

Chemical Analysis Report

NE-DIST-2019-05-08-02

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

Event Description: **LSJR South West**

Request ID: **RQ-2019-05-06-17**

Customer: **NE-DIST**

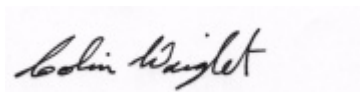
Project ID: **SMP**

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Certified by: Colin Wright, Program Administrator

Date Certified: 23-MAY-2019 10:08

A handwritten signature in black ink, appearing to read "Colin Wright", is shown 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: BULL CR NE CROSSING CR 215

Collection Date/Time: 05/07/2019 10:50

Field ID: 20030487

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2084529	EPA 180.1 Rev. 2.0	Turbidity	3.5		NTU	P363612	
	EPA 300.0 Rev. 2.1	Chloride	9.7		mg Cl/L	P363880	
		Sulfate	2.9		mg SO4/L	P363883	
		Color (true)	190		PCU	P363639	
	SM 2320 B-97	Total Alkalinity	16		mg CaCO3/L	P364170	
	SM 2540 C-97	TDS	63		mg/L	P364143	
	SM 2540 D-97	TSS	3	IA	mg/L	P364238	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P364174	
2084533	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P363907	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P363930	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15		mg N/L	P364065	
	EPA 365.1 Rev. 2.0	Total-P	0.25		mg P/L	P363874	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P363921	
2084537	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.20		mg P/L	P363650	
2084546	EPA 200.7 Rev. 4.4	Barium	7.1		ug/L	P363846	
		Calcium	6.73		mg/L	P363846	
		Iron	470		ug/L	P363846	
		Magnesium	2.33		mg/L	P363846	
		Potassium	0.50	I	mg/L	P363846	
		Sodium	5.6		mg/L	P363846	
		Zinc	5.0	U	ug/L	P363846	
		Aluminum	285		ug/L	P363846	
	EPA 200.8 Rev. 5.4	Antimony	0.050	U	ug/L	P363846	
		Arsenic	0.44		ug/L	P363846	
		Boron**	16.1		ug/L	P363846	
		Cadmium	0.020	U	ug/L	P363846	
		Chromium	0.54	I	ug/L	P363846	
		Copper	0.47	I	ug/L	P363846	
		Lead	0.40	I	ug/L	P363846	
		Nickel	0.50	U	ug/L	P363846	
		Selenium	0.20	U	ug/L	P363846	
		Silver	0.010	U	ug/L	P363846	
		Thallium	0.10	U	ug/L	P363846	

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: Unnamed Branch at Brit Place

Collection Date/Time: 05/07/2019 11:45

Field ID: G2NE1140

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2084530	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P363612	
	EPA 300.0 Rev. 2.1	Chloride	6.2		mg Cl/L	P363880	
		Sulfate	9.5		mg SO4/L	P363883	
		Color (true)	150		PCU	P363639	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P364170	
	SM 2540 C-97	TDS	56		mg/L	P364143	
	SM 2540 D-97	TSS	2	I	mg/L	P364238	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P364174	
2084534	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P363907	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P363930	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P364065	
	EPA 365.1 Rev. 2.0	Total-P	0.40		mg P/L	P363874	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P363921	
2084538	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.34		mg P/L	P363653	
2084547	EPA 200.7 Rev. 4.4	Barium	5.1		ug/L	P363846	
		Calcium	3.94		mg/L	P363846	
		Iron	330		ug/L	P363846	
		Magnesium	1.15		mg/L	P363846	
		Potassium	0.30	U	mg/L	P363846	
		Sodium	4.1		mg/L	P363846	
		Zinc	5.0	U	ug/L	P363846	
		Aluminum	303		ug/L	P363846	
		Antimony	0.050	U	ug/L	P363846	
		Arsenic	0.22		ug/L	P363846	
	EPA 200.8 Rev. 5.4	Boron**	12.6		ug/L	P363846	
		Cadmium	0.020	U	ug/L	P363846	
		Chromium	0.43	I	ug/L	P363846	
		Copper	0.40	U	ug/L	P363846	
		Lead	0.20	U	ug/L	P363846	
		Nickel	0.50	U	ug/L	P363846	
		Selenium	0.20	U	ug/L	P363846	
		Silver	0.010	U	ug/L	P363846	
		Thallium	0.10	U	ug/L	P363846	

