Chemical Analysis Report

SW-DIST-2019-07-03-01

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

Event Description: **Hunter, Wire, Beulah**
Request ID: **RQ-2019-07-01-05**
Customer: **SW-DIST**
Project ID: **SMP**

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Certified by: Colin Wright, Program Administrator

Date Certified: 26-JUL-2019 09:09

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: Lake Hunter North **Collection Date/Time: 07/02/2019 10:35**

Field ID: G2SW0086 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100466	EPA 180.1 Rev. 2.0	Turbidity	17	A	NTU	P366708	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P366802	
		Sulfate	1.4		mg SO4/L	P366804	
	SM 2120 B	Color (true)	15	A	PCU	P366704	
	SM 2320 B-97	Total Alkalinity	55		mg CaCO3/L	P366856	
	SM 2540 C-97	TDS	87		mg/L	P367122	
	SM 2540 D-97	TSS	23	I	mg/L	P367168	
	SM 4500 F-C-97	Fluoride	0.23		mg F/L	P366858	
2100470	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P366811	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.5		mg N/L	P366892	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P366831	
	EPA 365.1 Rev. 2.0	Total-P	0.22		mg P/L	P366917	
	SM 5310 B-00	Organic Carbon	8.4		mg C/L	P366843	
2100474	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P366714	
2100482	EPA 200.7 Rev. 4.4	Barium	8.5		ug/L	P366814	
		Calcium	20.5		mg/L	P366814	
		Iron	170		ug/L	P366814	
		Magnesium	1.96		mg/L	P366814	
		Potassium	1.3		mg/L	P366814	
		Sodium	6.0		mg/L	P366814	
		Zinc	5.0	U	ug/L	P366814	
	EPA 200.8 Rev. 5.4	Aluminum	315		ug/L	P366814	
		Antimony	0.41		ug/L	P366814	
		Arsenic	0.70		ug/L	P366814	
		Boron**	160		ug/L	P366814	
		Cadmium	0.020	U	ug/L	P366814	
		Chromium	0.40	U	ug/L	P366814	
		Copper	0.56	I	ug/L	P366814	
		Lead	0.79		ug/L	P367663	
		Nickel	0.50	U	ug/L	P366814	
		Selenium	0.20	U	ug/L	P366814	
		Silver	0.010	U	ug/L	P366814	
		Thallium	0.10	U	ug/L	P366814	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. The PQL was elevated because of sample matrix interference.
SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Hunter @ Center **Collection Date/Time: 07/02/2019 10:20**

Field ID: G2SW0076 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100467	EPA 180.1 Rev. 2.0	Turbidity	14		NTU	P366708	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P366802	
		Sulfate	1.4		mg SO4/L	P366804	
	SM 2120 B	Color (true)	24		PCU	P366705	
	SM 2320 B-97	Total Alkalinity	56		mg CaCO3/L	P366856	
	SM 2540 C-97	TDS	69		mg/L	P367122	
	SM 2540 D-97	TSS	25		mg/L	P367168	
	SM 4500 F-C-97	Fluoride	0.23		mg F/L	P366858	
2100471	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P366811	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.3		mg N/L	P366892	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P366831	
	EPA 365.1 Rev. 2.0	Total-P	0.19		mg P/L	P366917	
	SM 5310 B-00	Organic Carbon	8.3		mg C/L	P366843	
2100475	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P366714	
2100483	EPA 200.7 Rev. 4.4	Barium	7.4		ug/L	P366814	
		Calcium	20.2		mg/L	P366814	
		Iron	140		ug/L	P366814	
		Magnesium	1.98		mg/L	P366814	
		Potassium	1.2	I	mg/L	P366814	
		Sodium	6.0		mg/L	P366814	
		Zinc	5.0	U	ug/L	P366814	
	EPA 200.8 Rev. 5.4	Aluminum	264		ug/L	P366814	
		Antimony	0.41		ug/L	P366814	
		Arsenic	0.68		ug/L	P366814	
		Boron**	158		ug/L	P366814	
		Cadmium	0.020	U	ug/L	P366814	
		Chromium	0.40	U	ug/L	P366814	
		Copper	0.48	I	ug/L	P366814	
		Lead	0.62		ug/L	P367663	
		Nickel	0.50	U	ug/L	P366814	
		Selenium	0.20	U	ug/L	P366814	
		Silver	0.010	U	ug/L	P366814	
		Thallium	0.10	U	ug/L	P366814	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Wire West **Collection Date/Time: 07/02/2019 09:25**

