Sodium	2.4		mg/L	P385537	
		Zinc	5.0	U	ug/L	P385537	
	EPA 200.8 Rev. 5.4	Aluminum	249		ug/L	P385537	
		Antimony	0.050	U	ug/L	P385537	
		Arsenic	0.41		ug/L	P385537	
		Beryllium	0.092		ug/L	P385537	
		Boron**	15.8		ug/L	P385537	
		Cadmium	0.020	U	ug/L	P385537	
		Chromium	0.40	U	ug/L	P385537	
		Cobalt	0.752		ug/L	P385537	
		Copper	0.40	U	ug/L	P385537	
		Lead	0.35	I	ug/L	P385537	
		Manganese	48.0		ug/L	P385537	
		Molybdenum	0.15	U	ug/L	P385537	
		Nickel	1.2	I	ug/L	P385537	
		Selenium	0.20	U	ug/L	P385537	
		Silver	0.010	U	ug/L	P385537	
		Thallium	0.10	U	ug/L	P385537	
	SM 2340B	Hardness	14.1		mg/L	P385537	

Ref. Method and Comment:

SM 2540 D-2011: 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 potassium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: Big Coldwater Creek West Fork upstream of Hwy 4

Collection Date/Time: 07/30/2020 12:00

Field ID: G4NW0502

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2187539	EPA 180.1 Rev. 2.0	Turbidity	4.0		NTU	P385470	
	EPA 300.0 Rev. 2.1	Chloride	7.3		mg Cl/L	P385888	
		Sulfate	0.91		mg SO4/L	P385893	
	SM 2120 B-2011	Color (true)	39		PCU	P385454	
	SM 2320 B-2011	Total Alkalinity	2.6		mg CaCO3/L	P385725	
	SM 2540 C-2011	TDS	40		mg/L	P386001	
	SM 2540 D-2011	TSS	3	I	mg/L	P385872	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P385566	
2187541	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P385485	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21		mg N/L	P385669	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.64		mg N/L	P385532	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P385643	
	SM 5310 B-2011	Organic Carbon	4.9		mg C/L	P385840	
2187543	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P385497	

Ref. Method and Comment:

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P385470

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P385537

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
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: P385537

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385888

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385893

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385485

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385669

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385531

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385532

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385573

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385643

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385497

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

Reference Method: SM 2120 B-2011
Batch ID: P385454

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P385725

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

Reference Method: SM 2540 C-2011
Batch ID: P386001

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P385872

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P385566

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P385840

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: P385537

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	110		P	85 - 115
Calcium	108		P	85 - 115
Iron	106		P	85 - 115
Magnesium	107		P	85 - 115
Potassium	105		P	85 - 115
Sodium	101		P	85 - 115
Zinc	112		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385537

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	94.6		P	85 - 115
Antimony	97.3		P	85 - 115
Arsenic	97.4		P	85 - 115
Beryllium	89.5		P	85 - 115
Boron	103		P	85 - 115
Cadmium	97.3		P	85 - 115
Chromium	100		P	85 - 115
Cobalt	95.4		P	85 - 115
Copper	99.9		P	85 - 115
Lead	102		P	85 - 115
Manganese	99.1		P	85 - 115
Molybdenum	98.4		P	85 - 115
Nickel	98.9		P	85 - 115
Selenium	94.6		P	85 - 115
Silver	105		P	85 - 115
Thallium	104		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385888

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385893

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385485

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385669

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385531

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385532

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385573

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385643

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385497

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.8		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P385454

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P385725

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P385566

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P385840

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	100		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P385537

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187620	Barium	102		P	80 - 120
2187620	Calcium	104		P	80 - 120
2187620	Iron	106		P	80 - 120
2187620	Magnesium	104		P	80 - 120
2187620	Sodium	103		P	80 - 120
2187620	Zinc	104		P	80 - 120
2187711	Barium	105	105	P/P	80 - 120
2187711	Calcium	108	108	P/P	80 - 120
2187711	Iron	106	108	P/P	80 - 120
2187711	Magnesium	108	109	P/P	80 - 120
2187711	Potassium	104	104	P/P	80 - 120
2187711	Sodium	102		P	80 - 120
2187711	Zinc	110	110	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385537

