

Chemical Analysis Report

NE-DIST-2019-03-13-04

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

Event Description: **Interlachen 1**
Request ID: **RQ-2019-03-11-16**
Customer: **NE-DIST**
Project ID: **SMP**

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Certified by: Colin Wright, Program Administrator

Date Certified: 03-APR-2019 13:44

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Metals and Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Church Lake Center

Collection Date/Time: 03/12/2019 10:40

Field ID: G1NE0867

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069349	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P360386	
	EPA 300.0 Rev. 2.1	Chloride	5.5		mg Cl/L	P360814	
		Sulfate	3.1		mg SO4/L	P360816	
		Total Alkalinity	5.8		mg CaCO3/L	P360896	
	SM 2320 B-97	TDS	25		mg/L	P360930	
	SM 2540 D-97	TSS	2	U	mg/L	P360832	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360903	
2069351	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P360578	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40		mg N/L	P360709	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.044		mg N/L	P360695	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P360602	
	SM 5310 B-00	Organic Carbon	4.6		mg C/L	P360838	
2069353	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P360380	

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: Smith lake Center

Collection Date/Time: 03/12/2019 11:55

Field ID: G2NE1156

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069350	EPA 180.1 Rev. 2.0	Turbidity	0.70		NTU	P360386	
	EPA 300.0 Rev. 2.1	Chloride	5.5		mg Cl/L	P360814	
		Sulfate	0.83		mg SO4/L	P360816	
	SM 2320 B-97	Total Alkalinity	0.74	I	mg CaCO3/L	P360896	
	SM 2540 C-97	TDS	22	I	mg/L	P360931	
	SM 2540 D-97	TSS	2	U	mg/L	P360833	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360903	
2069352	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P360585	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.68		mg N/L	P360709	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P360695	
	EPA 365.1 Rev. 2.0	Total-P	0.007		mg P/L	P360602	
	SM 5310 B-00	Organic Carbon	9.7		mg C/L	P360838	
2069354	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P360380	

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: GEORGES LAKE NE SECTOR

Collection Date/Time: 03/12/2019 13:10

Field ID: 20030914

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069343	EPA 180.1 Rev. 2.0	Turbidity	6.7		NTU	P360386	
	EPA 300.0 Rev. 2.1	Chloride	7.8		mg Cl/L	P360814	
		Sulfate	4.2		mg SO4/L	P360816	
	SM 2120 B	Color (true)	79		PCU	P360405	
	SM 2320 B-97	Total Alkalinity	2.7		mg CaCO3/L	P360896	
	SM 2540 C-97	TDS	38		mg/L	P360930	
	SM 2540 D-97	TSS	3	I	mg/L	P360832	
	SM 4500 F-C-97	Fluoride	0.044	I	mg F/L	P360903	
2069345	EPA 350.1 Rev. 2.0	Ammonia-N	0.080		mg N/L	P360578	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.83		mg N/L	P360541	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P360695	
	EPA 365.1 Rev. 2.0	Total-P	0.050		mg P/L	P360601	
	SM 5310 B-00	Organic Carbon	7.7		mg C/L	P360753	
2069347	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.016		mg P/L	P360379	
2069372	EPA 200.7 Rev. 4.4	Barium	4.0		ug/L	P360652	
		Calcium	3.02		mg/L	P360652	
		Iron	150		ug/L	P360652	
		Magnesium	0.91		mg/L	P360652	
		Potassium	0.41	I	mg/L	P360652	
		Sodium	5.3		mg/L	P360652	
		Zinc	5.0	U	ug/L	P360652	
		Aluminum	293		ug/L	P360652	
		Antimony	0.083	I	ug/L	P360652	
		Arsenic	3.84		ug/L	P360652	
	EPA 200.8 Rev. 5.4	Boron**	19.8		ug/L	P360652	
		Cadmium	0.020	U	ug/L	P360652	
		Chromium	0.52	I	ug/L	P360652	
		Copper	0.84		ug/L	P360652	
		Lead	0.45		ug/L	P360652	
		Nickel	0.50	U	ug/L	P360652	
		Selenium	0.22	I	ug/L	P360652	
		Silver	0.010	U	ug/L	P360652	
		Thallium	0.10	U	ug/L	P360652	