Field ID: G2SW0056 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100468	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P366708	
	EPA 300.0 Rev. 2.1	Chloride	5.0		mg Cl/L	P366802	
		Sulfate	0.41	I	mg SO4/L	P366804	
	SM 2120 B	Color (true)	12		PCU	P366705	
	SM 2320 B-97	Total Alkalinity	47		mg CaCO3/L	P366856	
	SM 2540 C-97	TDS	57		mg/L	P367122	
	SM 2540 D-97	TSS	2	U	mg/L	P367168	
	SM 4500 F-C-97	Fluoride	0.18		mg F/L	P366858	
2100472	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P367002	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P366892	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P366831	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P366917	
	SM 5310 B-00	Organic Carbon	5.9		mg C/L	P366843	
2100476	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P366714	
2100484	EPA 200.7 Rev. 4.4	Barium	15.4		ug/L	P366814	
		Calcium	17.4		mg/L	P366814	
		Iron	64	I	ug/L	P366814	
		Magnesium	1.29		mg/L	P366814	
		Potassium	0.30	U	mg/L	P366814	
		Sodium	2.8		mg/L	P366814	
		Zinc	5.0	U	ug/L	P366814	
	EPA 200.8 Rev. 5.4	Aluminum	28		ug/L	P366814	
		Antimony	0.27		ug/L	P366814	
		Arsenic	1.58		ug/L	P366814	
		Boron**	25.7		ug/L	P366814	
		Cadmium	0.020	U	ug/L	P366814	
		Chromium	0.40	U	ug/L	P366814	
		Copper	0.40	U	ug/L	P366814	
		Lead	2.15		ug/L	P367663	
		Nickel	0.50	U	ug/L	P366814	
		Selenium	0.20	U	ug/L	P366814	
		Silver	0.010	U	ug/L	P366814	
		Thallium	0.10	U	ug/L	P366814	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 200.8 Rev. 5.4: The lead result was confirmed on 07/17/2019.

Sample Location: Lake Beulah SW **Collection Date/Time: 07/02/2019 11:05**

Field ID: G2SW0053 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100469	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P366708	
	EPA 300.0 Rev. 2.1	Chloride	4.2	A	mg Cl/L	P366803	
		Sulfate	3.2	A	mg SO4/L	P366805	
	SM 2120 B	Color (true)	11		PCU	P366705	
	SM 2320 B-97	Total Alkalinity	49		mg CaCO3/L	P366856	
	SM 2540 C-97	TDS	81		mg/L	P367122	
	SM 2540 D-97	TSS	2	U	mg/L	P367168	
	SM 4500 F-C-97	Fluoride	0.25		mg F/L	P366858	
2100473	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P367002	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P367032	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P366831	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P366917	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P366843	
2100477	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P366714	
2100485	EPA 200.7 Rev. 4.4	Barium	9.3		ug/L	P366814	
		Calcium	17.4		mg/L	P366814	
		Iron	30	U	ug/L	P366814	
		Magnesium	1.55		mg/L	P366814	
		Potassium	1.5		mg/L	P366814	
		Sodium	2.7		mg/L	P366814	
		Zinc	5.0	U	ug/L	P366814	
	EPA 200.8 Rev. 5.4	Aluminum	25		ug/L	P366814	
		Antimony	0.19	I	ug/L	P366814	
		Arsenic	0.49		ug/L	P366814	
		Boron**	144		ug/L	P366814	
		Cadmium	0.020	U	ug/L	P366814	
		Chromium	0.40	U	ug/L	P366814	
		Copper	0.40	U	ug/L	P366814	
		Lead	0.20	U	ug/L	P366814	
		Nickel	0.50	U	ug/L	P366814	
		Selenium	0.20	U	ug/L	P366814	
		Silver	0.010	U	ug/L	P366814	
		Thallium	0.10	U	ug/L	P366814	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P366708

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P366814

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	15	I	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366814

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	0.50		ug/L
Nickel	0.62	I	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P367663

Component	Result	Code	Units
Lead	0.20	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366802