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: Swimming Pen CR @ SR 220

Collection Date/Time: 05/07/2019 09:25

Field ID: 20030191

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2084531	EPA 180.1 Rev. 2.0	Turbidity	4.3	A	NTU	P363612	
	EPA 300.0 Rev. 2.1	Chloride	400		mg Cl/L	P363880	
		Sulfate	80		mg SO4/L	P363883	
	SM 2120 B	Color (true)	87		PCU	P363639	
	SM 2320 B-97	Total Alkalinity	44		mg CaCO3/L	P364170	
	SM 2540 C-97	TDS	752		mg/L	P364143	
	SM 2540 D-97	TSS	6	I	mg/L	P364238	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P364174	
2084535	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P363907	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P363930	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P364065	
	EPA 365.1 Rev. 2.0	Total-P	0.088		mg P/L	P363874	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P363921	
2084539	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.019		mg P/L	P363653	
2084548	EPA 200.7 Rev. 4.4	Barium	14.6		ug/L	P363846	
		Calcium	28.4		mg/L	P363846	
		Iron	140		ug/L	P363846	
		Magnesium	27.7		mg/L	P363846	
		Potassium	7.8		mg/L	P363846	
		Sodium	195		mg/L	P363846	
		Zinc	5.0	U	ug/L	P363846	
	EPA 200.8 Rev. 5.4	Aluminum	85		ug/L	P363846	
		Antimony	0.089	I	ug/L	P363846	
		Arsenic	2.29		ug/L	P363846	
		Boron**	130		ug/L	P363846	
		Cadmium	0.020	U	ug/L	P363846	
		Chromium	0.40	U	ug/L	P363846	
		Copper	1.18		ug/L	P363846	
		Lead	0.37	I	ug/L	P363846	
		Nickel	0.50	U	ug/L	P363846	
		Selenium	0.20	U	ug/L	P363846	
		Silver	0.010	U	ug/L	P363846	
		Thallium	0.10	U	ug/L	P363846	

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: Swimming Pen Creek at Eagles Creek Dr.

Collection Date/Time: 05/07/2019 10:00

Field ID: G2NE1188

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2084532	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P363612	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P363880	
		Sulfate	11		mg SO4/L	P363883	
		SM 2120 B	Color (true)	28	A	PCU	P363640
	SM 2320 B-97	Total Alkalinity	79		mg CaCO3/L	P364170	
	SM 2540 C-97	TDS	140	A	mg/L	P364143	
	SM 2540 D-97	TSS	2	I	mg/L	P364238	
	SM 4500 F-C-97	Fluoride	0.080	I	mg F/L	P364174	
2084536	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P363907	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P363930	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.078		mg N/L	P364065	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P363874	
	SM 5310 B-00	Organic Carbon	8.0		mg C/L	P363921	
2084540	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P363653	
2084549	EPA 200.7 Rev. 4.4	Barium	27.1		ug/L	P363846	
		Calcium	26.5		mg/L	P363846	
		Iron	340		ug/L	P363846	
		Magnesium	3.13		mg/L	P363846	
		Potassium	2.3		mg/L	P363846	
		Sodium	14.8		mg/L	P363846	
		Zinc	5.0	U	ug/L	P363846	
	EPA 200.8 Rev. 5.4	Aluminum	30		ug/L	P363846	
		Antimony	0.11	I	ug/L	P363846	
		Arsenic	0.60		ug/L	P363846	
		Boron**	32.3		ug/L	P363846	
		Cadmium	0.020	U	ug/L	P363846	
		Chromium	0.40	U	ug/L	P363846	
		Copper	5.78		ug/L	P363846	
		Lead	0.20	U	ug/L	P363846	
		Nickel	0.50	U	ug/L	P363846	
		Selenium	0.20	U	ug/L	P363846	
		Silver	0.010	U	ug/L	P363846	
		Thallium	0.10	U	ug/L	P363846	

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: P363612

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P363846

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: P363846

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
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	0.20	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: P363880

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363883

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363907

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: P363930

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364065

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363874

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363650

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363653

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

Reference Method: SM 2120 B
Batch ID: P363639

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P363640

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P364170

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

Reference Method: SM 2540 C-97
Batch ID: P364143

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P364238

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P364174

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P363921

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: P363846

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	101		P	85 - 115
Calcium	92.0		P	85 - 115
Iron	94.8		P	85 - 115
Magnesium	99.7		P	85 - 115
Potassium	93.3		P	85 - 115
Sodium	92.6		P	85 - 115
Zinc	99.7		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P363846

