Chemical Analysis Report

SE-DIST-2018-10-09-01

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

Event Description: **SMP- North Lakes**
Request ID: **RQ-2018-10-08-64**
Customer: **SE-DIST**
Project ID: **SMP**

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Date Certified: 05-NOV-2018 15:28

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 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: South Fork SLR @ Halpatiokee Trail **Collection Date/Time: 10/08/2018 12:00**

Field ID: G2SE0015 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2032501	EPA 180.1 Rev. 2.0	Turbidity	11		NTU	P352988	
	EPA 300.0 Rev. 2.1	Chloride	41		mg Cl/L	P353499	
		Sulfate	8.4		mg SO4/L	P353500	
	SM 2120 B	Color (true)	96		PCU	P353000	
	SM 2320 B-97	Total Alkalinity	185		mg CaCO3/L	P353318	
	SM 2540 C-97	TDS	306	A	mg/L	P353227	
	SM 2540 D-97	TSS	7	IA	mg/L	P353229	
	SM 4500 F-C-97	Fluoride	0.19		mg F/L	P353321	
2032502	EPA 350.1 Rev. 2.0	Ammonia-N	0.048		mg N/L	P353861	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P353285	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15		mg N/L	P353215	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P353210	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P353426	
2032503	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.066		mg P/L	P352987	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: South Fork SLR @ Gaines Ave **Collection Date/Time: 10/08/2018 12:10**

Field ID: G2SE0039 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2032495	EPA 180.1 Rev. 2.0	Turbidity	9.8		NTU	P352988	
	EPA 300.0 Rev. 2.1	Chloride	42		mg Cl/L	P353499	
		Sulfate	9.7		mg SO4/L	P353500	
	SM 2120 B	Color (true)	110		PCU	P353000	
	SM 2320 B-97	Total Alkalinity	156		mg CaCO3/L	P353318	
	SM 2540 C-97	TDS	284		mg/L	P353227	
	SM 2540 D-97	TSS	7	I	mg/L	P353229	
	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P353321	
2032497	EPA 350.1 Rev. 2.0	Ammonia-N	0.031		mg N/L	P353860	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P353285	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P353215	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P353209	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P353426	
2032499	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.072		mg P/L	P352987	
2032512	EPA 200.7 Rev. 4.4	Calcium	63.2		mg/L	P353226	
		Iron	860		ug/L	P353226	
		Magnesium	6.03		mg/L	P353226	
		Potassium	2.5		mg/L	P353226	
		Sodium	28.9		mg/L	P353226	
		Zinc	5.0	U	ug/L	P353226	
	EPA 200.8 Rev. 5.4	Arsenic	1.94		ug/L	P353226	
		Cadmium	0.020	U	ug/L	P353226	
		Chromium	0.77	I	ug/L	P353226	
		Copper	2.03		ug/L	P353226	
		Lead	0.35		ug/L	P353226	
		Nickel	0.41	I	ug/L	P353226	
		Silver	0.010	U	ug/L	P353226	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: South Fork SLR @ Hosford Park **Collection Date/Time: 10/08/2018 12:20**

Field ID: G2SE0043 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2032496	EPA 180.1 Rev. 2.0	Turbidity	9.6		NTU	P352988	
	EPA 300.0 Rev. 2.1	Chloride	43		mg Cl/L	P353499	
		Sulfate	10		mg SO4/L	P353500	
	SM 2120 B	Color (true)	100		PCU	P353000	
	SM 2320 B-97	Total Alkalinity	155		mg CaCO3/L	P353318	
	SM 2540 C-97	TDS	297		mg/L	P353227	
	SM 2540 D-97	TSS	7	I	mg/L	P353229	
	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P353321	
2032498	EPA 350.1 Rev. 2.0	Ammonia-N	0.027		mg N/L	P353860	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P353285	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P353215	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P353210	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P353426	
2032500	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.072		mg P/L	P352987	
2032513	EPA 200.7 Rev. 4.4	Calcium	62.2		mg/L	P353226	
		Iron	820		ug/L	P353226	
		Magnesium	6.24		mg/L	P353226	
		Potassium	2.6		mg/L	P353226	
		Sodium	29.9		mg/L	P353226	
		Zinc	5.0	U	ug/L	P353226	
	EPA 200.8 Rev. 5.4	Arsenic	2.03		ug/L	P353226	
		Cadmium	0.020	U	ug/L	P353226	
		Chromium	0.88	I	ug/L	P353226	
		Copper	2.21		ug/L	P353226	
		Lead	0.36		ug/L	P353226	
		Nickel	0.42	I	ug/L	P353226	
		Silver	0.010	U	ug/L	P353226	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Henderson Pond **Collection Date/Time: 10/08/2018 14:10**