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366803

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366804

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366805

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366811

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367002

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366892

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367032

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366831

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366917

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366714

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2120 B
Batch ID: P366704

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P366705

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P366856

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

Reference Method: SM 2540 C-97
Batch ID: P367122

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P367168

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P366858

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P366843

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: P366814

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	100		P	85 - 115
Calcium	91.8		P	85 - 115
Iron	96.4		P	85 - 115
Magnesium	101		P	85 - 115
Potassium	99.2		P	85 - 115
Sodium	99.3		P	85 - 115
Zinc	99.4		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366814

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	101		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	104		P	85 - 115
Boron	104		P	85 - 115
Cadmium	105		P	85 - 115
Chromium	102		P	85 - 115
Copper	101		P	85 - 115
Lead	104		P	85 - 115
Nickel	103		P	85 - 115
Selenium	103		P	85 - 115
Silver	105		P	85 - 115
Thallium	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P367663

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Lead	94.1		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366802

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366803

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366804

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366805

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366811

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367002

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366892

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367032

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366831

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366917

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: P366714

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.9		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P366704

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	94.7		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2120 B
Batch ID: P366705

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.9		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P366856

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P366858

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P366843

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.1		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P366814

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100485	Barium	99.0	100	P/P	80 - 120
2100485	Calcium	93.3		P	80 - 120
2100485	Iron	98.7	96.6	P/P	80 - 120
2100485	Magnesium	101	99.4	P/P	80 - 120
2100485	Potassium	98.7	96.9	P/P	80 - 120
2100485	Sodium	92.1	93.8	P/P	80 - 120
2100485	Zinc	101	102	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366814

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100485	Aluminum	103	101	P/P	80 - 120
2100485	Antimony	103	104	P/P	80 - 120
2100485	Arsenic	106	106	P/P	80 - 120
2100485	Boron	109	107	P/P	80 - 120
2100485	Cadmium	106	106	P/P	80 - 120
2100485	Chromium	104	103	P/P	80 - 120
2100485	Copper	104	104	P/P	80 - 120
2100485	Lead	107	106	P/P	80 - 120
2100485	Nickel	105	103	P/P	80 - 120
2100485	Selenium	103	103	P/P	80 - 120
2100485	Silver	106	119	P/P	80 - 120
2100485	Thallium	108	107	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P367663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100483	Lead	94.8	93.6	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366802

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099703	Chloride	104	105	P/P	90 - 110
2100316	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366803

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099979	Chloride	106		P	90 - 110
2100469	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366804

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099703	Sulfate	104	104	P/P	90 - 110
2100316	Sulfate	103		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366805

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099979	Sulfate	105		P	90 - 110
2100469	Sulfate	104		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366811

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100123	Ammonia-N	102	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367002

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100472	Ammonia-N	101	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366892

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100472	Kjeldahl Nitrogen	97.5	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367032

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100473	Kjeldahl Nitrogen	102	109	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366831

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100356	NO2NO3-N	99.5	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366917

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100473	Total-P	105	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366714

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100476	O-Phosphate-P	96.0	96.5	P/P	90 - 110

Reference Method: SM 5310 B-00
Batch ID: P366843

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100376	Organic Carbon	95.4	94.4	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P366708

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100466	Turbidity	5.37	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P366814

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100485	Barium	1.28	Spike	P	0 - 20
2100485	Calcium	2.33	Spike	P	0 - 20
2100485	Iron	2.12	Spike	P	0 - 20
2100485	Magnesium	1.08	Spike	P	0 - 20
2100485	Potassium	1.40	Spike	P	0 - 20
2100485	Sodium	1.06	Spike	P	0 - 20
2100485	Zinc	1.31	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366814

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100485	Aluminum	1.75	Spike	P	0 - 20
2100485	Antimony	0.660	Spike	P	0 - 20
2100485	Arsenic	0.236	Spike	P	0 - 20
2100485	Boron	0.942	Spike	P	0 - 20
2100485	Cadmium	0.128	Spike	P	0 - 20
2100485	Chromium	0.769	Spike	P	0 - 20
2100485	Copper	0.179	Spike	P	0 - 20
2100485	Lead	1.21	Spike	P	0 - 20
2100485	Nickel	1.64	Spike	P	0 - 20
2100485	Selenium	0.0465	Spike	P	0 - 20
2100485	Silver	11.5	Spike	P	0 - 20
2100485	Thallium	0.474	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P367663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100483	Lead	1.27	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366802

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099703	Chloride	0.663	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366803

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100469	Chloride	0.462	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366804

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099703	Sulfate	0.211	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366805

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100469	Sulfate	0.621	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366811