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.8		P	85 - 115
Antimony	96.7		P	85 - 115
Arsenic	101		P	85 - 115
Boron	98.4		P	85 - 115
Cadmium	99.4		P	85 - 115
Chromium	98.3		P	85 - 115
Copper	101		P	85 - 115
Lead	92.4		P	85 - 115
Nickel	99.7		P	85 - 115
Selenium	101		P	85 - 115
Silver	98.9		P	85 - 115
Thallium	99.2		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363880

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363883

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363907

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363930

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.9		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364065

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: P363874

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363650

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363653

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

Reference Method: SM 2120 B
Batch ID: P363639

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.3		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P363640

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P364170

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P364174

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.7		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P363921

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	89.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P363846

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084549	Barium	100		P	80 - 120
2084549	Calcium	94.2		P	80 - 120
2084549	Iron	97.8		P	80 - 120
2084549	Magnesium	102		P	80 - 120
2084549	Potassium	91.6		P	80 - 120
2084549	Sodium	92.5		P	80 - 120
2084549	Zinc	102		P	80 - 120
2084918	Barium	101	101	P/P	80 - 120
2084918	Calcium	92.3		P	80 - 120
2084918	Iron	96.0	97.3	P/P	80 - 120
2084918	Magnesium	99.5	101	P/P	80 - 120
2084918	Potassium	93.5	93.5	P/P	80 - 120
2084918	Sodium	92.4		P	80 - 120
2084918	Zinc	103	104	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P363846

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084549	Aluminum	95.6		P	80 - 120
2084549	Antimony	97.0		P	80 - 120
2084549	Arsenic	102		P	80 - 120
2084549	Boron	99.6		P	80 - 120
2084549	Cadmium	99.1		P	80 - 120
2084549	Chromium	97.2		P	80 - 120
2084549	Copper	98.5		P	80 - 120
2084549	Lead	92.8		P	80 - 120
2084549	Nickel	98.9		P	80 - 120
2084549	Selenium	100		P	80 - 120
2084549	Silver	96.6		P	80 - 120
2084549	Thallium	101		P	80 - 120
2084918	Aluminum	96.2	105	P/P	80 - 120
2084918	Antimony	95.6	105	P/P	80 - 120
2084918	Arsenic	100	109	P/P	80 - 120
2084918	Boron	100	111	P/P	80 - 120
2084918	Cadmium	98.2	108	P/P	80 - 120
2084918	Chromium	99.7	108	P/P	80 - 120
2084918	Copper	101	110	P/P	80 - 120
2084918	Lead	92.4	101	P/P	80 - 120
2084918	Nickel	99.5	108	P/P	80 - 120
2084918	Selenium	96.6	107	P/P	80 - 120
2084918	Silver	97.6	99.4	P/P	80 - 120
2084918	Thallium	101	113	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363880

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2083563	Chloride	98.9		P	90 - 110
2084529	Chloride	98.9		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363883

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2083563	Sulfate	99.2		P	90 - 110
2084529	Sulfate	99.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363907

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084561	Ammonia-N	106	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084453	Kjeldahl Nitrogen	92.8	91.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364065

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084504	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363874

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084162	Total-P	108	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363650

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084277	O-Phosphate-P	98.2	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363653

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084540	O-Phosphate-P	97.4	96.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P364174

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2084386	Fluoride	96.1	95.6	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P363921

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2083388	Organic Carbon	94.4	93.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P363612

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084531	Turbidity	2.09	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P363846

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084918	Barium	0.502	Spike	P	0 - 20
2084918	Calcium	0.878	Spike	P	0 - 20
2084918	Iron	1.30	Spike	P	0 - 20
2084918	Magnesium	1.24	Spike	P	0 - 20
2084918	Potassium	0.0637	Spike	P	0 - 20
2084918	Sodium	0.480	Spike	P	0 - 20
2084918	Zinc	0.506	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P363846

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084918	Aluminum	9.03	Spike	P	0 - 20
2084918	Antimony	9.69	Spike	P	0 - 20
2084918	Arsenic	8.66	Spike	P	0 - 20
2084918	Boron	8.01	Spike	P	0 - 20
2084918	Cadmium	9.30	Spike	P	0 - 20
2084918	Chromium	8.17	Spike	P	0 - 20
2084918	Copper	7.85	Spike	P	0 - 20
2084918	Lead	9.31	Spike	P	0 - 20
2084918	Nickel	8.21	Spike	P	0 - 20
2084918	Selenium	10.4	Spike	P	0 - 20
2084918	Silver	1.82	Spike	P	0 - 20
2084918	Thallium	11.0	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363880