Field ID: G2SE0010 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2032489	EPA 180.1 Rev. 2.0	Turbidity	1.4	A	NTU	P352988	
	EPA 300.0 Rev. 2.1	Chloride	39		mg Cl/L	P353437	
		Sulfate	2.6		mg SO4/L	P353442	
	SM 2120 B	Color (true)	120	A	PCU	P353000	
	SM 2320 B-97	Total Alkalinity	12		mg CaCO3/L	P353318	
	SM 2540 C-97	TDS	119		mg/L	P353227	
	SM 2540 D-97	TSS	3	I	mg/L	P353229	
	SM 4500 F-C-97	Fluoride	0.052	I	mg F/L	P353321	
2032490	EPA 350.1 Rev. 2.0	Ammonia-N	0.030		mg N/L	P353860	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P353284	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P353215	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P353209	
	SM 5310 B-00	Organic Carbon	20		mg C/L	P353425	
2032491	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P352987	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Lake Ellen **Collection Date/Time: 10/08/2018 14:40**

Field ID: G2SE0014 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2032492	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P352988	
	EPA 300.0 Rev. 2.1	Chloride	34	A	mg Cl/L	P353499	
		Sulfate	2.5	A	mg SO4/L	P353500	
	SM 2120 B	Color (true)	140		PCU	P353000	
	SM 2320 B-97	Total Alkalinity	21		mg CaCO3/L	P353318	
	SM 2540 C-97	TDS	124		mg/L	P353227	
	SM 2540 D-97	TSS	2	I	mg/L	P353229	
	SM 4500 F-C-97	Fluoride	0.057	I	mg F/L	P353321	
2032493	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P353860	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P353284	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.026		mg N/L	P353215	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P353209	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P353426	
2032494	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P352987	

Ref. Method and Comment:
SM 2540 D-97: 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: P352988

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353226

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
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353226

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353437

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353442

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353499

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353500

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: P353860

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353861

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353284

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353285

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353215

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353209

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353210

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352987

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

Reference Method: SM 2120 B
Batch ID: P353000

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P353318

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

Reference Method: SM 2540 C-97
Batch ID: P353227

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P353229

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P353321

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P353425

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

Reference Method: SM 5310 B-00
Batch ID: P353426

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: P353226

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	102		P	85 - 115
Iron	105		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	104		P	85 - 115
Sodium	102		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353226

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	101		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	98.9		P	85 - 115
Copper	99.9		P	85 - 115
Lead	96.0		P	85 - 115
Nickel	98.6		P	85 - 115
Silver	98.1		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353437

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353442

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353499

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353500

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353860

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353861

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353284

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353285

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353215

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: P353209

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353210

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352987

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.7		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P353000

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.3		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P353318

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P353321

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P353425

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.8		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P353426

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353226

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031978	Calcium	103		P	80 - 120
2031978	Iron	106		P	80 - 120
2031978	Magnesium	102		P	80 - 120
2031978	Potassium	100		P	80 - 120
2031978	Sodium	102		P	80 - 120
2031978	Zinc	100		P	80 - 120
2032011	Calcium	104		P	80 - 120
2032011	Iron	107	105	P/P	80 - 120
2032011	Magnesium	104		P	80 - 120
2032011	Potassium	106	105	P/P	80 - 120
2032011	Sodium	102		P	80 - 120
2032011	Zinc	98.3	98.9	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353226

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031978	Arsenic	103		P	80 - 120
2031978	Cadmium	106		P	80 - 120
2031978	Chromium	98.8		P	80 - 120
2031978	Copper	96.9		P	80 - 120
2031978	Lead	97.2		P	80 - 120
2031978	Nickel	96.8		P	80 - 120
2031978	Silver	99.1		P	80 - 120
2032011	Arsenic	98.3	98.4	P/P	80 - 120
2032011	Cadmium	102	105	P/P	80 - 120
2032011	Chromium	96.7	97.7	P/P	80 - 120
2032011	Copper	95.8	95.1	P/P	80 - 120
2032011	Lead	94.3	96.2	P/P	80 - 120
2032011	Nickel	94.5	96.8	P/P	80 - 120
2032011	Silver	98.2	99.3	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353437

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032005	Chloride	104		P	90 - 110
2032381	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353442

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032005	Sulfate	103		P	90 - 110
2032381	Sulfate	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353499

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032492	Chloride	94.8		P	90 - 110
2032635	Chloride	100		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353500

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032492	Sulfate	98.1		P	90 - 110
2032635	Sulfate	95.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353860