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100123	Ammonia-N	2.17	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367002

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100472	Ammonia-N	0.689	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366892

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100472	Kjeldahl Nitrogen	2.26	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367032

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100473	Kjeldahl Nitrogen	4.48	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366831

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100356	NO2NO3-N	1.50	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366917

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100473	Total-P	1.25	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366714

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100476	O-Phosphate-P	0.519	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P366704

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100466	Color (true)	2.18	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P366705

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100372	Color (true)	0.577	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P366856

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100316	Total Alkalinity	0.0543	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P367122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100317	TDS	6.32	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P366858

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100316	Fluoride	0.473	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P366843

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100376	Organic Carbon	0.818	Spike	P	0 - 20

Quality Assurance Report
Precision

* 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 300.0 Rev. 2.1
Run ID: A92512
Included Lab Sample IDs: 2100466, 2100467, 2100468, 2100469

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	103	P/P	90 - 110
Chloride	103	104	P/P	90 - 110
Sulfate	102	103	P/P	90 - 110
Sulfate	103	103	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A92537
Included Lab Sample IDs: 2100466

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

Reference Method: SM 2120 B
Run ID: A92538
Included Lab Sample IDs: 2100467, 2100468, 2100469

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.5	99.1	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A92542
Included Lab Sample IDs: 2100466, 2100467, 2100468, 2100469

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	102	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A92546
Included Lab Sample IDs: 2100474, 2100475, 2100476, 2100477

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.5	99.8	P/P	90 - 110
O-Phosphate-P	99.7	99.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A92596
Included Lab Sample IDs: 2100470, 2100471

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	105	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A92605
Included Lab Sample IDs: 2100470, 2100471, 2100472, 2100473

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A92618
Included Lab Sample IDs: 2100470, 2100471, 2100472, 2100473

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.8	96.0	P/P	90 - 110
Organic Carbon	96.0	95.6	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A92633
Included Lab Sample IDs: 2100466, 2100467, 2100468, 2100469

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110
Total Alkalinity	104	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A92633
Included Lab Sample IDs: 2100466, 2100467, 2100468, 2100469

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	99.1	P/P	90 - 110
Fluoride	99.1	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A92675
Included Lab Sample IDs: 2100470, 2100471, 2100472

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.1	97.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A92688
Included Lab Sample IDs: 2100472, 2100473

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A92691
Included Lab Sample IDs: 2100482, 2100483, 2100484, 2100485

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	101	P/P	90 - 110
Calcium	99.1	99.0	P/P	90 - 110
Iron	98.6	97.2	P/P	90 - 110
Magnesium	98.7	97.0	P/P	90 - 110
Potassium	97.5	94.9	P/P	90 - 110
Sodium	96.7	94.4	P/P	90 - 110
Zinc	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A92697
Included Lab Sample IDs: 2100470, 2100471

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A92697
Included Lab Sample IDs: 2100470, 2100471

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A92700
Included Lab Sample IDs: 2100472, 2100473

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A92729
Included Lab Sample IDs: 2100473

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.4	91.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A92868
Included Lab Sample IDs: 2100482, 2100483, 2100484, 2100485

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	103	103	P/P	90 - 110
Aluminum	104	103	P/P	90 - 110
Antimony	102	103	P/P	90 - 110
Antimony	103	102	P/P	90 - 110
Arsenic	103	103	P/P	90 - 110
Arsenic	103	105	P/P	90 - 110
Boron	108	108	P/P	90 - 110
Boron	109	108	P/P	90 - 110
Cadmium	104	104	P/P	90 - 110
Cadmium	104	102	P/P	90 - 110
Chromium	104	104	P/P	90 - 110
Chromium	104	105	P/P	90 - 110
Copper	102	105	P/P	90 - 110
Copper	103	102	P/P	90 - 110
Lead	106	105	P/P	90 - 110
Nickel	102	103	P/P	90 - 110
Nickel	103	104	P/P	90 - 110
Selenium	104	104	P/P	90 - 110
Selenium	104	105	P/P	90 - 110
Silver	103	103	P/P	90 - 110
Silver	104	103	P/P	90 - 110
Thallium	99.0	99.4	P/P	90 - 110
Thallium	99.4	99.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A92947
Included Lab Sample IDs: 2100482, 2100483, 2100484