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083563	Chloride	1.12	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363883

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083563	Sulfate	0.137	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363907

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084561	Ammonia-N	1.43	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084453	Kjeldahl Nitrogen	0.854	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364065

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084504	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363874

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084162	Total-P	4.28	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084277	O-Phosphate-P	1.20	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363653

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084540	O-Phosphate-P	0.725	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P363639

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084448	Color (true)	1.60	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P363640

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084532	Color (true)	0.125	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P364170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084386	Total Alkalinity	0.743	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P364143

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084532	TDS	4.98	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P364174

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2084386	Fluoride	0.476	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P363921

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083388	Organic Carbon	0.857	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 180.1 Rev. 2.0

Run ID: A91297

Included Lab Sample IDs: 2084529, 2084530, 2084531, 2084532

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

Reference Method: SM 2120 B

Run ID: A91305

Included Lab Sample IDs: 2084529, 2084530, 2084531, 2084532

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	90 - 115
Color (true)	101	100	P/P	90 - 115
Color (true)	102	102	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A91312

Included Lab Sample IDs: 2084537, 2084538, 2084539, 2084540

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.8	98.1	P/P	90 - 110
O-Phosphate-P	98.1	99.6	P/P	90 - 110
O-Phosphate-P	99.5	98.1	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A91404

Included Lab Sample IDs: 2084529, 2084530, 2084531, 2084532

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	102	P/P	90 - 110
Sulfate	102	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A91412

Included Lab Sample IDs: 2084533, 2084534, 2084535, 2084536

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

Reference Method: SM 5310 B-00

Run ID: A91414

Included Lab Sample IDs: 2084533, 2084534, 2084535, 2084536

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	90.6	92.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A91422

Included Lab Sample IDs: 2084546, 2084547, 2084548, 2084549

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.9	98.4	P/P	90 - 110
Aluminum	99.2	98.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A91422

Included Lab Sample IDs: 2084546, 2084547, 2084548, 2084549

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	94.9	95.8	P/P	90 - 110
Antimony	95.8	95.2	P/P	90 - 110
Arsenic	101	102	P/P	90 - 110
Arsenic	102	101	P/P	90 - 110
Boron	97.4	104	P/P	90 - 110
Boron	98.0	97.4	P/P	90 - 110
Cadmium	98.0	98.6	P/P	90 - 110
Cadmium	98.6	98.7	P/P	90 - 110
Chromium	101	102	P/P	90 - 110
Chromium	98.9	101	P/P	90 - 110
Copper	101	102	P/P	90 - 110
Copper	102	103	P/P	90 - 110
Lead	92.9	93.0	P/P	90 - 110
Lead	93.0	93.6	P/P	90 - 110
Nickel	100	102	P/P	90 - 110
Nickel	101	100	P/P	90 - 110
Selenium	100	99.7	P/P	90 - 110
Selenium	99.7	101	P/P	90 - 110
Silver	97.8	98.1	P/P	90 - 110
Silver	98.1	98.9	P/P	90 - 110
Thallium	94.8	96.5	P/P	90 - 110
Thallium	96.5	97.3	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A91424

Included Lab Sample IDs: 2084546, 2084547, 2084548, 2084549

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	102	P/P	95 - 105
Barium	102	103	P/P	90 - 110
Calcium	102	102	P/P	95 - 105
Calcium	102	99.6	P/P	90 - 110
Iron	101	102	P/P	95 - 105
Iron	102	101	P/P	90 - 110
Magnesium	101	103	P/P	95 - 105
Magnesium	103	101	P/P	90 - 110
Potassium	101	101	P/P	95 - 105
Potassium	101	99.2	P/P	90 - 110
Sodium	102	101	P/P	90 - 110
Sodium	99.8	102	P/P	95 - 105
Zinc	103	105	P/P	90 - 110
Zinc	103	103	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91454

Included Lab Sample IDs: 2084533, 2084534, 2084535

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	99.9	P/P	90 - 110
Total-P	99.9	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91455