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: GEORGES LAKE CENTER

Collection Date/Time: 03/12/2019 13:20

Field ID: 20030417

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069344	EPA 180.1 Rev. 2.0	Turbidity	5.0	A	NTU	P360387	
	EPA 300.0 Rev. 2.1	Chloride	7.9		mg Cl/L	P360814	
		Sulfate	4.2		mg SO4/L	P360816	
	SM 2120 B	Color (true)	77	A	PCU	P360406	
	SM 2320 B-97	Total Alkalinity	2.8		mg CaCO3/L	P360896	
	SM 2540 C-97	TDS	30		mg/L	P360931	
	SM 2540 D-97	TSS	2	I	mg/L	P360833	
	SM 4500 F-C-97	Fluoride	0.044	I	mg F/L	P360903	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.069		mg N/L	P360578	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P360541	
2069346	EPA 353.2 Rev. 2.0	NO2NO3-N	0.036		mg N/L	P360699	
	EPA 365.1 Rev. 2.0	Total-P	0.050		mg P/L	P360601	
	SM 5310 B-00	Organic Carbon	7.5		mg C/L	P360838	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.012		mg P/L	P360380	
	dissolved						
2069373	EPA 200.7 Rev. 4.4	Barium	3.8	I	ug/L	P360652	
		Calcium	2.97		mg/L	P360652	
		Iron	120	I	ug/L	P360652	
		Magnesium	0.89		mg/L	P360652	
		Potassium	0.49	I	mg/L	P360652	
		Sodium	5.2		mg/L	P360652	
		Zinc	5.0	U	ug/L	P360652	
	EPA 200.8 Rev. 5.4	Aluminum	241		ug/L	P360652	
		Antimony	0.081	I	ug/L	P360652	
		Arsenic	3.72		ug/L	P360652	
		Boron**	19.4		ug/L	P360652	
		Cadmium	0.020	U	ug/L	P360652	
		Chromium	0.49	I	ug/L	P360652	
		Copper	0.76	I	ug/L	P360652	
		Lead	0.33	I	ug/L	P360652	
		Nickel	0.50	U	ug/L	P360652	
		Selenium	0.20	U	ug/L	P360652	
		Silver	0.010	U	ug/L	P360652	
		Thallium	0.10	U	ug/L	P360652	

Ref. Method and Comment:

SM 2120 B: Batch laboratory fortified blank is unavailable because of analytical difficulties.

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: P360386

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P360387

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P360652

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: P360652

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: P360814

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360816

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: P360578

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360585

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360541

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360709

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360695

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360699

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360601

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360602

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360379

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360380

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

Reference Method: SM 2120 B
Batch ID: P360405

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P360406

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P360896

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

Reference Method: SM 2540 C-97
Batch ID: P360930

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P360931

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P360832

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P360833

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P360903

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P360753

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

Reference Method: SM 5310 B-00
Batch ID: P360838

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: P360652

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	101		P	85 - 115
Calcium	103		P	85 - 115
Iron	108		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	105		P	85 - 115
Sodium	100		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360652

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	96.8		P	85 - 115
Antimony	98.6		P	85 - 115
Arsenic	102		P	85 - 115
Boron	94.4		P	85 - 115
Cadmium	99.8		P	85 - 115
Chromium	91.9		P	85 - 115
Copper	98.1		P	85 - 115
Lead	98.3		P	85 - 115
Nickel	98.1		P	85 - 115
Selenium	99.0		P	85 - 115
Silver	110		P	85 - 115
Thallium	100		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360814

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360816

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360578

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360585

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360541

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360709

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360695

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360699

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360601

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360602

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: P360379

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360380

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.6		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P360405

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P360896

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P360903

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.1		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P360753

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.2		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P360838