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187620	Aluminum	96.2		P	80 - 120
2187620	Antimony	100		P	80 - 120
2187620	Arsenic	99.5		P	80 - 120
2187620	Beryllium	91.3		P	80 - 120
2187620	Boron	103		P	80 - 120
2187620	Cadmium	98.4		P	80 - 120
2187620	Chromium	99.5		P	80 - 120
2187620	Cobalt	97.8		P	80 - 120
2187620	Copper	98.0		P	80 - 120
2187620	Lead	102		P	80 - 120
2187620	Manganese	95.7		P	80 - 120
2187620	Molybdenum	98.9		P	80 - 120
2187620	Nickel	97.2		P	80 - 120
2187620	Selenium	95.8		P	80 - 120
2187620	Silver	104		P	80 - 120
2187620	Thallium	105		P	80 - 120
2187711	Aluminum	93.3	94.0	P/P	80 - 120
2187711	Antimony	96.0	97.6	P/P	80 - 120
2187711	Arsenic	96.4	96.8	P/P	80 - 120
2187711	Beryllium	87.8	91.0	P/P	80 - 120
2187711	Boron	97.3	101	P/P	80 - 120
2187711	Cadmium	95.0	96.9	P/P	80 - 120
2187711	Chromium	99.4	100	P/P	80 - 120
2187711	Cobalt	93.9	95.7	P/P	80 - 120
2187711	Copper	99.3	100	P/P	80 - 120
2187711	Lead	101	102	P/P	80 - 120
2187711	Manganese	97.1	98.9	P/P	80 - 120
2187711	Molybdenum	95.5	96.8	P/P	80 - 120
2187711	Nickel	97.8	98.1	P/P	80 - 120
2187711	Selenium	92.6	92.8	P/P	80 - 120
2187711	Silver	102	104	P/P	80 - 120
2187711	Thallium	102	106	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385888

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187492	Chloride	100		P	90 - 110
2187631	Chloride	99.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385893

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187492	Sulfate	101		P	90 - 110
2187631	Sulfate	99.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385485

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187540	Ammonia-N	97.2	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385669

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187406	Kjeldahl Nitrogen	106	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385531

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187378	NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385532

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187623	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385573

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187406	Total-P	104	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385643

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187541	Total-P	107	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385497

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187536	O-Phosphate-P	102	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P385566

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187648	Fluoride	99.7	99.1	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P385840

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2187541	Organic Carbon	101	103	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P385470

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187493	Turbidity	0.766	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P385537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187711	Barium	0.177	Spike	P	0 - 20
2187711	Calcium	0.0448	Spike	P	0 - 20
2187711	Iron	1.43	Spike	P	0 - 20
2187711	Magnesium	1.17	Spike	P	0 - 20
2187711	Potassium	0.461	Spike	P	0 - 20
2187711	Sodium	0.293	Spike	P	0 - 20
2187711	Zinc	0.0153	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187711	Aluminum	0.656	Spike	P	0 - 20
2187711	Antimony	1.70	Spike	P	0 - 20
2187711	Arsenic	0.286	Spike	P	0 - 20
2187711	Beryllium	3.66	Spike	P	0 - 20
2187711	Boron	2.69	Spike	P	0 - 20
2187711	Cadmium	1.93	Spike	P	0 - 20
2187711	Chromium	0.596	Spike	P	0 - 20
2187711	Cobalt	1.91	Spike	P	0 - 20
2187711	Copper	0.859	Spike	P	0 - 20
2187711	Lead	1.86	Spike	P	0 - 20
2187711	Manganese	1.31	Spike	P	0 - 20
2187711	Molybdenum	1.29	Spike	P	0 - 20
2187711	Nickel	0.296	Spike	P	0 - 20
2187711	Selenium	0.173	Spike	P	0 - 20
2187711	Silver	1.71	Spike	P	0 - 20
2187711	Thallium	3.08	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385888