Included Lab Sample IDs: 2084536

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A91473

Included Lab Sample IDs: 2084533, 2084534, 2084535, 2084536

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A91497

Included Lab Sample IDs: 2084533, 2084534, 2084535, 2084536

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

Reference Method: SM 2320 B-97

Run ID: A91513

Included Lab Sample IDs: 2084529, 2084530, 2084531, 2084532

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

Reference Method: SM 4500 F-C-97

Run ID: A91513

Included Lab Sample IDs: 2084529, 2084530, 2084531, 2084532

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	98.1	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					2.09	
EPA 200.7 Rev. 4.4	Barium	101	100	101	101		0.502
	Calcium	92.0	94.2	92.3			0.878
	Iron	94.8	97.8	96.0	97.3		1.30
	Magnesium	99.7	102	99.5	101		1.24
	Potassium	93.3	91.6	93.5	93.5		0.0637
	Sodium	92.6	92.5	92.4			0.480
	Zinc	99.7	102	103	104		0.506
EPA 200.8 Rev. 5.4	Aluminum	97.8	95.6	96.2	105		9.03
	Antimony	96.7	97.0	95.6	105		9.69
	Arsenic	101	102	100	109		8.66
	Boron	98.4	99.6	100	111		8.01
	Cadmium	99.4	99.1	98.2	108		9.30
	Chromium	98.3	97.2	99.7	108		8.17
	Copper	101	101	110	98.5		7.85
	Lead	92.4	92.8	92.4	101		9.31
	Nickel	99.7	98.9	99.5	108		8.21
	Selenium	101	100	96.6	107		10.4
	Silver	98.9	96.6	97.6	99.4		1.82
	Thallium	99.2	101	101	113		11.0
EPA 300.0 Rev. 2.1	Chloride	98.4	98.9	98.9		1.12	
	Sulfate	98.7	99.2	99.5		0.137	
EPA 350.1 Rev. 2.0	Ammonia-N	103	106	103			1.43
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.9	92.8	91.8			0.854
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	100	100			0.0
EPA 365.1 Rev. 2.0	Total-P	107	108	103			4.28
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.8	98.2	99.8			1.20
	O-Phosphate-P	100	97.4	96.6			0.725
SM 2120 B	Color (true)	99.3				1.60	
	Color (true)	100				0.125	
SM 2320 B-97	Total Alkalinity	102				0.743	
SM 2540 C-97	TDS					4.98	
SM 4500 F-C-97	Fluoride	96.7	96.1	95.6			0.476
SM 5310 B-00	Organic Carbon	89.2	94.4	93.2			0.857

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2084529, 2084530, 2084531, 2084532
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2084546, 2084547, 2084548, 2084549
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2084546, 2084547, 2084548, 2084549
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2084529, 2084530, 2084531, 2084532
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2084529, 2084530, 2084531, 2084532
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2084533, 2084534, 2084535, 2084536
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2084533, 2084534, 2084535, 2084536
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2084533, 2084534, 2084535, 2084536

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2084533, 2084534, 2084535, 2084536
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2084537, 2084538, 2084539, 2084540
SM 2120 B / E31780	True Color measured at 450 nm	2084529, 2084530, 2084531, 2084532
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2084529, 2084530, 2084531, 2084532
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2084529, 2084530, 2084531, 2084532
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2084529, 2084530, 2084531, 2084532
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2084529, 2084530, 2084531, 2084532
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2084533, 2084534, 2084535, 2084536