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P360652

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069273	Barium	98.5		P	80 - 120
2069273	Calcium	104		P	80 - 120
2069273	Iron	107		P	80 - 120
2069273	Magnesium	106		P	80 - 120
2069273	Potassium	103		P	80 - 120
2069273	Sodium	101		P	80 - 120
2069273	Zinc	101		P	80 - 120
2069327	Barium	99.9	99.7	P/P	80 - 120
2069327	Calcium	104		P	80 - 120
2069327	Iron	109	108	P/P	80 - 120
2069327	Magnesium	104		P	80 - 120
2069327	Potassium	105	105	P/P	80 - 120
2069327	Sodium	106		P	80 - 120
2069327	Zinc	100	99.5	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360652

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069273	Aluminum	100		P	80 - 120
2069273	Antimony	99.3		P	80 - 120
2069273	Arsenic	101		P	80 - 120
2069273	Boron	103		P	80 - 120
2069273	Cadmium	97.8		P	80 - 120
2069273	Chromium	87.2		P	80 - 120
2069273	Copper	95.2		P	80 - 120
2069273	Lead	98.6		P	80 - 120
2069273	Nickel	96.5		P	80 - 120
2069273	Selenium	99.5		P	80 - 120
2069273	Silver	107		P	80 - 120
2069273	Thallium	101		P	80 - 120
2069327	Aluminum	98.7	98.6	P/P	80 - 120
2069327	Antimony	99.2	98.1	P/P	80 - 120
2069327	Arsenic	99.5	99.5	P/P	80 - 120
2069327	Boron	103	104	P/P	80 - 120
2069327	Cadmium	99.0	100	P/P	80 - 120
2069327	Chromium	91.4	92.0	P/P	80 - 120
2069327	Copper	94.4	94.7	P/P	80 - 120
2069327	Lead	98.5	97.8	P/P	80 - 120
2069327	Nickel	96.0	95.0	P/P	80 - 120
2069327	Selenium	95.2	97.9	P/P	80 - 120
2069327	Silver	111	111	P/P	80 - 120
2069327	Thallium	101	101	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360814

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069322	Chloride	97.5		P	90 - 110
2069510	Chloride	100		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360816

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069322	Sulfate	96.8		P	90 - 110
2069510	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360578

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069259	Ammonia-N	101	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360585

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069352	Ammonia-N	97.7	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360541

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069333	Kjeldahl Nitrogen	102	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360709

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069351	Kjeldahl Nitrogen	104	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360695

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069333	NO2NO3-N	96.4	98.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360699

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069809	NO2NO3-N	94.5	93.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360601

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069333	Total-P	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360602

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069351	Total-P	99.6	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360379

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069137	O-Phosphate-P	97.8	98.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360380

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069348	O-Phosphate-P	95.7	96.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P360903

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069122	Fluoride	99.0	98.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P360753

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069123	Organic Carbon	92.7	94.9	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P360838

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069352	Organic Carbon	94.7	97.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P360386

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069337	Turbidity	5.43	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P360387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069344	Turbidity	10.5	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P360652

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069327	Barium	0.178	Spike	P	0 - 20
2069327	Calcium	0.707	Spike	P	0 - 20
2069327	Iron	1.27	Spike	P	0 - 20
2069327	Magnesium	1.04	Spike	P	0 - 20
2069327	Potassium	0.0172	Spike	P	0 - 20
2069327	Sodium	1.82	Spike	P	0 - 20
2069327	Zinc	0.566	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360652

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069327	Aluminum	0.0910	Spike	P	0 - 20
2069327	Antimony	1.16	Spike	P	0 - 20
2069327	Arsenic	0.0323	Spike	P	0 - 20
2069327	Boron	1.06	Spike	P	0 - 20
2069327	Cadmium	1.09	Spike	P	0 - 20
2069327	Chromium	0.659	Spike	P	0 - 20
2069327	Copper	0.345	Spike	P	0 - 20
2069327	Lead	0.720	Spike	P	0 - 20
2069327	Nickel	1.01	Spike	P	0 - 20
2069327	Selenium	2.76	Spike	P	0 - 20
2069327	Silver	0.743	Spike	P	0 - 20
2069327	Thallium	0.171	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360814

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069322	Chloride	2.14	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360816

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069322	Sulfate	1.95	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360578

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069259	Ammonia-N	0.589	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360585

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069352	Ammonia-N	1.01	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360541