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187631	Chloride	0.625	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385893

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187631	Sulfate	0.964	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385485

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187540	Ammonia-N	1.55	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385669

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187406	Kjeldahl Nitrogen	3.15	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385531

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187378	NO2NO3-N	0.277	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385532

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187623	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385573

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187406	Total-P	1.56	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385643

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187541	Total-P	2.68	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385497

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187536	O-Phosphate-P	0.294	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P385454

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187606	Color (true)	2.86	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P385725

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187648	Total Alkalinity	1.26	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P386001

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187548	TDS	1.25	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P385566

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187648	Fluoride	0.519	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P385840

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2187541	Organic Carbon	2.05	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B-2011

Run ID: A100204

Included Lab Sample IDs: 2187532, 2187533, 2187538, 2187539

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A100210

Included Lab Sample IDs: 2187532, 2187533, 2187538, 2187539

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A100213

Included Lab Sample IDs: 2187534, 2187535, 2187540, 2187541

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.6	98.8	P/P	90 - 110
Ammonia-N	98.8	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A100219

Included Lab Sample IDs: 2187536, 2187537, 2187542, 2187543

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.2	98.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A100229

Included Lab Sample IDs: 2187534, 2187535, 2187540, 2187541

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	P/P	90 - 110
NO2NO3-N	102	102	P/P	90 - 110
NO2NO3-N	102	102	P/P	90 - 110
NO2NO3-N	102	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A100241

Included Lab Sample IDs: 2187532, 2187533, 2187538, 2187539

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A100299

Included Lab Sample IDs: 2187555, 2187556

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.4	97.1	P/P	90 - 110
Arsenic	95.5	96.4	P/P	90 - 110
Boron	99.1	101	P/P	90 - 110
Cadmium	96.3	96.1	P/P	90 - 110
Chromium	95.4	96.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A100299

Included Lab Sample IDs: 2187555, 2187556

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cobalt	93.7	93.8	P/P	90 - 110
Copper	98.5	97.7	P/P	90 - 110
Lead	98.4	98.9	P/P	90 - 110
Manganese	96.7	96.8	P/P	90 - 110
Molybdenum	96.3	96.7	P/P	90 - 110
Nickel	96.9	97.4	P/P	90 - 110
Selenium	94.0	96.9	P/P	90 - 110
Silver	101	102	P/P	90 - 110
Thallium	99.5	98.3	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A100313

Included Lab Sample IDs: 2187532, 2187533, 2187538, 2187539

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A100324

Included Lab Sample IDs: 2187534, 2187535, 2187540, 2187541

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.4	105	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A100325

Included Lab Sample IDs: 2187555, 2187556

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A100326

Included Lab Sample IDs: 2187555, 2187556

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	95.8	95.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A100327

Included Lab Sample IDs: 2187534, 2187535, 2187540

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	93.8	94.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A100334

Included Lab Sample IDs: 2187541

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.0	94.2	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A100355

Included Lab Sample IDs: 2187555, 2187556

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	94.4	94.3	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A100374

Included Lab Sample IDs: 2187534, 2187535, 2187540, 2187541

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	103	P/P	90 - 110
Organic Carbon	103	104	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A100386