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032459	Ammonia-N	97.8	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353861

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032502	Ammonia-N	100	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353284

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032462	Kjeldahl Nitrogen	100	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353285

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032613	Kjeldahl Nitrogen	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353215

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032462	NO2NO3-N	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353209

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032464	Total-P	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353210

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032612	Total-P	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352987

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032494	O-Phosphate-P	100	102	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P353321

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032005	Fluoride	98.4	98.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P353425

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031937	Organic Carbon	97.5	96.9	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P353426

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032493	Organic Carbon	95.8	97.2	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P352988

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032489	Turbidity	7.25	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353226

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032011	Calcium	2.85	Spike	P	0 - 20
2032011	Iron	1.93	Spike	P	0 - 20
2032011	Magnesium	0.0298	Spike	P	0 - 20
2032011	Potassium	0.480	Spike	P	0 - 20
2032011	Sodium	1.52	Spike	P	0 - 20
2032011	Zinc	0.538	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353226

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032011	Arsenic	0.163	Spike	P	0 - 20
2032011	Cadmium	2.33	Spike	P	0 - 20
2032011	Chromium	1.11	Spike	P	0 - 20
2032011	Copper	0.728	Spike	P	0 - 20
2032011	Lead	2.00	Spike	P	0 - 20
2032011	Nickel	2.39	Spike	P	0 - 20
2032011	Silver	1.19	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353437

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032005	Chloride	3.78	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353442

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032005	Sulfate	5.36	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353499

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032492	Chloride	0.738	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353500

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032492	Sulfate	1.41	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353860

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032459	Ammonia-N	2.27	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353861

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032502	Ammonia-N	0.336	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353284

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032462	Kjeldahl Nitrogen	1.38	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353285

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032613	Kjeldahl Nitrogen	1.36	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353215

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032462	NO2NO3-N	0.231	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353209

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032464	Total-P	1.12	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353210

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032612	Total-P	0.787	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352987

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032494	O-Phosphate-P	1.29	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P353000

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032489	Color (true)	0.646	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P353318

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032005	Total Alkalinity	0.713	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P353227

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032501	TDS	5.56	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P353321

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032005	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P353425

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031937	Organic Carbon	0.385	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P353426

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032493	Organic Carbon	0.766	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A86998
Included Lab Sample IDs: 2032491, 2032494, 2032499, 2032500, 2032503

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	100	P/P	90 - 110
O-Phosphate-P	100	98.9	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A86999
Included Lab Sample IDs: 2032489, 2032492, 2032495, 2032496, 2032501

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

Reference Method: SM 2120 B
Run ID: A87004
Included Lab Sample IDs: 2032489, 2032492, 2032495, 2032496, 2032501

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.8	99.0	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A87095
Included Lab Sample IDs: 2032490, 2032493, 2032497, 2032498, 2032502

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A87105
Included Lab Sample IDs: 2032489

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A87113
Included Lab Sample IDs: 2032497, 2032498, 2032502

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A87128
Included Lab Sample IDs: 2032490, 2032493

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

Reference Method: SM 2320 B-97
Run ID: A87130
Included Lab Sample IDs: 2032489, 2032492, 2032495, 2032496, 2032501

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A87130
Included Lab Sample IDs: 2032489, 2032492, 2032495, 2032496, 2032501

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110
Total Alkalinity	103	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A87130
Included Lab Sample IDs: 2032489, 2032492, 2032495, 2032496, 2032501

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	102	P/P	90 - 110
Fluoride	101	100	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A87189
Included Lab Sample IDs: 2032490, 2032493, 2032497, 2032498, 2032502

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A87206
Included Lab Sample IDs: 2032490, 2032493, 2032497, 2032498, 2032502

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	105	P/P	90 - 110
Kjeldahl Nitrogen	105	103	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A87212
Included Lab Sample IDs: 2032492, 2032495, 2032496, 2032501

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A87292
Included Lab Sample IDs: 2032512, 2032513

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	101	P/P	90 - 110
Iron	101	101	P/P	90 - 110
Magnesium	103	102	P/P	90 - 110
Potassium	102	103	P/P	90 - 110
Sodium	103	103	P/P	90 - 110
Zinc	99.3	100	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A87366
Included Lab Sample IDs: 2032490, 2032493, 2032497, 2032498, 2032502

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	102	P/P	90 - 110
Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A87372
Included Lab Sample IDs: 2032512, 2032513