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069333	Kjeldahl Nitrogen	0.0624	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360709

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069351	Kjeldahl Nitrogen	0.656	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360695

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069333	NO2NO3-N	1.68	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360699

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069809	NO2NO3-N	0.664	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360601

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069333	Total-P	0.665	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360602

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069351	Total-P	3.49	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360379

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069137	O-Phosphate-P	0.916	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360380

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069348	O-Phosphate-P	0.921	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P360405

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069257	Color (true)	3.39	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P360406

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069344	Color (true)	0.358	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P360896

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069122	Total Alkalinity	0.494	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P360930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069257	TDS	3.27	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P360931

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069258	TDS	5.71	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P360903

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069122	Fluoride	0.470	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P360753

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069123	Organic Carbon	2.27	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P360838

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069352	Organic Carbon	1.83	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: A89987

Included Lab Sample IDs: 2069347, 2069348, 2069353, 2069354

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.1	95.6	P/P	90 - 110
O-Phosphate-P	97.7	98.9	P/P	90 - 110
O-Phosphate-P	97.8	97.1	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A89988

Included Lab Sample IDs: 2069343, 2069344, 2069349, 2069350

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

Reference Method: SM 2120 B

Run ID: A89998

Included Lab Sample IDs: 2069343, 2069344

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	104	P/P	85 - 115
Color (true)	103	102	P/P	90 - 115

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A90054

Included Lab Sample IDs: 2069345, 2069346, 2069351

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A90056

Included Lab Sample IDs: 2069352

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A90071

Included Lab Sample IDs: 2069343, 2069344, 2069349, 2069350

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A90094

Included Lab Sample IDs: 2069345, 2069346

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.3	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A90099

Included Lab Sample IDs: 2069345, 2069346, 2069351, 2069352

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A90103

Included Lab Sample IDs: 2069372, 2069373

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	103	P/P	90 - 110
Aluminum	103	105	P/P	90 - 110
Antimony	102	99.8	P/P	90 - 110
Antimony	99.8	100	P/P	90 - 110
Arsenic	101	102	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Boron	105	108	P/P	90 - 110
Boron	108	107	P/P	90 - 110
Cadmium	102	101	P/P	90 - 110
Cadmium	103	102	P/P	90 - 110
Chromium	101	102	P/P	90 - 110
Chromium	102	102	P/P	90 - 110
Copper	102	103	P/P	90 - 110
Copper	99.8	102	P/P	90 - 110
Lead	103	103	P/P	90 - 110
Lead	103	103	P/P	90 - 110
Nickel	102	102	P/P	90 - 110
Nickel	99.8	102	P/P	90 - 110
Selenium	101	99.4	P/P	90 - 110
Selenium	99.4	98.9	P/P	90 - 110
Thallium	98.0	98.4	P/P	90 - 110
Thallium	98.4	97.4	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A90113

Included Lab Sample IDs: 2069372, 2069373

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	101	P/P	90 - 110
Calcium	104	101	P/P	90 - 110
Iron	102	102	P/P	90 - 110
Magnesium	103	102	P/P	90 - 110
Potassium	101	102	P/P	90 - 110
Sodium	106	105	P/P	90 - 110
Zinc	102	101	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A90118

Included Lab Sample IDs: 2069345

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.6	93.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A90127

Included Lab Sample IDs: 2069351, 2069352

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	96.8	P/P	90 - 110
Kjeldahl Nitrogen	98.9	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A90136

Included Lab Sample IDs: 2069372, 2069373

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	107	108	P/P	90 - 110
Silver	108	108	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A90156

Included Lab Sample IDs: 2069346, 2069351, 2069352

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.8	94.6	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A90183