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	05/08/2019			05/08/2019 16:03	Adrian Shelby	2084529, 2084530, 2084531, 2084532
EPA 200.7 Rev. 4.4	05/08/2019	05/13/2019 14:50	Elliott D. Healy	05/14/2019 14:21	Betina Topolski	2084546
	05/08/2019	05/13/2019 14:50	Elliott D. Healy	05/14/2019 14:27	Betina Topolski	2084547
	05/08/2019	05/13/2019 14:50	Elliott D. Healy	05/14/2019 14:54	Betina Topolski	2084548
	05/08/2019	05/13/2019 14:50	Elliott D. Healy	05/14/2019 15:09	Betina Topolski	2084549
EPA 200.8 Rev. 5.4	05/08/2019	05/13/2019 14:50	Elliott D. Healy	05/14/2019 20:36	Robert K Palmer	2084546
	05/08/2019	05/13/2019 14:50	Elliott D. Healy	05/14/2019 20:46	Robert K Palmer	2084547
	05/08/2019	05/13/2019 14:50	Elliott D. Healy	05/14/2019 21:25	Robert K Palmer	2084548
	05/08/2019	05/13/2019 14:50	Elliott D. Healy	05/14/2019 21:35	Robert K Palmer	2084549
EPA 300.0 Rev. 2.1	05/08/2019			05/13/2019 18:59	Lipi Saha	2084529
	05/08/2019			05/13/2019 21:37	Lipi Saha	2084530
	05/08/2019			05/13/2019 21:49	Lipi Saha	2084531
	05/08/2019			05/13/2019 22:01	Lipi Saha	2084532
EPA 350.1 Rev. 2.0	05/08/2019			05/13/2019 12:38	Ping Hua	2084533
	05/08/2019			05/13/2019 12:39	Ping Hua	2084534
	05/08/2019			05/13/2019 12:41	Ping Hua	2084535
	05/08/2019			05/13/2019 12:42	Ping Hua	2084536
EPA 351.2 Rev. 2.0	05/08/2019	05/14/2019 12:30	Adrian Shelby	05/17/2019 09:32	Joseph Suarez	2084533
	05/08/2019	05/14/2019 12:30	Adrian Shelby	05/17/2019 09:34	Joseph Suarez	2084534
	05/08/2019	05/14/2019 12:30	Adrian Shelby	05/17/2019 09:36	Joseph Suarez	2084535
	05/08/2019	05/14/2019 12:30	Adrian Shelby	05/17/2019 09:37	Joseph Suarez	2084536
EPA 353.2 Rev. 2.0	05/08/2019			05/16/2019 11:14	Beverly Y. Sanders	2084533
	05/08/2019			05/16/2019 11:16	Beverly Y. Sanders	2084534
	05/08/2019			05/16/2019 11:17	Beverly Y. Sanders	2084535
	05/08/2019			05/16/2019 11:18	Beverly Y. Sanders	2084536
EPA 365.1 Rev. 2.0	05/08/2019	05/14/2019 10:06	Joseph Suarez	05/15/2019 13:55	Rosalyn Ballman	2084536
	05/08/2019	05/14/2019 10:06	Joseph Suarez	05/15/2019 17:13	Rosalyn Ballman	2084533
	05/08/2019	05/14/2019 10:06	Joseph Suarez	05/15/2019 17:14	Rosalyn Ballman	2084534
	05/08/2019	05/14/2019 10:06	Joseph Suarez	05/15/2019 17:17	Rosalyn Ballman	2084535
EPA 365.1 Rev. 2.0 dissolved	05/08/2019			05/08/2019 14:43	Jhamieka S. Greenwood	2084540
	05/08/2019			05/08/2019 14:56	Jhamieka S. Greenwood	2084537
	05/08/2019			05/08/2019 15:02	Jhamieka S. Greenwood	2084539
	05/08/2019			05/08/2019 15:33	Jhamieka S. Greenwood	2084538
SM 2120 B	05/08/2019			05/08/2019 15:45	Blanca Fach	2084530
	05/08/2019			05/08/2019 15:46	Blanca Fach	2084531
	05/08/2019			05/08/2019 15:50	Blanca Fach	2084532
	05/08/2019			05/08/2019 16:00	Blanca Fach	2084529
SM 2320 B-97	05/08/2019			05/17/2019 01:50	Dale L. Simmons	2084529
	05/08/2019			05/17/2019 02:01	Dale L. Simmons	2084530
	05/08/2019			05/17/2019 02:14	Dale L. Simmons	2084532

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	05/08/2019			05/17/2019 03:07	Dale L. Simmons	2084531
SM 2540 C-97	05/08/2019			05/10/2019 16:05	Yijie Li	2084529, 2084530, 2084531, 2084532
SM 2540 D-97	05/08/2019			05/10/2019 16:05	Yijie Li	2084529, 2084530, 2084531, 2084532
SM 4500 F-C-97	05/08/2019			05/17/2019 01:50	Dale L. Simmons	2084529
	05/08/2019			05/17/2019 02:01	Dale L. Simmons	2084530
	05/08/2019			05/17/2019 02:14	Dale L. Simmons	2084532
	05/08/2019			05/17/2019 03:07	Dale L. Simmons	2084531
	05/08/2019			05/14/2019 04:11	Julia Storbeck	2084533
SM 5310 B-00	05/08/2019			05/14/2019 04:24	Julia Storbeck	2084534
	05/08/2019			05/14/2019 04:38	Julia Storbeck	2084535
	05/08/2019			05/14/2019 04:51	Julia Storbeck	2084536