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	95.4	94.9	P/P	90 - 110
Cadmium	98.4	99.6	P/P	90 - 110
Chromium	97.4	96.2	P/P	90 - 110
Copper	97.3	95.4	P/P	90 - 110
Lead	95.6	96.1	P/P	90 - 110
Nickel	96.3	95.8	P/P	90 - 110
Silver	93.8	95.2	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		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						7.25	
EPA 200.7 Rev. 4.4	Calcium	102	103	104				2.85
	Iron	105	106	107	105			1.93
	Magnesium	104	102	104				0.0298
	Potassium	104	100	106	105			0.480
	Sodium	102	102	102				1.52
	Zinc	101	100	98.3	98.9			0.538
EPA 200.8 Rev. 5.4	Arsenic	101	103	98.3	98.4			0.163
	Cadmium	101	106	102	105			2.33
	Chromium	98.9	98.8	96.7	97.7			1.11
	Copper	99.9	96.9	95.8	95.1			0.728
	Lead	96.0	97.2	94.3	96.2			2.00
	Nickel	98.6	96.8	94.5	96.8			2.39
	Silver	98.1	99.1	98.2	99.3			1.19
EPA 300.0 Rev. 2.1	Chloride	105	104	101			3.78	
	Chloride	98.0	94.8	100			0.738	
	Sulfate	105	103	103			5.36	
	Sulfate	97.9	98.1	95.7			1.41	
EPA 350.1 Rev. 2.0	Ammonia-N	102	97.8	101				2.27
	Ammonia-N	101	100	101				0.336
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	100	98.2				1.38
	Kjeldahl Nitrogen	107	103	102				1.36
EPA 353.2 Rev. 2.0	NO2NO3-N	100	100					0.231
EPA 365.1 Rev. 2.0	Total-P	99.5	100	102				1.12
	Total-P	98.7	101	101				0.787
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.7	100	102				1.29
SM 2120 B	Color (true)	98.3					0.646	
SM 2320 B-97	Total Alkalinity	102					0.713	
SM 2540 C-97	TDS						5.56	
SM 4500 F-C-97	Fluoride	98.4	98.4	98.4				0.0
SM 5310 B-00	Organic Carbon	98.8	97.5	96.9				0.385
	Organic Carbon	97.8	95.8	97.2				0.766

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2032489, 2032492, 2032495, 2032496, 2032501
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2032512, 2032513
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2032512, 2032513
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2032489, 2032492, 2032495, 2032496, 2032501
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2032489, 2032492, 2032495, 2032496, 2032501
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2032490, 2032493, 2032497, 2032498, 2032502
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2032490, 2032493, 2032497, 2032498, 2032502
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2032490, 2032493, 2032497, 2032498, 2032502
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2032490, 2032493, 2032497, 2032498, 2032502

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2032491, 2032494, 2032499, 2032500, 2032503
SM 2120 B / E31780	True Color measured at 450 nm	2032489, 2032492, 2032495, 2032496, 2032501
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2032489, 2032492, 2032495, 2032496, 2032501
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2032489, 2032492, 2032495, 2032496, 2032501
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2032489, 2032492, 2032495, 2032496, 2032501
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2032489, 2032492, 2032495, 2032496, 2032501
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2032490, 2032493, 2032497, 2032498, 2032502