Included Lab Sample IDs: 2069343, 2069344, 2069349, 2069350

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

Reference Method: SM 4500 F-C-97

Run ID: A90183

Included Lab Sample IDs: 2069343, 2069344, 2069349, 2069350

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90185

Included Lab Sample IDs: 2069345, 2069346, 2069351, 2069352

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

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

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

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			LCS	Precision	MS
							SMP	
EPA 180.1 Rev. 2.0	Turbidity						5.43	
	Turbidity						10.5	
EPA 200.7 Rev. 4.4	Barium	101	98.5	99.9	99.7			0.178
	Calcium	103	104	104				0.707
	Iron	108	107	109	108			1.27
	Magnesium	104	106	104				1.04
	Potassium	105	103	105	105			0.0172
	Sodium	100	101	106				1.82
	Zinc	102	101	100	99.5			0.566
EPA 200.8 Rev. 5.4	Aluminum	96.8	100	98.7	98.6			0.0910
	Antimony	98.6	99.3	99.2	98.1			1.16
	Arsenic	102	101	99.5	99.5			0.0323
	Boron	94.4	103	103	104			1.06
	Cadmium	99.8	97.8	99.0	100			1.09
	Chromium	91.9	87.2	91.4	92.0			0.659
	Copper	98.1	95.2	94.4	94.7			0.345
	Lead	98.3	98.6	98.5	97.8			0.720
	Nickel	98.1	96.5	96.0	95.0			1.01
	Selenium	99.0	99.5	95.2	97.9			2.76
	Silver	110	107	111	111			0.743
	Thallium	100	101	101	101			0.171
EPA 300.0 Rev. 2.1	Chloride	98.1	97.5	100			2.14	
	Sulfate	99.5	96.8	100			1.95	
EPA 350.1 Rev. 2.0	Ammonia-N	98.6	101	101				0.589
	Ammonia-N	97.5	97.7	98.8				1.01
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	102	102				0.0624
	Kjeldahl Nitrogen	103	104	103				0.656
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	96.4	98.4				1.68
	NO2NO3-N	99.0	94.5	93.5				0.664
EPA 365.1 Rev. 2.0	Total-P	102	100	101				0.665
	Total-P	102	99.6	103				3.49
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	97.8	98.7				0.916
	O-Phosphate-P	98.6	95.7	96.7				0.921
SM 2120 B	Color (true)	102					3.39	
	Color (true)						0.358	
SM 2320 B-97	Total Alkalinity	101					0.494	
SM 2540 C-97	TDS						3.27	
	TDS						5.71	
SM 4500 F-C-97	Fluoride	98.1	99.0	98.3				0.470
SM 5310 B-00	Organic Carbon	95.2	92.7	94.9				2.27
	Organic Carbon	99.2	94.7	97.4				1.83

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2069343, 2069344, 2069349, 2069350
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2069372, 2069373
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2069372, 2069373
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2069343, 2069344, 2069349, 2069350

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2069343, 2069344, 2069349, 2069350
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2069345, 2069346, 2069351, 2069352
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2069345, 2069346, 2069351, 2069352
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2069345, 2069346, 2069351, 2069352
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2069345, 2069346, 2069351, 2069352
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2069347, 2069348, 2069353, 2069354
SM 2120 B / E31780	True Color measured at 450 nm	2069343, 2069344
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2069343, 2069344, 2069349, 2069350
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2069343, 2069344, 2069349, 2069350
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2069343, 2069344, 2069349, 2069350
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2069343, 2069344, 2069349, 2069350
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2069345, 2069346, 2069351, 2069352