Included Lab Sample IDs: 2187532, 2187533, 2187538, 2187539

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

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					0.766	
EPA 200.7 Rev. 4.4	Barium	110	102	105	105		0.177
	Calcium	108	104	108	108		0.0448
	Iron	106	106	106	108		1.43
	Magnesium	107	104	108	109		1.17
	Potassium	105	104	104			0.461
	Sodium	101	103	102			0.293
	Zinc	112	104	110	110		0.0153
EPA 200.8 Rev. 5.4	Aluminum	94.6	93.3	94.0	96.2		0.656
	Antimony	97.3	96.0	97.6	100		1.70
	Arsenic	97.4	96.4	96.8	99.5		0.286
	Beryllium	89.5	87.8	91.0	91.3		3.66
	Boron	103	97.3	101	103		2.69
	Cadmium	97.3	95.0	96.9	98.4		1.93
	Chromium	100	99.4	100	99.5		0.596
	Cobalt	95.4	93.9	95.7	97.8		1.91
	Copper	99.9	99.3	100	98.0		0.859
	Lead	102	101	102	102		1.86
	Manganese	99.1	97.1	98.9	95.7		1.31
	Molybdenum	98.4	95.5	96.8	98.9		1.29
	Nickel	98.9	97.8	98.1	97.2		0.296
	Selenium	94.6	92.6	92.8	95.8		0.173
	Silver	105	102	104	104		1.71
	Thallium	104	102	106	105		3.08
EPA 300.0 Rev. 2.1	Chloride	99.2	99.8	100		0.625	
	Sulfate	101	99.6	101		0.964	
EPA 350.1 Rev. 2.0	Ammonia-N	100	97.2	99.0			1.55
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	109	106	102			3.15
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	99.5	100			0.277
	NO ₂ NO ₃ -N	102	102	102			0.0
EPA 365.1 Rev. 2.0	Total-P	103	104	106			1.56
	Total-P	102	107	104			2.68
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.8	102	102			0.294
SM 2120 B-2011	Color (true)	101				2.86	
SM 2320 B-2011	Total Alkalinity	103				1.26	
SM 2540 C-2011	TDS					1.25	
SM 4500 F-C-2011	Fluoride	101	99.7	99.1			0.519
SM 5310 B-2011	Organic Carbon	100	101	103			2.05

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2187532, 2187533, 2187538, 2187539
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2187555, 2187556
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2187555, 2187556
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2187532, 2187533, 2187538, 2187539
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2187532, 2187533, 2187538, 2187539
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2187534, 2187535, 2187540, 2187541
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2187534, 2187535, 2187540, 2187541
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2187534, 2187535, 2187540, 2187541
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2187534, 2187535, 2187540, 2187541

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	2187536, 2187537, 2187542, 2187543
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2187532, 2187533, 2187538, 2187539
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2187532, 2187533, 2187538, 2187539
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2187555, 2187556
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2187532, 2187533, 2187538, 2187539
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2187532, 2187533, 2187538, 2187539
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2187532, 2187533, 2187538, 2187539
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2187534, 2187535, 2187540, 2187541