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	10/09/2018			10/09/2018 13:42	Sima Feizi	2032489, 2032492, 2032495, 2032496, 2032501
EPA 200.7 Rev. 4.4	10/09/2018	10/17/2018 15:30	Elliott D. Healy	10/25/2018 15:33	Betina Topolski	2032512
	10/09/2018	10/17/2018 15:30	Elliott D. Healy	10/25/2018 15:37	Betina Topolski	2032513
EPA 200.8 Rev. 5.4	10/09/2018	10/17/2018 15:30	Elliott D. Healy	10/29/2018 16:16	Robert K Palmer	2032512
	10/09/2018	10/17/2018 15:30	Elliott D. Healy	10/29/2018 16:26	Robert K Palmer	2032513
EPA 300.0 Rev. 2.1	10/09/2018			10/20/2018 19:45	Lipi Saha	2032489
	10/09/2018			10/22/2018 21:06	Lipi Saha	2032492
	10/09/2018			10/22/2018 21:55	Lipi Saha	2032495
	10/09/2018			10/22/2018 22:07	Lipi Saha	2032496
	10/09/2018			10/22/2018 22:19	Lipi Saha	2032501
EPA 350.1 Rev. 2.0	10/09/2018			10/29/2018 12:13	Ping Hua	2032490
	10/09/2018			10/29/2018 12:14	Ping Hua	2032493
	10/09/2018			10/29/2018 12:16	Ping Hua	2032497
	10/09/2018			10/29/2018 12:17	Ping Hua	2032498
	10/09/2018			10/29/2018 12:28	Ping Hua	2032502
EPA 351.2 Rev. 2.0	10/09/2018	10/18/2018 11:30	Adrian Shelby	10/22/2018 14:01	Joseph Suarez	2032490
	10/09/2018	10/18/2018 11:30	Adrian Shelby	10/22/2018 14:03	Joseph Suarez	2032493
	10/09/2018	10/18/2018 11:30	Adrian Shelby	10/22/2018 14:07	Joseph Suarez	2032497
	10/09/2018	10/18/2018 11:30	Adrian Shelby	10/22/2018 14:09	Joseph Suarez	2032498
	10/09/2018	10/18/2018 11:30	Adrian Shelby	10/22/2018 14:13	Joseph Suarez	2032502
EPA 353.2 Rev. 2.0	10/09/2018			10/17/2018 12:26	Lauren Bottorf	2032490
	10/09/2018			10/17/2018 12:27	Lauren Bottorf	2032493
	10/09/2018			10/17/2018 12:28	Lauren Bottorf	2032497
	10/09/2018			10/17/2018 12:29	Lauren Bottorf	2032498
	10/09/2018			10/17/2018 12:30	Lauren Bottorf	2032502
EPA 365.1 Rev. 2.0	10/09/2018	10/17/2018 13:20	Sima Feizi	10/18/2018 10:40	Beverly Y. Sanders	2032497
	10/09/2018	10/17/2018 13:20	Sima Feizi	10/18/2018 10:47	Beverly Y. Sanders	2032498
	10/09/2018	10/17/2018 13:20	Sima Feizi	10/18/2018 10:48	Beverly Y. Sanders	2032502
	10/09/2018	10/17/2018 13:20	Sima Feizi	10/18/2018 13:59	Beverly Y. Sanders	2032490
	10/09/2018	10/17/2018 13:20	Sima Feizi	10/18/2018 14:00	Beverly Y. Sanders	2032493
EPA 365.1 Rev. 2.0 dissolved	10/09/2018			10/09/2018 12:59	Anthony C. Onicha	2032494
	10/09/2018			10/09/2018 13:04	Anthony C. Onicha	2032499
	10/09/2018			10/09/2018 13:05	Anthony C. Onicha	2032500
	10/09/2018			10/09/2018 13:10	Anthony C. Onicha	2032503
	10/09/2018			10/09/2018 13:11	Anthony C. Onicha	2032491
SM 2120 B	10/09/2018			10/09/2018 13:42	Blanca Fach	2032489
	10/09/2018			10/09/2018 13:43	Blanca Fach	2032492
	10/09/2018			10/09/2018 13:44	Blanca Fach	2032495, 2032496
	10/09/2018			10/09/2018 13:45	Blanca Fach	2032501

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	10/09/2018			10/18/2018 03:20	Dale L. Simmons	2032489
	10/09/2018			10/18/2018 03:30	Dale L. Simmons	2032492
	10/09/2018			10/18/2018 03:41	Dale L. Simmons	2032495
	10/09/2018			10/18/2018 03:51	Dale L. Simmons	2032496
	10/09/2018			10/18/2018 04:28	Dale L. Simmons	2032501
SM 2540 C-97	10/09/2018			10/15/2018 11:12	Yijie Li	2032489, 2032492, 2032495, 2032496, 2032501
SM 2540 D-97	10/09/2018			10/15/2018 10:54	Yijie Li	2032489
	10/09/2018			10/15/2018 10:57	Yijie Li	2032492
	10/09/2018			10/15/2018 11:00	Yijie Li	2032495
	10/09/2018			10/15/2018 11:03	Yijie Li	2032496
	10/09/2018			10/15/2018 11:12	Yijie Li	2032501
SM 4500 F-C-97	10/09/2018			10/18/2018 03:20	Dale L. Simmons	2032489
	10/09/2018			10/18/2018 03:30	Dale L. Simmons	2032492
	10/09/2018			10/18/2018 03:41	Dale L. Simmons	2032495
	10/09/2018			10/18/2018 03:51	Dale L. Simmons	2032496
	10/09/2018			10/18/2018 04:28	Dale L. Simmons	2032501
SM 5310 B-00	10/09/2018			10/20/2018 02:14	Megan Treadwell	2032497
	10/09/2018			10/20/2018 02:26	Megan Treadwell	2032498
	10/09/2018			10/20/2018 02:38	Megan Treadwell	2032502
	10/09/2018			10/20/2018 12:20	Megan Treadwell	2032490
	10/09/2018			10/20/2018 12:57	Megan Treadwell	2032493