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	03/13/2019			03/13/2019 16:52	Adrian Shelby	2069343, 2069344, 2069349, 2069350
EPA 200.7 Rev. 4.4	03/13/2019	03/18/2019 13:30	Elliott D. Healy	03/19/2019 15:27	Vijayalakshmi Reddy	2069372
	03/13/2019	03/18/2019 13:30	Elliott D. Healy	03/19/2019 15:33	Vijayalakshmi Reddy	2069373
EPA 200.8 Rev. 5.4	03/13/2019	03/18/2019 13:30	Elliott D. Healy	03/19/2019 18:04	Robert K Palmer	2069372
	03/13/2019	03/18/2019 13:30	Elliott D. Healy	03/19/2019 18:33	Robert K Palmer	2069373
	03/13/2019	03/18/2019 13:30	Elliott D. Healy	03/20/2019 14:01	Robert K Palmer	2069372
	03/13/2019	03/18/2019 13:30	Elliott D. Healy	03/20/2019 14:20	Robert K Palmer	2069373
EPA 300.0 Rev. 2.1	03/13/2019			03/21/2019 03:47	Lipi Saha	2069343
	03/13/2019			03/21/2019 04:23	Lipi Saha	2069344
	03/13/2019			03/21/2019 04:35	Lipi Saha	2069349
	03/13/2019			03/21/2019 04:47	Lipi Saha	2069350
EPA 350.1 Rev. 2.0	03/13/2019			03/14/2019 13:06	Ping Hua	2069345
	03/13/2019			03/14/2019 13:08	Ping Hua	2069346
	03/13/2019			03/14/2019 13:09	Ping Hua	2069351
	03/13/2019			03/15/2019 11:27	Ping Hua	2069352
EPA 351.2 Rev. 2.0	03/13/2019	03/15/2019 16:30	Adrian Shelby	03/19/2019 13:48	Joseph Suarez	2069345
	03/13/2019	03/15/2019 16:30	Adrian Shelby	03/19/2019 13:50	Joseph Suarez	2069346
	03/13/2019	03/19/2019 12:25	Adrian Shelby	03/20/2019 08:56	Joseph Suarez	2069351
	03/13/2019	03/19/2019 12:25	Adrian Shelby	03/20/2019 09:04	Joseph Suarez	2069352
EPA 353.2 Rev. 2.0	03/13/2019			03/19/2019 12:59	Lauren Lees	2069345
	03/13/2019			03/19/2019 13:00	Lauren Lees	2069351
	03/13/2019			03/19/2019 13:02	Lauren Lees	2069352
	03/13/2019			03/19/2019 14:29	Lauren Lees	2069346
EPA 365.1 Rev. 2.0	03/13/2019	03/18/2019 14:30	Sima Feizi	03/21/2019 13:37	Beverly Y. Sanders	2069345
	03/13/2019	03/18/2019 14:30	Sima Feizi	03/21/2019 13:38	Beverly Y. Sanders	2069346
	03/13/2019	03/18/2019 14:30	Sima Feizi	03/21/2019 13:40	Beverly Y. Sanders	2069351
	03/13/2019	03/18/2019 14:30	Sima Feizi	03/21/2019 13:41	Beverly Y. Sanders	2069352
EPA 365.1 Rev. 2.0 dissolved	03/13/2019			03/13/2019 15:50	Julia Storbeck	2069348
	03/13/2019			03/13/2019 16:21	Julia Storbeck	2069347
	03/13/2019			03/13/2019 16:22	Julia Storbeck	2069353
	03/13/2019			03/13/2019 16:27	Julia Storbeck	2069354
SM 2120 B	03/13/2019			03/13/2019 16:55	Mariam Hanna	2069343
	03/13/2019			03/13/2019 16:59	Mariam Hanna	2069344
SM 2320 B-97	03/13/2019			03/21/2019 14:35	Dale L. Simmons	2069343
	03/13/2019			03/21/2019 14:46	Dale L. Simmons	2069344
	03/13/2019			03/21/2019 15:00	Dale L. Simmons	2069349
	03/13/2019			03/21/2019 15:10	Dale L. Simmons	2069350
SM 2540 C-97	03/13/2019			03/18/2019 14:58	Yijie Li	2069343, 2069344, 2069349, 2069350
SM 2540 D-97	03/13/2019			03/18/2019 14:58	Yijie Li	2069343, 2069344, 2069349, 2069350
SM 4500 F-C-97	03/13/2019			03/21/2019 14:35	Dale L. Simmons	2069343

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-97	03/13/2019			03/21/2019 14:46	Dale L. Simmons	2069344
	03/13/2019			03/21/2019 15:00	Dale L. Simmons	2069349
	03/13/2019			03/21/2019 15:10	Dale L. Simmons	2069350
SM 5310 B-00	03/13/2019			03/20/2019 02:46	Julia Storbeck	2069345
	03/13/2019			03/20/2019 03:13	Julia Storbeck	2069352
	03/13/2019			03/20/2019 04:39	Julia Storbeck	2069346
	03/13/2019			03/20/2019 04:54	Julia Storbeck	2069351