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	07/31/2020			07/31/2020 15:33	Blanca Fach	2187532, 2187533, 2187538, 2187539
EPA 200.7 Rev. 4.4	07/31/2020	08/03/2020 14:00	Elliott D. Healy	08/06/2020 15:09	Betina Topolski	2187555
	07/31/2020	08/03/2020 14:00	Elliott D. Healy	08/06/2020 15:15	Betina Topolski	2187556
EPA 200.8 Rev. 5.4	07/31/2020	08/03/2020 14:00	Elliott D. Healy	08/05/2020 15:59	Alexander Thompson	2187555
	07/31/2020	08/03/2020 14:00	Elliott D. Healy	08/05/2020 16:07	Alexander Thompson	2187556
	07/31/2020	08/03/2020 14:00	Elliott D. Healy	08/07/2020 02:08	Alexander Thompson	2187555
	07/31/2020	08/03/2020 14:00	Elliott D. Healy	08/07/2020 02:15	Alexander Thompson	2187556
	07/31/2020	08/03/2020 14:00	Elliott D. Healy	08/07/2020 15:16	Alexander Thompson	2187555
	07/31/2020	08/03/2020 14:00	Elliott D. Healy	08/07/2020 15:20	Alexander Thompson	2187556
EPA 300.0 Rev. 2.1	07/31/2020			08/08/2020 00:15	Julia Storbeck	2187532
	07/31/2020			08/08/2020 00:27	Julia Storbeck	2187533
	07/31/2020			08/08/2020 01:04	Julia Storbeck	2187538
	07/31/2020			08/08/2020 01:16	Julia Storbeck	2187539
EPA 350.1 Rev. 2.0	07/31/2020			08/02/2020 13:36	Ping Hua	2187540
	07/31/2020			08/02/2020 13:47	Ping Hua	2187534
	07/31/2020			08/02/2020 13:48	Ping Hua	2187535
	07/31/2020			08/02/2020 13:49	Ping Hua	2187541
EPA 351.2 Rev. 2.0	07/31/2020	08/05/2020 10:42	Sima Feizi	08/06/2020 17:01	Jhamieka S. Greenwood	2187534
	07/31/2020	08/05/2020 10:42	Sima Feizi	08/06/2020 17:03	Jhamieka S. Greenwood	2187535
	07/31/2020	08/05/2020 10:42	Sima Feizi	08/06/2020 17:04	Jhamieka S. Greenwood	2187540
	07/31/2020	08/05/2020 10:42	Sima Feizi	08/06/2020 17:06	Jhamieka S. Greenwood	2187541
EPA 353.2 Rev. 2.0	07/31/2020			08/03/2020 10:19	Beverly Y. Sanders	2187534
	07/31/2020			08/03/2020 10:33	Beverly Y. Sanders	2187541
	07/31/2020			08/03/2020 11:48	Beverly Y. Sanders	2187535
	07/31/2020			08/03/2020 11:55	Beverly Y. Sanders	2187540
EPA 365.1 Rev. 2.0	07/31/2020	08/04/2020 10:15	Lipi Saha	08/07/2020 08:29	Lipi Saha	2187534
	07/31/2020	08/04/2020 10:15	Lipi Saha	08/07/2020 08:30	Lipi Saha	2187535
	07/31/2020	08/04/2020 10:15	Lipi Saha	08/07/2020 08:31	Lipi Saha	2187540
	07/31/2020	08/05/2020 10:35	Lipi Saha	08/07/2020 09:23	Lipi Saha	2187541
EPA 365.1 Rev. 2.0 dissolved	07/31/2020			07/31/2020 15:24	Virginia P. Brown	2187536
	07/31/2020			07/31/2020 15:26	Virginia P. Brown	2187537
	07/31/2020			07/31/2020 15:27	Virginia P. Brown	2187542
	07/31/2020			07/31/2020 15:28	Virginia P. Brown	2187543
SM 2120 B-2011	07/31/2020			07/31/2020 15:07	Benjamin T. Nordmann	2187532
	07/31/2020			07/31/2020 15:08	Benjamin T. Nordmann	2187533, 2187538
	07/31/2020			07/31/2020 15:09	Benjamin T. Nordmann	2187539
SM 2320 B-2011	07/31/2020			08/05/2020 19:13	Dale L. Simmons	2187532
	07/31/2020			08/05/2020 19:21	Dale L. Simmons	2187533
	07/31/2020			08/05/2020 19:28	Dale L. Simmons	2187538
	07/31/2020			08/05/2020 19:36	Dale L. Simmons	2187539

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2340B	07/31/2020			08/06/2020 15:09	Betina Topolski	2187555
	07/31/2020			08/06/2020 15:15	Betina Topolski	2187556
SM 2540 C-2011	07/31/2020			08/05/2020 15:06	Yijie Li	2187532, 2187533, 2187538, 2187539
SM 2540 D-2011	07/31/2020			08/05/2020 15:06	Yijie Li	2187532, 2187533, 2187538, 2187539
SM 4500 F-C-2011	07/31/2020			08/03/2020 19:16	Dale L. Simmons	2187532
	07/31/2020			08/03/2020 19:26	Dale L. Simmons	2187533
	07/31/2020			08/03/2020 19:36	Dale L. Simmons	2187538
	07/31/2020			08/03/2020 19:46	Dale L. Simmons	2187539
SM 5310 B-2011	07/31/2020			08/07/2020 17:42	David Boose	2187541
	07/31/2020			08/07/2020 19:43	David Boose	2187534
	07/31/2020			08/07/2020 19:55	David Boose	2187535
	07/31/2020			08/07/2020 20:08	David Boose	2187540