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	95.2	92.6	P/P	90 - 110

Quality Assurance Report
Calibration Verification

* 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					5.37	
EPA 200.7 Rev. 4.4	Barium	100	99.0	100			1.28
	Calcium	91.8	93.3				2.33
	Iron	96.4	98.7	96.6			2.12
	Magnesium	101	101	99.4			1.08
	Potassium	99.2	98.7	96.9			1.40
	Sodium	99.3	92.1	93.8			1.06
	Zinc	99.4	101	102			1.31
EPA 200.8 Rev. 5.4	Aluminum	101	103	101			1.75
	Antimony	101	103	104			0.660
	Arsenic	104	106	106			0.236
	Boron	104	109	107			0.942
	Cadmium	105	106	106			0.128
	Chromium	102	104	103			0.769
	Copper	101	104	104			0.179
	Lead	104	107	106			1.21
	Lead	94.1	94.8	93.6			1.27
	Nickel	103	105	103			1.64
	Selenium	103	103	103			0.0465
	Silver	105	106	119			11.5
	Thallium	104	108	107			0.474
EPA 300.0 Rev. 2.1	Chloride	103	104	105	104		0.663
	Chloride	105	103	106		0.462	
	Sulfate	104	104	104	103		0.211
	Sulfate	105	104	105		0.621	
EPA 350.1 Rev. 2.0	Ammonia-N	104	102	104			2.17
	Ammonia-N	105	101	100			0.689
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.8	97.5	101			2.26
	Kjeldahl Nitrogen	102	102	109			4.48
EPA 353.2 Rev. 2.0	NO2NO3-N	102	99.5	101			1.50
EPA 365.1 Rev. 2.0	Total-P	107	105	107			1.25
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.9	96.0	96.5			0.519
SM 2120 B	Color (true)	94.7				2.18	
	Color (true)	97.9				0.577	
SM 2320 B-97	Total Alkalinity	105				0.0543	
SM 2540 C-97	TDS					6.32	
SM 4500 F-C-97	Fluoride	99.5					0.473
SM 5310 B-00	Organic Carbon	97.1	95.4	94.4			0.818

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2100466, 2100467, 2100468, 2100469
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2100482, 2100483, 2100484, 2100485
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2100482, 2100483, 2100484, 2100485
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2100466, 2100467, 2100468, 2100469
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2100466, 2100467, 2100468, 2100469
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2100470, 2100471, 2100472, 2100473

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2100470, 2100471, 2100472, 2100473
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2100470, 2100471, 2100472, 2100473
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2100470, 2100471, 2100472, 2100473
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2100474, 2100475, 2100476, 2100477
SM 2120 B / E31780	True Color measured at 450 nm	2100466, 2100467, 2100468, 2100469
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2100466, 2100467, 2100468, 2100469
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2100466, 2100467, 2100468, 2100469
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2100466, 2100467, 2100468, 2100469
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2100466, 2100467, 2100468, 2100469
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2100470, 2100471, 2100472, 2100473

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	07/03/2019			07/03/2019 16:51	Samantha Davila	2100466, 2100467, 2100468, 2100469
EPA 200.7 Rev. 4.4	07/03/2019	07/08/2019 13:00	Elliott D. Healy	07/10/2019 10:30	Betina Topolski	2100482
	07/03/2019	07/08/2019 13:00	Elliott D. Healy	07/10/2019 10:35	Betina Topolski	2100483
	07/03/2019	07/08/2019 13:00	Elliott D. Healy	07/10/2019 10:40	Betina Topolski	2100484
	07/03/2019	07/08/2019 13:00	Elliott D. Healy	07/10/2019 10:46	Betina Topolski	2100485
EPA 200.8 Rev. 5.4	07/03/2019	07/08/2019 13:00	Elliott D. Healy	07/17/2019 21:34	Robert K Palmer	2100482
	07/03/2019	07/08/2019 13:00	Elliott D. Healy	07/17/2019 22:13	Robert K Palmer	2100483
	07/03/2019	07/08/2019 13:00	Elliott D. Healy	07/17/2019 22:23	Robert K Palmer	2100484
	07/03/2019	07/08/2019 13:00	Elliott D. Healy	07/17/2019 22:33	Robert K Palmer	2100485
	07/03/2019	07/22/2019 09:40	Alexander Thompson	07/22/2019 17:08	Robert K Palmer	2100482
	07/03/2019	07/22/2019 09:40	Alexander Thompson	07/22/2019 17:18	Robert K Palmer	2100483
	07/03/2019	07/22/2019 09:40	Alexander Thompson	07/22/2019 17:47	Robert K Palmer	2100484
EPA 300.0 Rev. 2.1	07/03/2019			07/06/2019 02:42	Jhamieka S. Greenwood	2100466
	07/03/2019			07/06/2019 02:54	Jhamieka S. Greenwood	2100467
	07/03/2019			07/06/2019 03:06	Jhamieka S. Greenwood	2100468
	07/03/2019			07/06/2019 04:31	Jhamieka S. Greenwood	2100469
EPA 350.1 Rev. 2.0	07/03/2019			07/07/2019 13:21	Ping Hua	2100470
	07/03/2019			07/07/2019 13:22	Ping Hua	2100471
	07/03/2019			07/10/2019 15:06	Ping Hua	2100472
	07/03/2019			07/10/2019 15:11	Ping Hua	2100473
EPA 351.2 Rev. 2.0	07/03/2019	07/09/2019 12:45	Adrian Shelby	07/10/2019 12:02	Joseph Suarez	2100470
	07/03/2019	07/09/2019 12:45	Adrian Shelby	07/10/2019 12:04	Joseph Suarez	2100471
	07/03/2019	07/09/2019 12:45	Adrian Shelby	07/10/2019 12:05	Joseph Suarez	2100472
	07/03/2019	07/11/2019 12:15	Adrian Shelby	07/12/2019 11:08	Joseph Suarez	2100473
EPA 353.2 Rev. 2.0	07/03/2019			07/08/2019 13:37	Lauren Lees	2100470
	07/03/2019			07/08/2019 13:38	Lauren Lees	2100471
	07/03/2019			07/08/2019 13:39	Lauren Lees	2100472
	07/03/2019			07/08/2019 13:41	Lauren Lees	2100473
EPA 365.1 Rev. 2.0	07/03/2019	07/10/2019 13:20	Sima Feizi	07/11/2019 08:13	Lipi Saha	2100470
	07/03/2019	07/10/2019 13:20	Sima Feizi	07/11/2019 08:14	Lipi Saha	2100471
	07/03/2019	07/10/2019 13:20	Sima Feizi	07/11/2019 10:27	Lipi Saha	2100473
	07/03/2019	07/10/2019 13:20	Sima Feizi	07/11/2019 10:33	Lipi Saha	2100472
EPA 365.1 Rev. 2.0 dissolved	07/03/2019			07/03/2019 16:17	Jhamieka S. Greenwood	2100476
	07/03/2019			07/03/2019 16:41	Jhamieka S. Greenwood	2100474
	07/03/2019			07/03/2019 16:42	Jhamieka S. Greenwood	2100475
	07/03/2019			07/03/2019 16:43	Jhamieka S. Greenwood	2100477
SM 2120 B	07/03/2019			07/03/2019 15:01	Madeline Funaro	2100467
	07/03/2019			07/03/2019 15:02	Madeline Funaro	2100468
	07/03/2019			07/03/2019 15:03	Madeline Funaro	2100469
	07/03/2019			07/03/2019 15:38	Madeline Funaro	2100466

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	07/03/2019			07/09/2019 02:37	Dale L. Simmons	2100466
	07/03/2019			07/09/2019 02:50	Dale L. Simmons	2100467
	07/03/2019			07/09/2019 03:33	Dale L. Simmons	2100468
	07/03/2019			07/09/2019 03:44	Dale L. Simmons	2100469
SM 2540 C-97	07/03/2019			07/05/2019 13:29	Yijie Li	2100466, 2100467, 2100468, 2100469
SM 2540 D-97	07/03/2019			07/05/2019 13:29	Yijie Li	2100466, 2100467, 2100468, 2100469
SM 4500 F-C-97	07/03/2019			07/09/2019 02:37	Dale L. Simmons	2100466
	07/03/2019			07/09/2019 02:50	Dale L. Simmons	2100467
	07/03/2019			07/09/2019 03:33	Dale L. Simmons	2100468
	07/03/2019			07/09/2019 03:44	Dale L. Simmons	2100469
SM 5310 B-00	07/03/2019			07/08/2019 04:16	Madeline Funaro	2100472
	07/03/2019			07/08/2019 06:32	Madeline Funaro	2100470
	07/03/2019			07/08/2019 06:47	Madeline Funaro	2100471
	07/03/2019			07/08/2019 07:00	Madeline Funaro	2100473